DRAFT
ENVIRONMENTAL IMPACT STATEMENT

PROPOSED JERICHO RISE WIND FARM PROJECT
TOWN OF BELLMONT
TOWN OF CHATEAUGAY
FRANKLIN COUNTY, NEW YORK

JERICHO RISE
WIND FARM

Co-Lead Agencies:
Town of Bellmont and Town of Chateaugay

Date of Submittal: February 5, 2008
Date of Acceptance: _______________
Comment Submittal Deadline: ________

Prepared for:
Jericho Rise Wind Farm LLC
52 James Street 4th Floor
Albany, New York 12207

FEBRUARY 2008

Prepared by:

TETRA TECH EC, INC.

VOLUME 1 OF 2

Jericho Rise Wind Farm LLC
52 James Street, 4th Floor, Albany, New York 12207, (518) 426-1650
JERICHO RISE
WIND FARM

February 5, 2008

Mr. H. Bruce Russell
Town Supervisor
Town of Bellmont
County Route 24
Malone, NY 12953

RE: Jericho Rise Wind Farm
Draft Environmental Impact Statement

Dear Mr. Russell:

Enclosed please find eight copies of the Draft Environmental Impact Statement (DEIS) for the Jericho Rise Wind Farm (Project) that has been prepared pursuant to the New York State Environmental Quality Review Act (SEQRA) and regulations (6 NYRR Part 617).

This DEIS has been prepared with extensive input provided by the Town's consultant Conestoga-Rovers & Associates, and the Town's attorney, C.J. Madonna. They have provided advance draft copies of all of the sections and studies contained in the DEIS and the project team has diligently responded to comments and suggestions resulting form their review. Hence, we believe this document meets the requirements of SEQRA and "is adequate with respect to its scope and content for the purpose of commencing public review." Copies of this DEIS have also been sent to the Town of Chateaugay.

We look forward to a comprehensive, public review of the Project and DEIS. The Jericho Rise Wind Farm team stands ready to respond to any and all questions, comments, and requests that may arise from the public, the Towns, the consultants, and agencies.

Thank you very much for your attention to this submittal.

Sincerely,

Patrick Doyle

Patrick Doyle
Director of Development
Horizon Wind Energy

Enclosures

cc: C.J. Madonna, Esq.
P.A. Lemay, Town of Chateaugay
D. Fitzgerald, Jericho Rise Wind Farm LLC
R. Cogen, Nixon Peabody LLP
T. Levy, Conestoga-Rovers & Associates, Inc.
B. Smith, Conestoga-Rovers & Associates, Inc.
R.G. Adams, Conestoga-Rovers & Associates, Inc.
L. Kearns, Tetra Tech EC, Inc.

****

Receipt of Jericho Rise Wind Farm Draft Environmental Impact Statement is hereby acknowledged:

Dated: ____________

Signature: _______________________
Town Clerk

Jericho Rise Wind Farm LLC
52 James Street, 4th Floor, Albany, New York 12207, (518) 426-1650

JERICHO RISE
WIND FARM

February 5, 2008

Mr. Donald Bilow
Town Supervisor
Town of Chateaugay
P.O. Box 9
191 East Main Street
Chateaugay, New York 12920

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Enclosures: as stated

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Dated: ____________

Signature: _______________________
Town Clerk

FIRMS INVOLVED IN PREPARATION OF THIS DEIS

This Draft Environmental Impact Statement has been developed pursuant to the State Environmental Quality Review Act (6 NYCRR 617) under the direction of the Applicant, Jericho Rise Wind Farm LLC, with input from the following list of preparers. The Applicant's lead consultant, Tetra Tech EC, Inc., was responsible for the majority of the SEQRA required elements of the document.

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EXECUTIVE SUMMARY

This Draft Environmental Impact Statement (DEIS) is being prepared to describe the potential environmental impacts and mitigation measures associated with the construction and operation of the proposed Jericho Rise Wind Farm (the Project) as required under the New York State Environmental Quality Review Act (SEQRA) (6 NYCRR 617). Provided below is a brief Project description, along with summaries of the regulatory process; the Project's purpose, need, and benefit; a summary of potential environmental impacts; and proposed mitigation measures. Alternatives to the Project and its effect on use and conservation of energy are also reviewed.

Project Description

Jericho Rise Wind Farm LLC (the Applicant) is proposing to develop a wind-powered generating facility of up to 53 wind turbines with a maximum capacity of 87.45 megawatts (MW). The proposed Project would meet the electrical needs of approximately 25,500 New York households. In addition to the wind turbines, the Project will involve construction of up to four permanent meteorological towers, a system of gravel access roads, a buried and overhead electrical collection system, an operation and maintenance building, and an interconnection substation facility.

The Project will be developed on leased private land in the towns of Bellmont and Chateaugay in Franklin County, New York (see Figure 1.1-1, Project Area). The Project will be constructed in one phase, currently anticipated to commence as early as fall 2008 and to finish in fall 2009.

Once built, the wind turbines and associated components operate in almost a completely automated fashion. The Project will, however, employ approximately 10 to 15 personnel.

Regulatory Process

This DEIS has been prepared by Tetra Tech EC, Inc. (Tetra Tech) of Boston, MA. This document is intended to facilitate the environmental review process and to provide a basis for informed public comment and decision-making. This process is in accordance with the requirements of SEQRA. The towns of Bellmont and Chateaugay are acting as Joint Lead Agencies to provide a coordinated review under SEQRA. Various support studies have also been performed for the Project, which provide detailed information on discrete topical areas in furtherance of the SEQRA evaluation. These studies include, but are not limited to, the following:

- Phase IA Cultural Resource Investigation
- Shadow Flicker Analysis
- Transportation Study
- Aviation Hazard Assessment
- TV Broadcast Off-Air Reception
- Licensed Microwave Search and Worst Case Fresnel Zone

- Avian and Bat Studies
- Visual Impact Assessment Report
- Environmental Sound Survey and Noise Impact Assessment
- Property Value Impact Assessment

Purpose, Need, and Benefit

The purpose of the proposed action is to create a wind-powered electrical-generating facility that will provide a significant source of renewable energy to the New York power grid. The Project would facilitate compliance with the Public Service Commission (PSC) "Order Approving Renewable Portfolio Standard Policy (Order)," issued on September 24, 2004. This Order calls for an increase in renewable energy used in the state to 25 percent (from the then level of 19 percent) by the year 2013. The Project responds to objectives identified in the 2002 New York State Energy Plan (State Energy Plan) and Final Environmental Impact Statement (New York State Energy Planning Board, 2002), and the Preliminary Investigation into Establishing a Renewable Portfolio Standard in New York (NYSERDA 2003). These objectives include stimulating economic growth, increasing energy diversity, and promoting a cleaner and healthier environment. The benefits of the proposed action include positive impacts on socioeconomics (e.g., payment-in-lieu of tax (PILOT) revenues to local municipalities, lease revenues to participating landowners, and reduced wholesale electricity prices statewide), air quality (through reduction of emissions from fossil-fuel-burning power plants), and climate (reduction of greenhouse gases that contribute to global warming). The principal, overriding benefits of the Project are in complete accordance with the 2002 State Energy Plan (New York State Energy Planning Board, 2002), namely:

> “Stimulating sustainable economic growth”
> “Increasing energy diversity…including renewable-based energy”, and
> “Promoting and achieving a cleaner and healthier environment”

Summary of Potential Impacts

In accordance with the requirements of the SEQRA process, potential impacts arising from the proposed action were identified early in the application process and are evaluated in this DEIS with respect to an array of environmental and cultural resources. Provided below is a list of all potential impacts that may occur in association with the construction and/or operation of the Project. These impacts and associated mitigation measures are described in detail in this DEIS.

Environmental Factor	Potential Impacts
Topography, Geology, and Soils	• Soil erosion • Soil compaction • Loss of agricultural land
Surface and Groundwater Resources	• Stream crossings • Siltation/sedimentation • Temporary disturbance • Wetland filling • Permanent stream crossings
Biological Resources	• Vegetation clearing • Incidental wildlife injury and mortality • Loss or alteration of habitat
Land Use and Zoning	• Adverse and beneficial impacts on farming • Changes in community character and land use trends
Socioeconomic	• Host community payment / PILOT • Revenue to participating landowners • Expenditures on goods and services • Tourism • Short and long-term employment
Transportation	• Road wear • Traffic congestion/delays • Road system improvements/upgrades
Cultural Resources	• Visual impacts on architectural resources • Disturbance of historic archaeological resources
Visual Resources	• Visual change to the landscape • Visual impact on sensitive sites/viewers • Shadow-flicker impact on adjacent residents
Community Services, Public Utilities, and Infrastructure	• Demands on police and emergency services • Telecommunication interference • Utility distribution lines and poles • Bulk power system upgrade • New source of clean renewable energy
Communications	• Interference with public, private or government communication facilities.
Public Safety	• Stray voltage • Tower collapse/blade failure • Ice throw • Lightning strike • Fire

Environmental Factor	Potential Impacts
Climate and Air Quality	• Construction vehicle emissions • Dust during construction • Reduced air pollutants and greenhouse gases
Noise	• Construction noise impacts on neighboring/adjacent residents • Operational noise impacts on neighboring/adjacent residents

The Project is expected to result in positive, long-term agricultural and socioeconomic impacts within the Project Area and across the state, and to provide benefits to the region's air quality.

The Project will result in minor, generally short-term impacts to soils, vegetation, wetlands, wildlife habitat, and transportation facilities as a result of Project construction. The Project will have long-term effects on community character, avian/bat resources, ambient noise levels, and some historic and visual resources during operation. However, with the inclusion of proper mitigation measures, and a Complaint Resolution Procedure (Appendix N), operational impacts other than the Project's visibility will be limited and minor.

Summary of Mitigation Measures

Various measures will be taken to avoid, minimize and/or mitigate potential environmental impacts. General mitigation measures will include adhering to requirements of various local, state, and federal ordinances and regulations, and entering into development agreements with adjacent landowners. The Applicant will also employ an environmental inspector to assure compliance with permit requirements and environmental protection commitments during construction and operation of the Project. The proposed Project will result in significant environmental and economic benefits to the area. These benefits also serve to mitigate unavoidable adverse impacts associated with Project construction and operation.

Specific measures designed to mitigate or avoid adverse potential environmental impacts during Project construction or operations include the following:

- Siting the Project away from population centers and areas of residential development.
- Siting Project components outside of areas of mature forestland to the extent practicable.
- Locating access roads and turbines along field edges where practical and in field corners to avoid or minimize disturbance of agricultural land.
- Keeping turbines a minimum of 1,000 feet from residences in Bellmont and 1,320 feet from residences in Chateaugay that do not directly receive Project benefits, to minimize noise and visual impacts.

- Utilizing multiple-megawatt scale turbines to reduce the length of interconnect and access roads per megawatt of capacity.
- Burying electrical interconnection lines between turbines except where unavoidable due to sensitive environmental/cultural resources, to minimize agricultural impacts, or construction constraints.
- Using existing roads for turbine access whenever possible to minimize disturbance to agricultural land, wildlife habitat, wetlands, and streams.
- Utilizing construction techniques that minimize disturbance to vegetation, streams, and wetlands.
- Siting the interconnection substation facilities in an area screened by existing mature vegetation.
- Painting the turbines with a matte non-specular finish.
- Developing and implementing a sedimentation and erosion control plan.
- Proposing a compensatory stream/wetland mitigation program.
- Siting select turbines to avoid or minimize wetland, wildlife, or visual impacts.
- Performing post-construction monitoring to improve understanding of possible avian impacts.
- Siting turbines to avoid interference with microwave and AM/FM communication systems.
- Implementing agricultural protection measures to avoid, minimize, or mitigate impacts on agricultural land and farm operations.
- Developing a traffic and dust management plan during construction.
- Upgrading public roads utilized during construction.
- Finalizing a component delivery plan that minimizes impacts on residential areas.
- Developing and implementing a historic resource protection plan in concert with the New York State Historic Preservation Office (SHPO).
- Developing and implementing a Complaint Resolution Procedure.

Alternatives

Alternatives to the proposed Project that were considered and evaluated include alternate Project size; alternate Project location; alternate Project layout; alternate turbine output, height, and color; and a “no action” alternative. Analysis of these alternatives revealed that the size, type, number, and the configuration of the turbines as currently proposed are necessary to produce a commercially feasible Project. The Applicant has investigated several alternative locations across northern New York and rejected many locations due to significant development constraints, including migratory bird issues, incompatible land uses, lack of contiguous land, a lack of adequate wind resource, unsuitable transmission facilities, and lack of likely community acceptability. All suitable locations, including the proposed Project Site, must be seriously considered if the State is to meet its obligations regarding domestic generation of renewable energy by 2013. The Applicant has nearly continuously revised the Project layout since its inception in an effort to optimize the balance between energy generation with the protection of agricultural, environmental, and aesthetic resources, as well as community safety and welfare. The Applicant considered several types of wind energy conversion technologies for the Project. However, the 3-bladed, upwind, horizontal axis, propeller-type wind turbine provides the smallest land-use footprint per unit of energy generated, and has demonstrated itself as the most reliable and commercially viable for the application of utility scale electrical power generation. The Applicant has reduced the size of the originally proposed Project layout from over 60 turbines to the 53 currently proposed and reviewed in this DEIS. This reduction in size was made in large part due to the siting parameters described above. The Applicant has also considered reducing the Project size by using either smaller or fewer turbines in this current layout. Doing so, however, would not fully capture the available wind resource and both hurt the State's objective of supplying domestic renewable energy as well as the Project's ability to offset fixed expenses associated with construction and connecting to the power grid. In summary, the alternatives analysis concluded that the Project as proposed offers the optimum use of resources with the fewest potential adverse impacts.

Effects on Use and Conservation of Energy Resources

The proposed Project will have significant, long-term beneficial effects on the use and conservation of energy resources. Energy will be expended during the construction phases of the Project, as well as for the maintenance of the wind turbines and support facilities on the Project Site. However, the operating Project will generate up to 87.45 MW of electricity from a renewable resource (the wind) without any fossil-fuel emissions. This greatly exceeds the energy required to construct and operate the Project. The output from the Project would power approximately 25,500 households in New York State (on an average annual basis). The Project will add to and diversify the state's sources of power generation helping to stabilize power prices currently subject to spikes in fossil fuel prices. Over the long term, the Project will displace some of the state's older, less efficient, and dirtier sources of power and, at a minimum, will stave off the need to build new fossil fuel plants.

TABLE OF CONTENTS

TABLE OF CONTENTS – *Continued*

TABLE OF CONTENTS – *Continued*

TABLE OF CONTENTS – *Continued*

TABLE OF CONTENTS – *Continued*

TABLE OF CONTENTS – *Continued*

TABLE OF CONTENTS – *Continued*

TABLE OF CONTENTS – *Continued*

TABLE OF CONTENTS – *Continued*

APPENDICES

EXHIBITS

TABLE OF CONTENTS – *Continued*

FIGURES

TABLES

TABLE OF CONTENTS – *Continued*

ACRONYMS AND ABBREVIATIONS

ACI	American Concrete Institute
ACSM	American Congress on Surveying and Mapping
Ag & Markets	New York State Department of Agriculture and Markets
ALTA	American Land Title Association
ANSI	American National Standards Institute
APE	area of potential effects
Applicant	Jericho Rise Wind Farm LLC
AWEA	American Wind Energy Association
BBA	Breeding Bird Atlas (New York)
BMPs	best management practices
c/kWh	cents per kilowatt-hour
CEA	Critical Environmental Area
CHP	Combined Heat and Power
CNR	Composite Noise Rating
CO	carbon monoxide
CO_2	carbon dioxide
CR	County Route
CRA	Conestoga-Rovers & Associates
CSI	Construction Standards Institute
dB	decibel
dBA	decibels on the A-weighted scale
DEIS	Draft Environmental Impact Statement
DEM	digital elevation model
DOD	Department of Defense
DPS	New York Department of Public Service
EAF	Environmental Assessment Form
EMF	electromagnetic field
EMTs	emergency medical technicians
Energy Plan	2002 State Energy Plan and Final Environmental Impact Statement
ENVIRON	ENVIRON International Corporation of Amherst, MA
EPA eGRID	EPA's Emissions and Generation Resource Integrated Database
ESA	Endangered Species Act of 1973
ESCP	Erosion and Sediment Control Plan
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FIDA	Franklin Industrial Development Agency (County of)
GIS	Geographic Information System
GPS	global positioning system

ACRONYMS AND ABBREVIATIONS – *Continued*

HAWT	horizontal axis of wind turbine
Horizon	Horizon Wind Energy
Hz	Hertz
IBC	International Building Code
IDA	Industrial Development Agency
IEC	International Electrotechnical Commission
IEEE	Institute for Electrical and Electronic Engineers
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standard Organization
kHz	kilohertz
kV	kilovolt
kW	kilowatt
lbs	pounds
L_{eq}	equivalent sound level
LFG	landfill gas
LMR	land mobile radio
LNG	liquefied natural gas
LSZ	landscape similarity zones
m/s	meters per second
MBTA	Migratory Bird Treaty Act
MDS	map-documented structure
met	meteorological
MOA	Memorandum of Agreement
mph	miles per hour
MSDS	material safety data sheets
MW	megawatt
MWh	megawatt-hour
NAAQS	National Ambient Air Quality Standards
NCDC	National Climatic Data Center (U.S.)
NEC	National Electric Code
NEPA	National Environmental Policy Act
NESC	National Electric Safety Code
NFPA	National Fire Protection Agency
NHP	New York Natural Heritage Program
NHPA	National Historic Preservation Act
NIA	noise impact assessment
NLCD	National Land Cover Data
NO_x	nitrogen oxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places

ACRONYMS AND ABBREVIATIONS – *Continued*

NSHMP	National Seismic Hazard Mapping Project (USGS)
NTIA	National Telecommunications and Information Administration
NWI	National Wetland Inventory
NYECL	New York Environmental Conservation Law
NYISO	New York Independent System Operators
NYPA	New York Power Authority
NYSDEC	New York State Department of Environmental Conservation
NYSDEC Noise Policy	NYSDEC Program Policy titled Assessing and Mitigating Noise Impacts
NYSDOT	New York State Department of Transportation
NYSEG	New York State Electric & Gas
NYSERDA	New York State Energy Research and Development Authority
NYSGS	New York State Geologic Survey
NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
O&M	operation and maintenance
O_3	ozone
OS/OW	oversize/overweight
OSHA	Occupational Safety and Health Administration
PCS	personal communications system
PEM	palustrine emergent wetlands
PFO	palustrine forested wetlands
PFR	public fishing rights
PILOT	payment-in-lieu of tax
PM_{10}	inhalable particulates with diameters less than 10 microns
$PM_{2.5}$	inhalable particulates with diameters less than 2.5 microns
POI	point-of-interconnect
PRHPL	Parks, Recreation, and Historic Preservation Law
Project	Jericho Rise Wind Farm
PSC	Public Service Commission
PSS	palustrine scrub/shrub
PSTN	public switched telephone network
PV	Photovoltaic
QA	quality assurance
REC	renewable energy credit
REPP	Renewable Energy Policy Project
RPM	rotations per minute
RPS	Renewable Portfolio Standard
RTU	remote terminal unit
RV	recreational vehicle
SCADA	Supervisory Control and Data Acquisition
SEQR	New York State Environmental Quality Review

ACRONYMS AND ABBREVIATIONS – *Continued*

SEQRA	New York State Environmental Quality Review Act
SHPO	New York State Historic Preservation Office
SHPO Guidelines	New York SHPO Guidelines for Wind Farm Development Cultural Resources Survey Work
SIMS	Safety Information Management System
SO_2	sulfur dioxide
SPCC Plan	Spill Prevention Containment and Countermeasure Plan
SPDES	State Pollution Discharge Elimination System
SPL	sound pressure level
SWPPP	Storm Water Pollution Prevention Plan
Tetra Tech	Tetra Tech EC, Inc.
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
VAWT	vertical axis wind turbine
VIA	Visual Impact Analysis
VMS	Vehicle Message Systems
WCFZ	Worst Case Fresnel Zone
WEC	Wind Energy Conversion
WECS	wind energy conversion systems
WEST	Western EcoSystems Technology, Inc.
WTGs	wind turbine generators
ZVI	Zone of Visual Influence

1.0 DESCRIPTION OF PROPOSED ACTION

1.1 Project Summary / Introduction

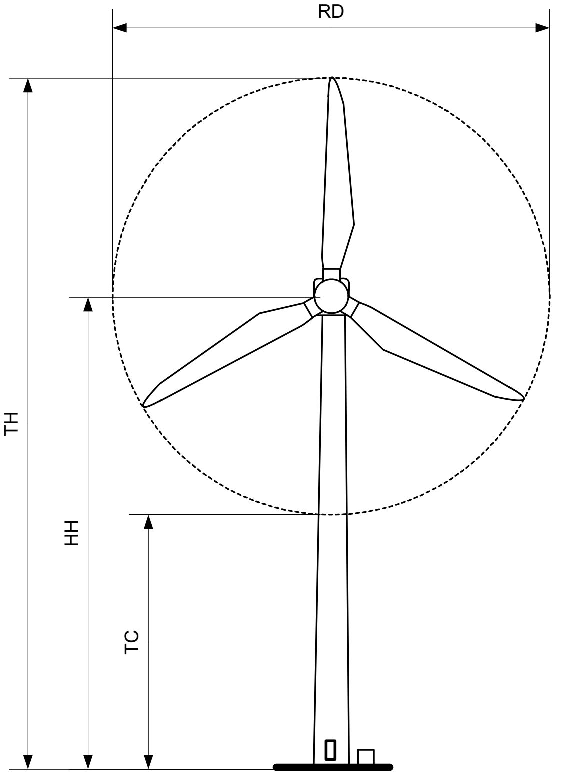
The proposed Jericho Rise Wind Farm (the Project) is located in the towns of Chateaugay and Bellmont in Franklin County, New York. The Project location was selected due to the energetic wind resource of the area, its primarily agricultural land-use pattern, and its proximity to the New York State Electric & Gas (NYSEG) Willis-Malone 115-kilovolt (kV) line and the Willis Substation, which gives the Project access to New York's electricity market.

The following terms are used throughout this document to describe the proposed action:

> **Applicant.** Refers to Jericho Rise Wind Farm LLC, formerly Burke Wind Power LLC, a wholly owned subsidiary of Horizon Wind Energy.
>
> **Project.** Refers to all activities associated with the construction, operation, and individual components of the Jericho Rise Wind Farm, including, but not limited to, turbines (including blades, towers, nacelle, foundations, etc.), electrical collection lines, access roads, laydown areas, and other facilities.
>
> **Project Site.** Refers to the parcels of land where the Project will be placed. Jericho Rise Wind Farm LLC has obtained consent from all landowners within the Project Site.
>
> **Project Area.** Refers to the larger geographic study area including the Project Site and immediate vicinity.

The Project will consist of up to 53 wind turbine generators (WTGs) with a maximum output of 1.65 megawatt (MW) and a rotor diameter of 82 meters (269 feet), as shown in Exhibit 1.1-1. Although Jericho Rise Wind Farm LLC (the Applicant) currently plans to utilize the Vestas V-82, due to high demand placed on the turbine manufacturing industry, there is a possibility that this particular WTG may not be available at the time of procurement. The Applicant will utilize a WTG of similar specifications if the Vestas V-82 WTG is not available and will maintain compliance with the 400-foot height limit specified in the local laws of the respective Towns. Other possible WTGs include the GE1.5 MW sle. Although this Draft Environmental Impact Statement (DEIS) assumes that the Vestas V-82 will be used, the Applicant has conducted a noise analysis on both turbines (Appendix I). Because the rotor diameter of the GE turbine in smaller, a visual analysis on the Vestas V-82 was conducted to provide a more conservative estimate of potential impact.

All of the proposed turbines will be the same make and model. The Project's installed total nameplate capacity will be a maximum of 87.45 MW. In addition to WTGs, the Project entails construction and operation of permanent meteorological towers, a system of gravel access roads, electrical collection and communication cable networks, an operation and maintenance (O&M) building, and an on-site substation and associated point-of-interconnect (POI) facility. In addition to the above on-site improvements, the Project may require upgrades to other portions of the electrical system. These system upgrades, as well as the Applicant's portion of the associated costs, will be defined in a Facility Study conducted by the New York Independent System Operator (NYISO). In addition to permanent Project facilities, the Project will require a temporary construction trailer site and construction work space, including, but not limited to, areas to store Project components (laydown yards), construction vehicle parking areas, and cleared areas for turbine assembly.



MIN	Dimension
80 m/262 ft.	Hub Height (HH)
82 m/269 ft.	Rotor Diameter (RD)
35 m/115 ft.	Tip Clearance (TC)
121 m/397 ft.	Tip Height (TH)

Exhibit 1.1-1 Wind Turbine Dimensions

The entire Project Area encompasses approximately 10.9 square miles (6,988 acres) in the northeast corner of Franklin County in the towns of Chateaugay and Bellmont. Project facilities will be spread across the Project Site, which consists of roughly 5,040 acres of leased private land within the Project Area; however, these facilities will temporarily impact only about 400 acres of land during construction and only approximately 100 acres during Project operations (Figure 1.1-1, Project Area). A site layout map illustrating these key elements is provided in Figure 1.1-2, Proposed Project Layout.

The Project is designed to provide economical renewable electricity to meet New York State's growing energy needs. The Project design and construction methodology was chosen to strike a balance between maximizing energy production, accommodating geological and environmental conditions, and limiting potential intrusions on the host community. Detailed descriptions of the types of activities required to construct the Project, and the plan for managing the Project during construction and operations, are contained in Section 1.6, Project Construction.

Figure 1.1-1 Project Area

Figure 1.1-2 Proposed Project Layout

The Project is expected to be in service for at least 20 years. Well maintained wind power plants operating according to industry standard practices are capable of service lives longer than 20 years. Due to the rapid advancement in wind turbine technology, it is possible that during the Project's service life, the turbines would be retrofitted or replaced under a re-powering program. Such retrofitting is not uncommon at older wind power projects in Europe and California.

Preconstruction activities, such as clearing, improvement of laydown areas, and road grading could commence as early as fall 2008 with construction of the Project facilities commencing as early as spring 2009. More information on the proposed construction schedule is presented in Table 1.6-1. Construction will commence when the Applicant obtains the required permits and when the necessary offtake agreement(s) for the Project's renewable power and/or financing arrangements are in place, until which point a final construction schedule cannot be produced.

1.2 Project Location

The proposed Project is located in Franklin County, as depicted in Figure 1.1-1. The Project Site includes approximately 5,040 acres of leased private land within the towns of Chateaugay and Bellmont. It is located about 5 miles south of the Canadian border, approximately 1 mile southwest of the Village of Chateaugay, and 2 miles east of the Village of Burke (as measured to the nearest turbine). The Project Area is roughly bordered by the Burke/Chateaugay town line to the west, State Highway 374 to the east, Malone Chateaugay Road to the north, and Brainardsville Road to the south. Two alternate locations for the substation and POI are currently being analyzed and are presented as alternatives in this document. The proposed substation site #1 is located in the southeast corner of the Project Area north of Town Line Road in the Town of Bellmont. The alternate substation site #2 is located directly south of and adjacent to the existing Willis Substation on Willis Road in the Town of Chateaugay. Both proposed locations are depicted on the site layout map in Figure 1.1-2.

The Project Area is situated within the St. Lawrence-Champlain Lowlands, north of the Adirondack Park boundary. This area is characterized by topography with elevations ranging from approximately 780 feet above mean sea level to 1,500 feet above mean sea level. Land use within the Project Area is dominated by active agriculture, with farms and single-family rural residences generally occurring along the road frontage.

1.2.1 Project Participation

Approximately 41 individuals own the 92 land parcels that make up the Project Area. The Applicant has secured sufficient acreage under lease and easement option agreements to construct an economically viable Project and is concluding negotiations on additional neighboring parcels.

Figure 1.1-2 illustrates all of the key Project facilities on a topographic map.

1.3 Project Facility Owner/Developer/Operator

Jericho Rise Wind Farm LLC, formerly Burke Wind Power LLC, is a wholly owned indirect subsidiary of Horizon Wind Energy (Horizon). Horizon develops, constructs, owns, and operates wind farms throughout the United States. Horizon-developed wind farms operate in New York, Iowa, Illinois, Pennsylvania, Oklahoma, Texas, and Washington. Horizon has projects under construction in Minnesota, Oregon, Texas, and Illinois. Operating assets in New York include the Maple Ridge Wind Farm on Tug Hill in Lewis County, New York (50 percent owned by Horizon and 50 percent by PPM Energy) and the Madison Wind Farm in Madison County, New York. At the time this report was prepared, Horizon had roughly 9,000 MW under development and expects to own 1,300 MW of operating wind energy capacity at the end of 2007. In July 2007, Horizon was acquired by Energias de Portugal, a worldwide leader in development and operation of wind energy projects. Now in its eighth year in New York, with four New York offices and extensive experience in development, construction, and operation in New York, Horizon has demonstrated that it has the resources required to successfully develop, construct, and operate the proposed Project.

1.4 Project Purpose, Need, and Benefit

The purpose of the proposed Project is to create a profitable, economically viable wind-powered energy facility that will provide a significant source of renewable energy to the New York power grid.

The impetus for clean renewable energy in New York comes predominantly from the Public Service Commission (PSC) "Order Approving Renewable Portfolio Standard Policy," issued on the 24th of September 2004. This Order calls for an increase in renewable energy used in the state to increase to 25 percent (from the then level of 19 percent) by the year 2013. This renewable energy policy was identified in the *2002 State Energy Plan* (New York State Energy Planning Board 2002) and the Preliminary Investigation into Establishing a Renewable Portfolio Standard (RPS) in New York (NYSERDA 2003). The New York State Energy Research and Development Authority (NYSERDA) 2003 preliminary report found that an RPS can be implemented in a manner that is consistent with the wholesale and retail marketplace in New York and that an RPS has the potential to improve energy security and help diversify the state's electricity generation mix.

One of the PSC's goals in designing the solicitation process and RPS eligibility criteria is to ensure that renewable energy is procured at the lowest possible cost to the state's electricity consumers. As of 2007, over 5,500 MW of New York-based wind energy projects have entered the NYISO interconnection queue. Most of these projects, including the Project, are expected to participate in one of NYSERDA's renewable energy auctions. In addition, other renewable energy projects (biomass, small hydro, solar, landfill gas, etc.) in New York and adjoining states/provinces can compete in such auctions. As a result of the RPS, a modest direct impact on customer bills is anticipated due to the above-mentioned surcharge being added to cover the additional costs of purchasing renewable energy. On the other hand, a report prepared by GE Energy on behalf of NYSERDA and issued in February 2004 (Preliminary Reliability Assessment Report) concludes that wholesale energy prices are likely to decline by approximately $362 million annually once the targets of the RPS are met. Subsequent New York State Assembly Hearing testimony has indicated that the decline may be more than $500 million (Parella 2006).

In addition to the benefit of the RPS in helping New York reduce its reliance upon fossil fuels, increasing the state's renewable energy consumption to 25 percent should reduce statewide air emissions of nitrogen oxide (NO_x) by 6.8 percent, sulfur dioxide (SO_2) by 5.9 percent, and carbon dioxide (CO_2) by 7.7 percent by 2013. The Project alone is expected to reduce annual air emissions of NO_x by 184 tons, SO_2 by 203 tons, and CO_2 by 143,181 tons.

Beyond meeting the goals of the RPS, the benefits of the Project include positive impacts on socioeconomics (e.g., increased revenues to local municipalities and lease revenues to participating landowners and neighbors), air quality (through reduction of emissions from fossil-fuel-burning power plants), and climate (reduction of greenhouse gases that contribute to global warming). By eliminating pollutants and greenhouse gases, the Project will also benefit ecological and water resources and human health. Additional information on the air quality and socioeconomic benefits of the proposed Project is included in Sections 2.4 and 2.9.

1.5 Project Facility Layout and Components

1.5.1 Facility Layout Criteria

The proposed location and spacing of the wind turbines and support facilities were determined based on a wind resource assessment, a review of the site's land use constraints (see Section 2.13, Land Use and Zoning), and the locations of currently existing sensitive environmental and cultural resources. During Project planning, several factors were considered, including the following:

Wind Resource Assessment: The Applicant used computerized modeling software incorporating meteorological data gathered both on- and off-site, topographic information, and environmental information collected in the Project Area. The wind turbines are sited to optimize exposure to wind from all directions, with emphasis on exposure to the prevailing west-southwesterly winds in the Project Area.

Distance from Residences and Other Buildings, Non-participating Land Parcels, Roads, and Other Infrastructure: A detailed house study was performed to determine the exact location of houses, outbuildings, roads, transmission lines, and other existing infrastructure within the Project Area. A setback constraints map was created indicating areas that were available for turbine placement. The Project setbacks are based upon requirements in the local laws for each town and standard wind industry practices. The purpose of the setbacks is to minimize visual and sound effects of the turbines on neighbors and enhance the safety of the operating Project. The following setbacks were utilized in the development of the Project layout:

- Maintain a minimum setback of at least 1,320 feet between the center of any tower foundation and the nearest outer wall of existing non-participating occupied residences in the Town of Chateaugay;
- Maintain a minimum setback of at least 1,200 feet between the center of any tower foundation and the nearest outer wall of existing occupied residences in the Town of Bellmont;
- Maintain a minimum setback of at least one and a half times the total tip-height of the tower between proposed turbine locations and non-dwelling structures, such as barns and camps;
- Maintain a minimum setback, as measured from the centerline of the tower foundation, of at least 500 feet from all local roads in the Town of Bellmont and at least 600 feet from all local roads in the Town of Chateaugay. In addition, a setback of 1,200 feet was observed from State Highway 374;
- Maintain a minimum setback of at least one and a half times the total tip-height feet between proposed turbine locations and existing aboveground utilities; and
- For turbine locations which did not meet applicable boundary line setbacks, Jericho Rise is pursuing participation agreements/written waivers from individuals with proposed turbines sited within the 500-foot site boundary line setback requirement by the Town of Bellmont and the 600-foot site boundary line setback requirement by both the towns of Burke and Chateaugay.

<u>Sufficient Spacing</u>: In siting turbines within the setback constraints discussed above, turbines must maintain sufficient spacing from one another. Siting individual turbines or rows of turbines too close to one another can result in decreased electricity production due to the creation of wake losses and in increased maintenance due to wind turbulence between and among the turbines. The first step in modeling the wake effects of a given wind Project layout is to calculate the wake created by a single turbine. Immediately downstream of the rotor, there is a momentum deficit with respect to free-stream conditions (i.e., a shelter zone). The area of the shelter zone is directly related to the size of the rotor. As the airflow proceeds downstream, the shelter zone expands in size but shrinks in intensity as free-stream conditions gradually prevail. If turbine rows are sufficiently far apart (typically 5 to 10 rotor diameters), energy losses between turbine rows can be reduced. However, wind direction at a Project Area varies and as rotors pivot on their towers, turbines can cast a shelter zone at downstream turbines within the same row. Project siting must carefully evaluate the direction of the most energetic winds to understand the prevalent direction of a turbine's shelter zone.

In addition to energy losses due to siting a downwind turbine in a shelter zone, turbines sited on the margins of the shelter zone can be impacted. At the edge of the shelter zone, airflow mixes with free-stream flow to create turbulence. Turbulent airflow provides less available energy for a turbine to capture and introduces transient forces on the rotor causing the blades to flex more than usual. If turbulence is persistent and severe, it can shorten the useful life of turbine blades. Usually turbines within a row are sited closer together (typically 3 to 5 rotor diameters) in order to reduce the length of associated roads and cables as well as the overall Project Area. Project planning must include a careful balance of these construction and aesthetic impacts with the need to minimize turbulence-related energy or equipment losses. The turbines will be sited according to the minimum spacing requirements necessary to minimize shelter and turbulence impacts, and minimize the overall size of the Project Area. Site topography, environmental conditions, and zoning requirements may require increased turbine spacing however.

Agricultural Protection Measures: In keeping with the wind energy facility siting guidelines developed by the New York State Department of Agriculture and Markets (Ag & Markets), the Applicant has worked closely with all participating landowners and Ag & Markets to design a layout that minimizes impacts on normal farming operations. The proposed layout maximizes the use of existing farm lanes for access roads. As frequently as possible, new access roads and turbines have been sited along the edge or in between fields. For a more detailed discussion of avoidance and mitigation factors employed to minimize agricultural impacts, refer to Section 2.13, Land Use and Zoning.

Biological and Cultural Resources: Through consultation with local, state, and federal agencies, as well as through independent, in-depth desktop and field investigations, the Applicant has developed a solid understanding of sensitive plant and animal species in the Project Area, as well as other sensitive biological, cultural, and architectural resources. The Applicant has also thoroughly investigated and characterized avian and bat usage in the Project Area to determine the relative risks posed to resident and migrating species. Similarly, the Applicant has inventoried known historical structures and cultural resources and has provided reasonable buffer areas from proposed Project facilities to avoid or minimize potential impacts. For a more detailed discussion of avoidance of biological and cultural resources, refer to Section 2.3, Biological Terrestrial and Aquatic Ecology, and Section 2.6, Historical, Cultural, and Archeological Resources.

Unusual Landform Areas: Special consideration is typically given to siting Project facilities to avoid any unusual land forms within the Project Area. After desktop and field study, no unusual landforms have been identified within the Project Area boundary. For a more detailed discussion of the geotechnical and landform features in the Project Area, refer to Section 2.1, Geology, Topography, and Soils.

Wetland Avoidance: Special consideration was given to siting Project facilities to avoid or minimize impact to wetlands within the Project Area. A desktop analysis of the U.S. Fish and

Wildlife National Wetland Inventory Maps and New York State Department of Environmental Conservation (NYSDEC) Freshwater Wetlands Maps was conducted. Additionally, a field wetland inventory has been performed to verify the accuracy of the desktop study. Finally, a desktop analysis using the aforementioned data has been conducted to further determine the extent of the wetland resources to consider during siting. Project facilities were sited to the extent possible in order to avoid or minimize wetland impacts. Prior to construction, the Applicant will submit an application for any wetland permits that may be required for the Project. Wetland delineations according to U.S. Army Corps of Engineers (USACE) and NYSDEC delineation guidelines will be conducted in the spring of 2008 in order to meet permit application requirements. For a more detailed discussion of the wetland and surface water features in the Project Area, refer to Section 2.2, Water Resources.

Visual and Noise Impacts: Special consideration was given to siting the proposed turbines in order to minimize the potential visual impact on residents to the extent practical given the height of the WTGs. The Applicant also conducted extensive shadow flicker and noise analyses. Based upon these studies, the Applicant has proposed to site turbines to minimize impacts on residents within and around the Project Area. For more detailed discussion of the visual and noise impact assessments performed for the Project, please refer to Section 2.5, Aesthetic and Visual Resources, and Section 2.7, Sound.

The Applicant has proactively applied all the above factors to the development of the Project layout. The proposed location of all Project components is illustrated in Figure 1.1-2. These components are described individually below.

1.5.2 Roads and Civil Construction Work

Project Site access roads will be designed to allow for oversized heavy equipment to be transported to the Project Area and will be used throughout the life of the Project to allow access to and from the wind turbines, substations, and meteorological monitoring towers. In order to facilitate the erection of wind turbines and towers, a crane pad, which is a flat work area approximately 60 feet by 100 feet, will be cleared of topsoil, compacted, and graveled as necessary adjacent to each turbine location. The Project also entails a gravel parking area at the O&M facility and a gravel surfaced equipment laydown yard. The proposed locations of the laydown yards are identified on Figure 1.1-2. All proposed roads and transportation facilities locations have been sited to minimize ground disturbance in general and disturbance to agricultural lands, wetlands, and cultural resources in particular.

Road access to the Project Area will be provided by a number of existing public roads, as described in Section 2.8, Traffic and Transportation. The Applicant has developed a transportation, or delivery plan, that examines the feasibility of transporting large or heavy Project components to and around the Project Site. It is currently estimated that several miles of existing public roads will be improved to facilitate Project construction. A typical gravel access road is displayed in Exhibit 1.5-1.

Exhibit 1.5-1 Typical Wind Power Project Gravel Road

1.5.2.1 Project Site Roads

The road design has been prepared to minimize the overall ground disturbance footprint and avoid erosion risks. Approximately 15 miles of new access roads will be constructed and/or improved for the turbines. Wherever practical, the Project layout uses existing farm lanes to minimize new ground disturbance.

1.5.2.2 Road Design

The road design will be finalized by an experienced and state-licensed civil engineer based on the results of a detailed geotechnical investigation of the surface and subsurface conditions at the Project Site. The Project's geotechnical engineer will specify the standards for road construction and road rock specifications that are adequate for safe and reliable Project construction and on-going operations. The access road leading to the first turbine in a string will generally consist of a 16-foot-wide compacted graveled surface and a 3-foot-wide shoulder on either side to blend with the surrounding contours and allow for proper drainage. The roads between contiguous turbines in a string will be 34 feet wide to accommodate the safe movement of large crane equipment between the individual turbine sites. Access roads will be constructed to follow the existing contours of the land. In areas of steeper grades, a cut and fill design will be used to ensure grades are kept below 12 percent to facilitate access and help prevent erosion. Access roads constructed in agricultural lands will be designed in consultation with the Ag & Markets guidelines and Agricultural Protection Measures detailed in Appendix C. Detailed 2-foot topographic contour maps have been prepared to aid final design prior to construction. The detailed contour maps will be used to clarify special cut and fill areas. They will also be used to prepare a detailed Storm Water Pollution Prevention Plan (SWPPP) and a set of best management practices (BMPs), which will be implemented to prevent erosion during construction and operations. The Applicant will be responsible for maintenance of any new private roads. All access road entrances will be designed to provide safe access of emergency vehicles. The Applicant will consult with local emergency providers to ensure such design meets their needs.

1.5.3 Turbine Tower Foundations

Exhibit 1.5-2 Spread Footing Type Foundation

The Project Site provides solid subsurface conditions for the turbine foundations. A geotechnical investigation will be performed at each tower location prior to construction with a drill rig. The foundation may be either a concrete caisson or a spread footer or equivalent, as specified by the Project geotechnical/civil engineer. It is currently anticipated, however, that the spread foot foundation design similar to the one shown in Exhibit 1.5-2 will be used.

The foundation design will be tailored to suit the soil and subsurface conditions at the various turbine sites. The foundation design will be certified by an experienced state-registered structural engineer. The foundation will be designed in accordance with the New York State Building Code, namely, Sections 1614 through to 1622, as well as Minimum Design Loads for Buildings and Other Structures (ASCE 7-05), whichever is greater.

Each foundation will require roughly 330 cubic yards of concrete, much of which must be provided in continuous pours. Concrete for the foundations will be provided by an off-site batch plant. The Applicant will contract with a local provider prior to construction.

1.5.4 Wind Turbine Generators and Central Control System

The WTG proposed for this Project is the 1.65 MW Vestas V-82 (or equivalent WTG). Information regarding the characteristics and general operation of this turbine is included in Appendix B. Each wind turbine consists of three major mechanical components, which are the tower, nacelle, and the rotor. The height of the tower proposed for this site, or “hub height” (height from foundation to top of tower), is approximately 80 meters (262 feet). The nacelle sits atop the tower, and the rotor hub is mounted to the drive shaft within the nacelle. The total turbine height (i.e., height at the highest blade tip position) is approximately 121 meters (~397 feet), including any grading and pedestal height. Descriptions of each of the turbine components are provided below.

Although the Applicant currently plans to utilize the Vestas V-82, due to high demand placed on the turbine manufacturing industry, there is a possibility that this particular WTG may not be available at the time of procurement. The Applicant will utilize a WTG of similar specifications.

Wind Turbine Type Certification: European manufacturers have been required, for many years, to meet rigid standards verifying their design criteria, operational characteristics, supervision of construction, transportation, erection, commissioning, testing, and servicing. In Europe, Germanischer Lloyd, Det Norske Veritas, Wind Test GmbH, and Risø (Denmark) are independent testing laboratories, which administer regulations for the design, approval, and certification of wind energy conversion systems.

The testing processes involved in the approval of design documentation include safety and control system concepts, static and dynamic load assumptions, and associated load case definitions. Once approved, specific components, such as blades, drive trains (hubs, gearing, bearings, and generators, etc.), safety systems, towers, yaw systems, foundations, and electrical installations, will be reviewed and approved according to minimum standards established by these testing agencies. In addition to operating characteristics and design features, the testing agencies review construction supervision procedures, including materials testing, quality assurance (QA) reports and procedures, corrosion protection, and others. They also review and set standards for supervision during the transportation, erection, and commissioning of the turbines.

Operational testing performed by the agencies includes measurement of power curves, noise emissions, as well as loads and stresses, including wind loads imposed on the tower, foundation, drive train, blades, nacelle frame, power quality, etc. Test data are evaluated for plausibility and compared with the original calculations and mathematical models used for the design.

None of the certification auditors will issue its certification unless the turbine design has met minimum design standards and performance levels, both calculated and measured. The approval process also applies to the manufacturers' processes and procedures through ISO 9001.

Due to this arduous approval process, wind turbines designed to European standards have proven to be the most reliable wind energy systems over the past two decades. In Europe, certification pursuant to these standards is mandatory for both permitting and financing. Partly due to these verification programs, lenders in Europe view wind energy equipment in the same way lenders in the United States might view the purchase of heavy construction equipment.

Equipment Selection: Only proven equipment, with an emphasis on safety, reliability and competitive pricing will be utilized. This results in a project that delivers energy safely and reliably at the most competitive cost possible over time. A very rigorous approach has been taken to pre-qualify all key potential equipment suppliers for the Project, especially the wind turbine and component manufacturers.

1.5.4.1 Wind Turbine Basic Configuration

Wind turbines consist of three main physical components that are assembled and erected during construction: the tower, the nacelle (machine house), and the rotor (three blades).

Tower: The WTG tower is a tubular conical steel structure that is manufactured in multiple sections depending on the tower height. Towers for the Project will be fabricated, delivered, and erected in three or four sections. The towers are slightly tapered, with diameter of approximately 4 meters (13 feet) at ground level. A service platform at the top of each section allows for access to the tower connecting bolts for routine inspection. Each tower will have an access door and an internal ladder that runs to the top platform of the tower just below the nacelle. A nacelle ladder extends from the machine bed to the tower top platform allowing nacelle access independent of its orientation. The tower is equipped with interior lighting and a safety glide cable alongside the ladder. Towers will be painted off-white to make the structure less visually obtrusive and to provide corrosion protection.

The tower design is certified by experienced and qualified structural engineers who have designed several generations of turbine towers that have proven themselves well in some of the most aggressive wind regions of the world. The towers and foundations are designed for a survival gust wind speed of 90+ miles per hour (mph) with the blades pitched in their most vulnerable position. For the cold-weather winter conditions on the Project Site, special material specifications are set to ensure that materials are designed for the brittle transition temperature.

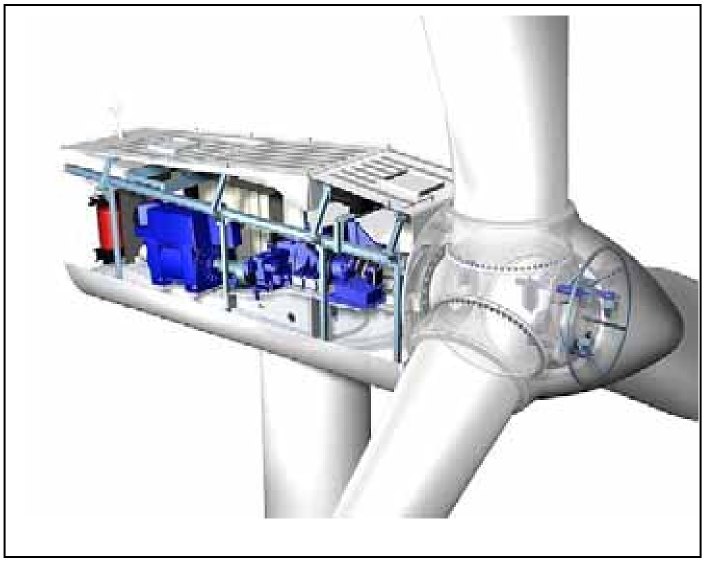


Exhibit 1.5-3 Typical WTG Nacelle

Nacelle: Exhibit 1.5-3 shows the general arrangement of a typical nacelle that houses the main mechanical components of the WTG. The nacelle sits atop the tower and consists of a robust machine platform mounted on a roller bearing sliding yaw ring. An externally mounted wind vane and anemometer at the rear of the nacelle relay real-time wind data to the controller which signals yaw motors to rotate (yaw) the nacelle and keep the turbine pointed into the wind to maximize energy capture. The main components inside the nacelle are the drive train, a gearbox, and the generator. On some turbines, the step-up transformer is situated at the rear of the nacelle that eliminates the need for a pad-mounted transformer at the base of the tower. A fully enclosed steel reinforced fiberglass or all steel shell protects internal machinery from the environment and dampens noise emissions. The shell is designed to allow for adequate ventilation to cool internal machinery such as the gearbox and generator. Attached to the top of some of the nacelles, per specifications of the Federal Aviation Administration (FAA), will be a single, medium intensity aviation warning light. These flashing red aviation warning lights will be operated only at night. A lighting plan is included as Appendix S.

Drive Train: The rotor blades are all bolted to a central hub. The hub is bolted to the main shaft on a large flange at the front of the nacelle. The main shaft is independently supported by the main bearing at the front of the nacelle. The rotor transmits torque to the main shaft that is coupled to the gearbox. The gearbox increases the rotational speed of the high speed shaft that drives the generator at 1,200 to 1,800 rotations per minute (RPM) to provide electrical power at 60 Hertz (Hz).

Rotor: The Vestas V-82 has 3-bladed rotors that are 82 (269 feet) in diameter, with a blade length of 40 (131 feet), and a hub width of 2 meters (6.5 feet). Exhibit 1.5-4 illustrates a rotor assembly, which includes the rotor hub—the frame onto which the blades are attached, the turbine blades, and the nose cone. The rotor hub attaches to the drive train emerging from the front of the nacelle. The rotor blades are typically made from a glass-reinforced polyester composite similar to that used in the marine industry for sophisticated racing hulls. Much of the design and materials experience comes from both the marine and aerospace industries, and has been developed and tuned for wind turbines over the past 25 years. The blades are non-metallic, and are equipped with a sophisticated lightning suppression system that is defined in detail below in Section 1.5.7, Project Grounding System. The operating rotor assembly turns slowly, typically within the range of 9 to 19 RPM. Hydraulic motors within the rotor hub rotate the angle of each blade according to wind conditions, which enables the turbine to operate efficiently at varying wind speeds and reduces wear and tear on the blades and drive train in higher wind conditions. WTG rotors typically begin generating electricity in winds as low as 7 mph and reach their nominal rated output in winds of 25 to 35 mph. If wind gusts exceed a certain wind speed, typically 55 to 70 mph, WTGs shut down.

Exhibit 1.5-4 Rotor Assembly

Turbine Control Systems: Wind turbines are equipped with sophisticated computer control systems which are constantly monitoring variables such as wind speed and direction, air and machine temperatures, electrical voltages, currents, vibrations, blade pitch, and yaw angles, etc. The main functions of the control system include nacelle operations, as well as power operations. Generally, nacelle functions include yawing (or rotating) the nacelle into the wind, pitching the blades, and applying the brakes, if necessary. Power operations controlled at the bus cabinet inside the base of the tower include operations of the main breakers to engage the generator with the grid, as well as control of ancillary breakers and systems. The control system is always running and ensures that the machines are operating efficiently and safely.

Heat Dissipation: Air cooling of the operating machinery inside the wind turbines, such as the generator and gearbox, is necessary. Heat dissipation is minimal. The proposed facility uses wind, not thermal energy, as its source of energy production, and therefore, water sources are not used in the process of heat dissipation.

Central Supervisory Control and Data Acquisition (SCADA) System: Each turbine is connected to a central SCADA System (shown schematically in Exhibit 1.5-5) through a network of underground fiber optic cable or copper signal wire. When copper signal wire is used, the interfaces to the wind turbine and other signal processors are optically isolated in order to prevent stray surges. The SCADA system allows for remote control and monitoring of individual turbines and the wind plant as a whole from the central host computer or from a remote computer. In the event of faults, the SCADA system can also send signals to a fax, pager or cell phone to alert operations staff.

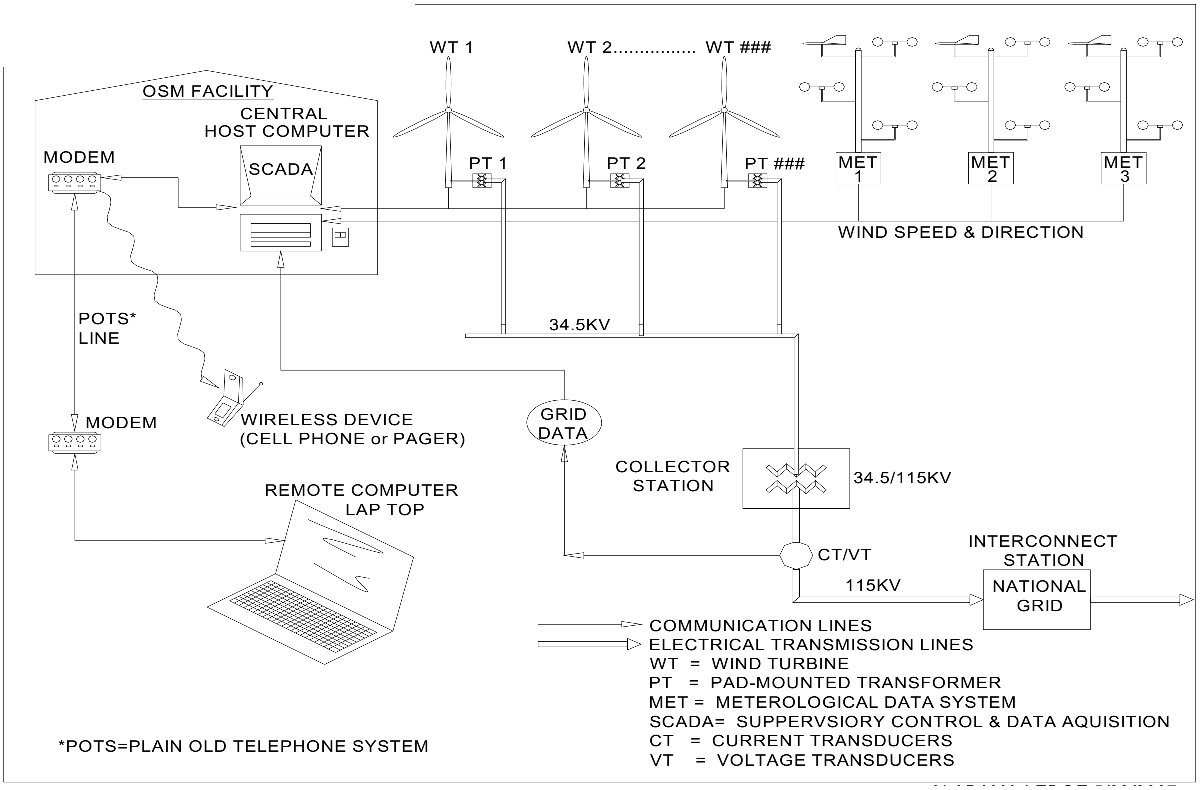


Exhibit 1.5-5 Electrical and Central Control System

Safety Systems: All turbines are designed with several levels of built-in safety and comply with the codes set forth by strict European standards (such as ISO 9001) as well as Federal Occupational Safety and Health Administration (OSHA) and American National Standards Institute (ANSI) standards.

Braking Systems: The turbines are equipped with two fully independent braking systems that can stop the rotor. The braking systems are designed to be fail-safe, allowing the rotor to be brought to a halt under all foreseeable conditions. The system consists of aerodynamic braking by the rotor blades and by a separate hydraulic disc brake system. Both braking systems operate independently such that, if there is a fault with one, the other can still bring the turbine to a halt. Brake pads on the disc brake system are spring loaded against the disc and power is required to keep the pads away from the disc. If power is lost, the brakes will be mechanically activated immediately. The aerodynamic braking system is also configured such that if power is lost, it will be activated immediately using back-up battery power or the nitrogen accumulators on the hydraulic system, depending on the turbine's design.

After an emergency stop is executed, remote restarting is not possible. The turbine must be inspected in-person and the stop-fault must be reset manually before automatic operation will be re-activated.

The turbines are also equipped with a parking brake that is generally used to "park" the rotor for routine maintenance or inspections that require a stationary rotor.

Climbing Safety: Normal access to the nacelle is accomplished with a ladder inside the tower. Towers are equipped with standard safety hardware, including lanyards and safety belts for service personnel. All internal ladders and maintenance areas inside the tower and nacelle are equipped with safety provisions for securing lifelines and safety belts and conform to or exceed ANSI 14.3-1974 (Safety Requirements for Ladders). During operations of the Project, maintenance personnel always work in pairs inside the wind turbines as part of standard safety practice.

Turbine Design Life: The Project will use proven utility grade equipment with a minimum design life of 20 years. The most vulnerable pieces of equipment are the wear and tear components of the wind turbines. The Project will utilize only well-proven designs that have been approved by reputable third-party testing agencies. Modern wind turbines of the type being proposed for the Project have been developed over the past 25 years and have been proven over several generations of equipment. The basic configuration of the 3-bladed up-wind turbine is the best proven and understood turbine configuration available in the industry, and the vast majority of all new wind power generation facilities planned, or under construction, in the world utilizes this technology. The wind turbine technology used for the design of the Project has proven to be very reliable, efficient, and lower in electrical energy production cost than other commercially available wind power technologies.

Over the past 25 to 30 years, more than 90,000 wind turbines have been installed around the world for an installed nameplate capacity of about 60,000 MW. More than 23,000 wind turbines (about 11,000 MW) are installed in the United States and there were roughly 270 units (430 MW) of wind turbines operating in New York State as of November 2007.

1.5.5 Electrical Collection System Infrastructure

Electrical Collection System Overview: Electrical power generated by wind turbines is transformed and collected through a network of underground and overhead cables. Groups of turbines are connected along individual electrical circuits that terminate at the Project substation. At the substation, the voltage level is increased from 34.5 kV to 115 kV. The Proposed Project Layout in Figure 1.1-2 shows the general routing paths of the underground and overhead electrical collection lines as well as the proposed substation locations. Exhibit 1.5-5 illustrates the overall electrical collection system schematically.

Nacelle/Pad Mounted Transformers and Underground Cable: The pad transformers will be interconnected on the high voltage side to underground cables that connect all of the WTGs together electrically. The underground cables are installed in trenches that are a minimum of 4 feet in depth in agricultural areas and typically located beside the Project's roadways as shown in Exhibit 1.5-6. Alongside the electrical cables will be buried a fiber optic or copper communication line which will tie all of the turbines back to the central control computer as illustrated in Exhibit 1.5-5. A clean fill material, such as sand or fine gravel, will be used to cover the cable before the native soil and rock are backfilled over the top to prevent damage to buried cables from compaction. The Project will require approximately 21 miles of underground cable to connect all the turbines into as many as five circuits, which will run directly to the substation. Exact specifications for the feeder circuits will depend upon the number of turbines and associated power output channeled through the circuit, as well as the thermal characteristics of the soil and the spacing between each cable.

Exhibit 1.5-6 Typical Underground Cable Trench

Exhibit 1.5-7 shows a typical pad mounted transformer used at each wind turbine. The pad transformers are generally a loop feed, dead front configuration with bayonet and current limiting fuse systems for protection and safety. Each transformer will be sized to carry its respective load without exceeding a 65°C temperature rise. The step-up transformer impedance will be optimized based on the facility power output requirements, and feeder circuit breaker interrupting ratings and internal fuses. Protection to the transformer and turbine generator is provided by a switchable breaker at the turbine bus cabinet electrical panel inside the turbine tower.

Exhibit 1.5-7 Typical Pad Mount Transformer
(shown during construction before terminations landed)

Collection System Overhead Line: The Applicant proposes to integrate short stretches of overhead 34.5-kV power lines into the collection system design. These stretches include a 0.35-mile overhead line in the southwest part of the Project Area. This overhead line section stretches across a large wetland body connecting turbine 35 to turbine 36 south of Legacy Road, minimizing wetland disturbance. Another short section of overhead line (0.26 mile) bridges the Chateaugay River and connects turbines 13 and 14 to the Project.

The Project will require approximately 15 miles of underground and up to 1 mile of overhead 34.5-kV electrical power lines to collect all of the power from the turbines to terminate at the substation facility. The Project will also require two roughly 500-foot spans of overhead 115-kV electrical power lines that will connect the substation with the existing electric grid. These lines, commonly referred to as loop-in/loop-out lines, are discussed further in the next section.

1.5.6 Interconnection Substation Facilities

The Project substation facilities will consist of a collection system station and a POI switchyard. The two components of the substation are separated by an internal fence and will ultimately have separate owners. The Transmission Owner (New York Power Authority [NYPA] or NYSEG) will take possession of the POI and the collection system station will remain with the Project.

Two alternate locations for the substation are analyzed in this document. Proposed substation location #1 is located in the southwest corner of the Project Area north of Town Line Road in the Town of Bellmont. Substation location #2 is directly south of and adjacent to the existing Willis Substation on Willis Road in the Town of Chateaugay. One location will be chosen, based on feedback from the NYISO. The substation will require a chain link perimeter fence and an outdoor lighting system. In accordance with guidelines from Homeland Security, there will be a road gate to limit public access; the road will turn 90 degrees near the end so as not to terminate directly at the station fence or gate; a clear space of at least 10 feet will be maintained exterior to the fence; and there will be intrusion alarms. A connection to the local electrical distribution line will provide a local source of substation service power to run the control houses and the associated protection and control systems. A continuous grounding grid will cover the substation footprint and extend beyond the station fence. The substation yard will be covered with uniform crushed stone for weed control and to mitigate the “step and touch potentials” (i.e., contact with voltage from energized substation).

Final adjustments to the detailed substation and interconnect plans will be made during design review with the interconnecting utility and their system protection engineers to accommodate for conditions on the grid at the time of construction.

The Project’s electrical system will be designed and constructed in accordance with the guidelines of the National Electric Safety Code (NESC), National Fire Protection Agency (NFPA), and utility requirements. The general schedule for construction of the substation shall be coordinated with the construction of the rest of the Project.

Collection System Station: The main function of the collection system station is to step up the voltage transported through the collection lines and to provide fault protection. The basic elements of the collection system station are a control house, a main transformer, outdoor circuit breakers, capacitor banks, relaying equipment, high voltage bus work, metal clad switchgear, steel support structures, an underground grounding grid, and overhead lightning suppression conductors. In a typical collection substation design, as shown in Exhibit 1.5-8, the collection system cables enter the collection station and terminate at the 34.5-kV switchgear. The switchgear includes circuit breakers and protection devices for each individual collection line circuit, as well as the bus bars and the main 34.5-kV to 115-kV main step-up transformer. These protection systems allow the Project operator to isolate a circuit or substation component for service. The switchgear also contains the control house service transformer, which provides the low-voltage electricity to power the control house.

Exhibit 1.5-8 Typical Collection System Portion of Substation Facilities

From the switchgear, an underground cable connects to the main step-up transformer, which converts power from the 34.5-kV collection system to the 115-kV level of the grid. The transformer will be filled with mineral oil on-site, as it is delivered without oil in the tank. The main transformer is filled and tested during the commissioning process. The station design will incorporate an oil containment system consisting of a perimeter containment trough, large enough to contain the full volume of transformer mineral oil with a margin of safety to be determined by the manufacturer's suggestion and based on ANSI/IEEE C57.12.26 design standards, surrounding the main substation transformer. The trough will be poured as part of the transformer concrete foundation, be set on a bentonite base, or will consist of a heavy oil resistant membrane buried around the perimeter of the transformer foundation. The trough and/or membrane will drain into a common collection sump area equipped with a sump pump designed to pump rain water out of the trough to the surrounding area away from any natural drainages. In order to prevent the sump from pumping oil out to the surrounding area, it will be fitted with an oil detection shut-off sensor which will shut off the sump when oil is detected. A fail-safe system with redundancy is built to the sump controls since the transformers are also equipped with oil level sensors. If the oil level inside a transformer drops due to a leak in the transformer tank, it will also shut off the sump pump system to prevent it from pumping oil, and an alarm will be activated at the station and at the main Project control SCADA system.

Immediately off the high side of the main step-up transformer is a set of lightning arrestors, as well as a 115-kV circuit breaker connected with an air insulated bus. The 115-kV bus crosses over the fence that is also the demarcation between the POI switchyard owned by the Transmission Owner and the collection system station owned by the Project.

All of the main outdoor electrical equipment and control house will be installed on concrete foundations that are designed for the soil conditions at the substation sites. The exact footprint of the substation will depend largely on the Transmission Owner requirements and breakers will be finalized during the Facility Study process overseen by the NYISO.

POI Switchyard: In general appearance, the POI switchyard will be very similar to the collection system station, except that it will not have a load step-up transformer. In addition, the POI will have more steel pole structures and more high voltage switch breakers. The main function of the POI is to connect the Project feeder lines to the utility grid and to provide fault protection. The basic elements of the POI switchyard are a control house, outdoor circuit breakers, capacitor banks, relaying equipment, high voltage bus work, steel support structures, an underground grounding grid, and overhead lightning suppression conductors. The control house contains the protection and control systems for the 115-kV lines. All of the main outdoor electrical equipment and control house will be installed on concrete foundations that are designed for the soil conditions at the substation sites. The POI switchyard and protection will be designed in accordance with the Northeast Power Coordinating Council Criteria for Bulk Power Stations and criteria set forth by Homeland Security. These design criteria require that the entire substation is sited outside of the prescriptive easement of the existing electrical grid. As such, connecting the substation with the electric grid involves cutting the existing power lines and running short spans of overhead 115-kV electric lines known as loop-in/loop-out lines from the grid to the substation. The exact footprint of the POI will depend largely on the utility requirements and the grid line characteristics at the point of interconnection.

Stand-By Power Consumption: The Project will generate power output approximately 80 percent of the time and will consume a tiny amount of power from the grid during periods of low wind. Unlike traditional power plants, the Project does not consume a large amount of power for start-up. Each wind turbine comes on line at random, depending upon the local wind speed at each turbine location, and power consumption is generally that used for the auxiliary systems at each turbine. As with any power plant, the transformers and auxiliary systems at the substation consume some power to stay energized. The turbines also consume some electricity to maintain power to the hydraulic systems, pumps, heaters, fans, controller electronics, lighting, etc. Overall, the Project will consume less than 1 percent of what it generates to support auxiliary systems with stand-by power.

Substation Transformers: The transformers will be liquid-type with cooling fins and fans. The transformer will be sized to carry its respective load without exceeding a 65°C temperature rise.

Capacitor Banks and Power Factor/Voltage Control: Capacitor banks will be installed at each wind turbine in a bus cabinet inside the base of each tower, as well as in a central bank at the substation. The capacitor banks at the substation will be sized and configured depending on the Transmission Owner's requirements and needs for switching and control. Generally, a remote terminal unit (RTU) is installed which allows the utility to switch banks on or off depending on the requirements at their systems operations center.

Protective Relaying: The control houses in both the collection system substation and POI switchyards generally house all of the protective relaying devices. Protective relays are used for switchyard control, indication, metering, recording, instrumentation, and annunciation. The relays provide protection for both the utilities and the wind plant's electrical systems by automatically detecting and acting to isolate faulted, or overloaded, equipment and lines. This protection will help to minimize equipment damage and limit the extent of associated system outages in the event of electrical faults, lightning strikes, etc.

Lighting: The substation will be equipped with night-time and motion sensor lighting systems to provide personnel with illumination for operation under normal conditions, and for egress under emergency conditions. Emergency lighting with back-up power is also designed into the substation to allow personnel to perform manual operations during an outage of normal power sources.

1.5.7 Project Grounding System

The Project has an extensive grounding system. In order to achieve a strong level of grounding, a number of provisions are engineered into the Project's grounding system and the electrical system design.

Turbine Grounding and Lightning Protection System: The earthing system at each WTG consists of a buried grounding ring of bare copper around the outer perimeter of the tower connected to four grounding rods driven down into the ground at diametrically opposed points outside of the foundation. As shown in Exhibit 1.5-9, this ring is connected to the tower base. WTGs that use pad transformers (not shown) would link the WTG grounding ring to an additional grounding ring with one to two grounding rods buried around the base of the adjacent pad transformer. The pad transformers are generally a grounded “Wye” type unit. The neutral of each pad transformer is connected to the grounding rings and also to the grounding system of the wind turbine. If the soil is too rocky for the grounding rods, a hole is drilled, the rod is placed in the hole and it is filled with a designated bentonite mix to ensure a surrounding ground contact. Resistance of the grounding system is measured prior to commissioning and must not exceed 10 Ohms to provide a firm grounding path to divert harmful stray surge voltages away from the WTG.

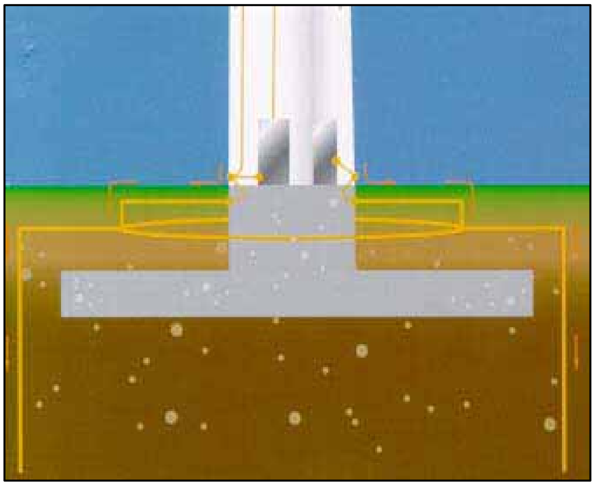


Exhibit 1.5-9 Turbine Earthing System at Tower Base

The WTGs are equipped with an engineered lightning protection system that connects the blades, nacelle, and tower to the earthing system at the base of the tower. As depicted in Exhibit 1.5-10, typical lightning protection schemes safeguard all major WTG components. Both the rear lightning rod and blades have conductive paths to the nacelle bed frame that in turn connects to the tower. The tower base is connected to the earthing system at diametrically opposed points.

Exhibit 1.5-10 Typical WTG Lightning Diversion Paths

The controllers and communication interfaces of the Project’s SCADA system that link WTGs with the operations and maintenance facility utilize fiber optic cables and optical signal conversion systems that are poor electrical conductors thereby protecting these systems from stray surges.

<u>Underground Collection System Grounding</u>: The underground 34.5-kV cables will have concentric neutral conductor shielding or will be buried with a bare copper wire in the trench to act as the neutral. The neutrals on the cable runs are terminated to the ground terminal at each pad transformer and, pursuant to National Electric Code (NEC) requirements, are tied to buried grounding rods at every ¼ mile. Additionally, at the junction boxes, pad switches and at the substation, the underground cable neutrals are tied to the common grounding system. In effect,

the grounding system ties the tips of the blades of each turbine back to an extensive grounding network all the way back to the substation grounding grid. The detailed geotechnical investigation performed prior to final design will include testing to measure the soil's electrical and insulation properties to ensure that the grounding system and electrical design is adequate.

Substation Grounding System: Electrical systems are susceptible to ground faults, lightning, and switching surges that could constitute a hazard to site personnel and electrical equipment, including protective relaying equipment. As such, the collection system and POI switchyards will be designed and constructed to have a robust grounding grid which will divert stray surges and faults. Generally, the substation grounding grid consists of heavy gauge bare copper conductor buried in a grid fashion and permanently bonded to a series of multiple underground grounding rods. Direct lightning strike protection will be provided by the use of overhead shield wires and lightning masts connected to tops of the steel dead-end structure poles, which run to the switchyard ground grid. Overhead shield wires will be high strength steel wires arranged to provide shield zones of protection.

1.5.8 Meteorological Monitoring Station Towers

The Project design includes four permanent meteorological (met) towers similar to that shown in Exhibit 1.5-11. The met towers will be fitted with multiple sensors to track and monitor wind speed, direction, and temperatures. These wind data support performance testing of the WTGs. The met towers will be connected to the wind plant's central SCADA system as shown in Exhibit 1.5-5. These met towers have not yet been sited, but will be located within the footprint currently under investigation within this DEIS.

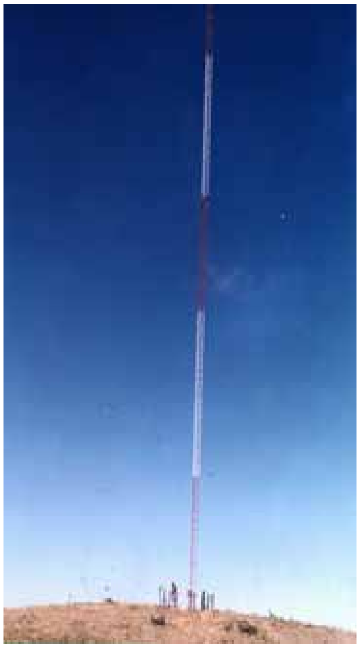


Exhibit 1.5-11 Met Tower

The Applicant anticipates that each permanent 80-meter (262-foot) tall, self-supporting (unguyed) met tower will be a galvanized lattice steel structure, with wind monitoring instruments suspended at the end of booms attached perpendicular to the tower. Red aviation warning lighting will be mounted at the top of all towers. Electrical lines will connect each tower directly to a power source at the nearest NYSEG distribution line and provide the power necessary to run the warning lights and wind testing equipment. The meteorological towers will be sited upwind of the prevailing wind direction within the Project Area. Towers will be permitted according to local and state requirements. Each met tower will also have a grounding system similar to that of the WTGs, with a buried copper ring and grounding rods, which will all be tied to the lightning dissipaters or rods installed at the top of the towers. This will provide an umbrella of protection for the upper sensors.

1.5.9 Operations and Maintenance Facility

The O&M facility will include a main building with offices, a storage yard for spare parts and maintenance equipment, restrooms, a workshop area, outdoor parking facilities, a turnaround area for larger vehicles, outdoor lighting, and a gated access with partial or full perimeter fencing. The O&M facility area will be leveled and graded and will serve as a central base for Project operation. The main O&M building will house the command center of the Project's SCADA system. The building will be linked by fiber optic cables to each of the WTGs through the SCADA system, which allows an operator to control critical functions and the overall performance of each WTG. The main O&M building is anticipated to be 5,000 to 8,000 square feet in size overall and the O&M facility will require up to 5 acres of disturbance area. The final design and architecture of the O&M facility will comply with all required building standards and codes and be determined prior to its construction. The proposed location of the O&M building is identified in Figure 1.1-1.

<u>Water Storage Tanks and Septic System</u>: The O&M facility will include one to two on-site storage tanks approximately 5,000 gallons in size suitable for potable water to supply the building for domestic use. The O&M building will also have a septic tank, which will be permitted through the appropriate processes.

1.6 Project Construction

The construction of the Project will be performed in a manner that will incorporate the impact mitigation methods outlined in other sections of this document, including, but not limited to sediment and erosion control measures (see Section 2.2, Water Resources); emission controls (see Section 2.4, Climate and Air Quality); surface water control measures (see Section 2.2, Water Resources); spillage prevention and control measures (see Section 2.10, Public Safety); traffic control measures (see Section 2.8, Traffic and Transportation); and other construction practice measures (see Section 2.11, Community Facilities and Services) that will minimize the Project's impact on the environment and the surrounding area. Protocols for managing erosion and runoff during Project construction will also be described in a SWPPP, which will be prepared and implemented in accordance with the New York State Pollution Discharge Elimination System (SPDES) General Permit for the Project.

The Project is expected to be constructed in a single year, with the exception of some punchlist, restoration, and possible warranty work that will be done in the following year. Preconstruction activities such as clearing, improvement of laydown areas, and road grading could commence as early as fall 2008 at the earliest with construction of the Project facilities commencing as early as spring 2009. The various aspects of construction, as sequenced, include:

- Site mobilization;
- Construction environmental and safety training;
- Grading of the field construction office and substation areas;

- General clearing and construction of access roads, crane pads, and turnaround areas;
- Installation of sediment and erosion controls;
- Public road improvements;
- Construction of turbine access roads, tower foundations, and associated transformer pads;
- Installation of the electrical collection system;
- Assembling and erection of the wind turbines;
- Construction and installation of the collection system substation;
- Construction and installation of the POI switchyard, in coordination with the Transmission Owner;
- Plant commissioning and energization;
- Final grading and drainage; and
- Restoration activities.

Table 1.6-1 provides an estimated Project schedule based on a field start date of spring 2009. This schedule is subject to change and an updated construction schedule will be provided prior to construction.

Table 1.6-1. Preliminary Construction Schedule

Task/Milestone	Duration (Weeks)	Commencement
Preliminary Activity		
Reserve Turbines	-	Mid 2008
Order Substation Transformer	-	Mid 2008
Fabricate Turbines	30	Fall 2008
Fabricate Substation Transformer	50	Fall 2008
Grading of Substation Areas/POI Switchyard	6	Fall 2008/Spring 2009
Construction		
Estimated Mobilization Date	1	May 1, 2009
Environmental and Safety Training	1	May 2009
Road Construction	23	May 2009
Substation and Switchyard Construction	30	May 2009
Foundation Construction	23	June 2009
Electrical Collection System Construction	23	June 2009
Wind Turbine Assembly and Erection	13	August 2009
Switchyard and Substation Energization and Commissioning	4	September 2009
Energization and Commissioning of Turbines	10	October 2009
Final Grading	10	October 2009
Restoration Activities	10	Spring 2010
Estimated Projection Completion Date	-	December 2009

Note 1: Above table assumes construction in 2009.
Note 2: Many of the above activities will occur simultaneously.
Note 3: Restoration will not occur after October 1.

The Project has been planned based on recent experience constructing wind power projects in New York and elsewhere in the United States. This recent experience was used to generate the impact assumptions included in Table 1.6-2. However, during detailed engineering design, additional needs and constraints may be identified that require site specific plans be developed. In those situations, the area of impact required may deviate slightly from the assumptions in Table 1.6-2.

Table 1.6-2. Impact Assumptions and Calculations

Project Components	Typical Area of Vegetation Clearing	Area of Total Soil Disturbance (temporary and permanent)	Area of Permanent Soil Disturbance
Wind Turbines and Workspaces	250-foot radius per turbine	250-foot radius per turbine	50-foot radius 60 feet x 100 feet crane pad
Access Roads	100 feet wide per linear foot of road	54 feet wide per linear foot of road	34 feet wide per linear foot of road a/
Buried Electrical Interconnects	75 feet wide per linear foot of cable	35 feet wide per linear foot of cable plus 10 feet per additional circuit	None
Overhead Electrical Interconnects	150 feet wide per linear foot of cable	Minimal at each pole location	Minimal at each pole location
Meteorological Towers	1 acre per tower	1 acre per tower	0.10 acre per tower
O&M Building and associated site (5,000-8,000 square feet)	5 acres	5 acres	5 acres
Staging Areas	10 acres	10 acres	None
Collection Substation/POI Switchyard	4 acres each	4 acres each	4 acres each
Crane Paths b/	75 feet wide per linear foot (in non-public road or access road areas only)	35 feet wide per linear foot (in non-public road or access road areas only)	None

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a/ Permanent road width in agricultural lands will be 16 feet with permanent disturbance of 22 feet per Agricultural Protection Measures outlined in Appendix C.

b/ Crane paths are designed to walk the crane from turbine to turbine during construction only. After construction, if and when a crane is needed, it will be trucked in using the access roads and erected at the turbine.

The following sections describe the various activities that will occur as part of Project construction.

1.6.1 Pre-construction Activities

The Applicant has conducted numerous pre-construction activities, including field topographic and wetland surveys and substantial land title research in an effort to characterize existing conditions within the Project Area. Before construction can commence, a site survey will be performed to stake out the exact location of the WTGs, access roads, electrical lines, and access entryways from public road and substation areas.

1.6.1.1 Geotechnical and Title Surveys

Once the surveys are complete, a detailed geotechnical investigation will be performed to identify subsurface conditions, which will dictate much of the design specifications for the access roads, foundations, underground trenching, and electrical grounding systems. Typically, the geotechnical investigation involves a drill rig, which bores to the engineer's required depths, and a backhoe to identify the subsurface soil and rock types and strength properties by sampling and lab testing. Testing is also done to measure the soil's electrical properties to ensure proper grounding system design. A geotechnical investigation is generally performed at each WTG location, at the substation location, along the access roads, and at the O&M building site.

In addition to geotechnical investigations, the Applicant will conduct detailed land title surveys, also called an American Land Title Association (ALTA) survey. An ALTA survey is a boundary survey prepared to a set of minimum standards that have been jointly prepared and adopted by the ALTA and the American Congress on Surveying and Mapping (ACSM). Additionally, an ALTA survey shows improvements, easements, rights-of-way, and other elements impacting the ownership of land.

Many parts of the Project Area contain subsurface drainage infrastructure, mainly in the form of drain tiles in agricultural fields. The Applicant will contact and work closely with all affected individuals, the Franklin County Soil and Water Conservation District, the Natural Resources Conservation Service, and the Ag & Markets to identify, and avoid or minimize to the maximum extent practical, crossings of drain tiles with Project components.

1.6.1.2 Design and Construction Specifications

Using all of the data gathered for the Project, including geotechnical information, environmental conditions, title information, utility infrastructure locations, and site topography, the Applicant will establish a set of site-specific construction specifications for the various portions of the Project. The design specifications will be based on well proven and established sets of construction standards set forth by the various standard industry practice groups, including, but not limited to:

- American Concrete Institute (ACI)
- International Building Code (IBC)
- International Electrotechnical Commission (IEC)

- Institute for Electrical and Electronic Engineers (IEEE)
- National Electric Code (NEC)
- National Fire Protection Agency (NFPA)
- Construction Standards Institute (CSI)
- New York State Electric & Gas (NYSEG)
- New York Independent System Operators (NYISO)

The design and construction specifications will be custom tailored for site-specific conditions by qualified technical staff and engineers. The Project engineering team will ensure that all aspects of the specifications, as well as the actual on-site construction, comply with all applicable federal, state, and local codes and good industry practice.

Construction Environmental Compliance Plan and Notification Procedures: To assure compliance with various environmental protection commitments and permit conditions, the Applicant will prepare a construction environmental compliance plan (see Section 3.2 for additional detail). In order to implement that plan, the Applicant will hire at least one environmental inspection firm to help plan for environmental compliance during construction, and oversee construction (and post-construction) activities. Prior to beginning work at the construction site, all work crews will be trained in the environmental compliance program and in the Project safety rules. Prior to the commencement of construction, sensitive environmental and/or cultural resources, such as wetlands, will be flagged in the field. No metal pin flagging will be used for this effort.

Prior to the start of construction, the contractor will mark the location of underground facilities through the one-call system (Dig Safely New York). In the event that any excavation work will encroach upon such facilities, under the Applicant’s supervision, the construction contractor will work closely with the utility owner to ensure the protection of the underground facilities. Prior to starting excavation work at the site, the construction contractor will review the location of underground facilities with site personnel to promote protection of underground facilities. The construction contractor will designate a qualified person at the job site to maintain the contact information of all natural gas facility owners and the one-call center, in the unlikely event that a situation arises that requires immediate notification of those parties. The construction contractor will adhere to all applicable federal and state safety regulations, which include training regarding the protection of underground facilities. Construction crews will be taught best practices and regulations applicable to the protection of underground facilities prior to starting work.

About one week prior to the start of construction at any given site, an environmental monitor, the contractor, and any subcontractors will conduct a walk-over of areas to be affected, or potentially affected, by proposed construction activities. These pre-construction walk-overs will occur regularly and are intended to identify sensitive resources to avoid (e.g., wetlands, archaeological or agricultural resources), location of buried natural gas infrastructure, limits of clearing, proposed stream crossings, location of drainage features (e.g., culverts, ditches), and the layout for sedimentation and erosion control measures. Upon identification of these features, specific construction procedures will be reviewed, and any modifications to construction methods or locations will be agreed upon before construction activities begin. Landowners and agency representatives will be consulted or included on these walk-overs as needed.

1.6.2 Construction Initiation

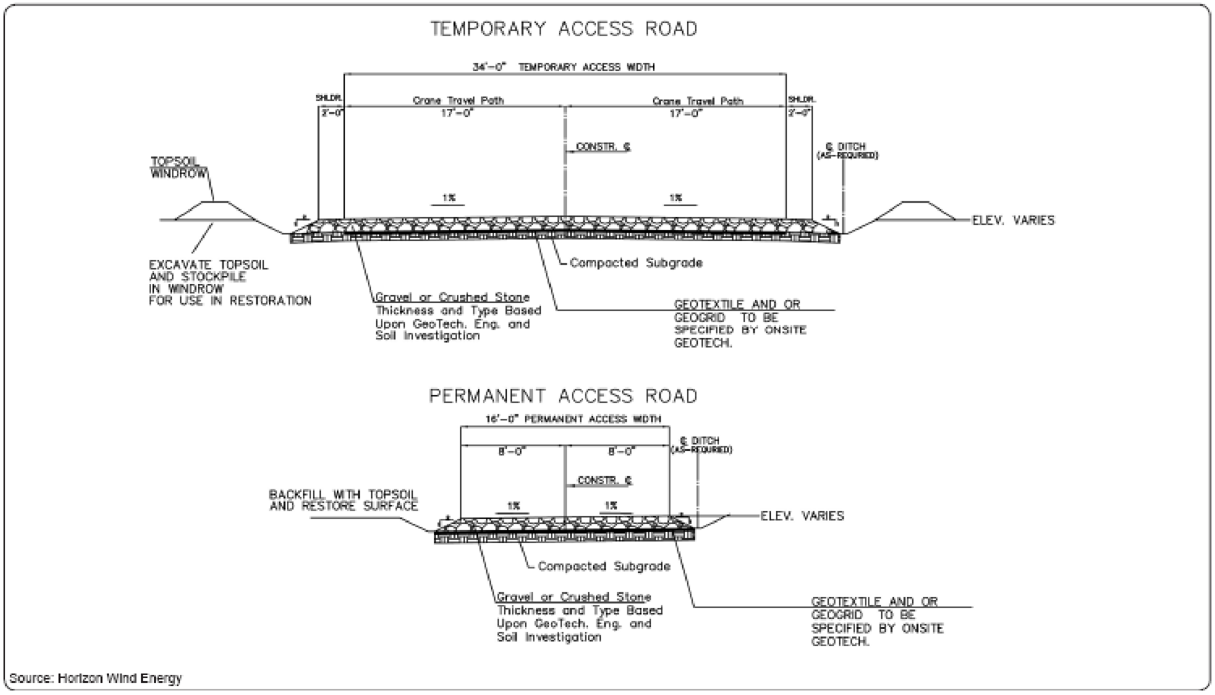
Project construction will be initiated by clearing woody vegetation (as necessary) from all tower sites, access roads, collection routes, and other areas where Project improvements will occur. Valuable trees cleared from the work area will be disposed of as agreed to between the Applicant and the owner of the timber; it will likely be cut into logs and piled at the edge of the work area, while other trees, limbs, and brush will be chipped and spread on-site in upland non-agricultural areas to be approved by the landowner, the Applicant, and the environmental inspector. For the purposes of this DEIS, it is assumed that an approximately 250-foot radius will be cleared around each tower, a maximum 100-foot-wide corridor may be cleared of vegetation along access roads, and a maximum 150-foot-wide corridor will be cleared along all collection line routes. Initial construction activities will involve installation of civil infrastructure, including roads, foundations, buried cable, and overhead lines. Details of specific construction activities are described below.

1.6.3 Construction Staging Area

Construction of the Project will require the development of one main material laydown/ construction staging area and secondary staging areas as necessary. As shown in Figure 1.1-2, the locations of the main laydown/construction staging areas to serve the Project during construction have been preliminary sited on privately owned land. Additional usage details for these area will be identified in consultation with the Project construction contractor upon selection, and it is anticipated that approximately 5 acres of land will be required for each staging area. A temporary construction trailer headquarters will be assembled at the main staging location. Construction of the Project will also require the creation of temporary construction access, construction parking areas, soil, rock, and slash disposal areas, improvements to public roads to facilitate construction traffic, and other similar uses and improvements associated with construction. These areas will require site preparation work potentially including installation of erosion and sediment control measures, stripping and stockpiling the topsoil if on agricultural land, grading and compacting the subsoil, installation of geotextile fabric (as needed), and placement of gravel to create a level storage yard. The Applicant will prepare a SWPPP that addresses erosion and runoff control methodologies associated with site preparation work. The Applicant will obtain necessary approval of the SWPPP prior to starting site preparation work. Electric and communication lines will be brought in on overhead poles to allow connection with construction trailers. Fencing or lighting of the staging area will occur only if necessary. At the end of construction, all utilities, gravel, and geotextile fabric will be removed, and the site will be restored to its preconstruction condition unless the Applicant is otherwise directed by the landowner. These construction mobilization activities may occur prior to the Applicant getting its notice to proceed for construction of the complete Project.

1.6.4 Access Road Installation

Existing roads and farm drives will be upgraded for use as Project access roads in order to minimize impacts to both active agricultural areas and wetland/stream areas. Where an existing road or farm drive is unavailable or unsuitable, new gravel-surfaced access roads will be constructed as shown in Exhibit 1.6-1. Road construction will typically involve installation of soil erosion and sediment control measures, topsoil stripping in agricultural lands and grubbing of stumps, as necessary. Stripped topsoil will be stockpiled along the road corridor for use in site restoration. Any grubbed stumps will be chipped and spread, buried in upland non-agricultural areas, or otherwise appropriately disposed of with the approval of the landowner, Applicant, and environmental inspector. Exhibit 1.6-1 provides typical access road details.



Source: Horizon Wind Energy

Exhibit 1.6-1 Typical Access Road Details

Following removal of topsoil, subsoil will be graded and compacted. As needed, geotextile fabric or grid will be laid down to provide additional support to overlaying rock. Once rough grade is achieved, base rock will be spread and compacted to create a road base. A capping rock will then be spread over the road base and roll-compacted to finished grade. Once heavy construction is complete, a final pass will be made with the grading equipment to level-out road surfaces and more capping rock will be spread and compacted in areas where needed. Project road construction will involve the use of several pieces of heavy machinery, including bulldozers, track-hoe excavators, front-end loaders, dump trucks, motor graders, water trucks, and rollers for compaction.

It is the intent of the applicant to build all access roads along field edges in agricultural areas, but there may be instances where bisecting a field is more practicable. The applicant will work with Ag & Markets and landowners to determine these locations, if they are necessary. In agricultural areas, topsoil will be stripped and stockpiled along the access road to prevent construction vehicles from driving over undisturbed soil and adjacent fields. Maximum permanent road width, including graded side-slopes, will be finalized during the civil engineering design phase, and it is expected that the permanent road impacts, including side slopes, will not exceed 34 feet. The portions of access roads leading from public roads to the crane assembly points will be up to 24 feet wide with occasional wider pull-offs on narrow roads to accommodate passing vehicles. Permanent road width in agricultural lands will be 16 feet, with permanent disturbance of 22 feet per consultation with Ag & Markets and the Agricultural Protection Measures outlined in Appendix C. Once construction is complete, any temporarily disturbed areas will be restored, soil de-compacted up to depths of 18 inches as necessary, and rocks greater than 4 inches removed from agricultural areas, and pre-construction contours reestablished. No restoration activities will occur in agricultural areas after October 1st.

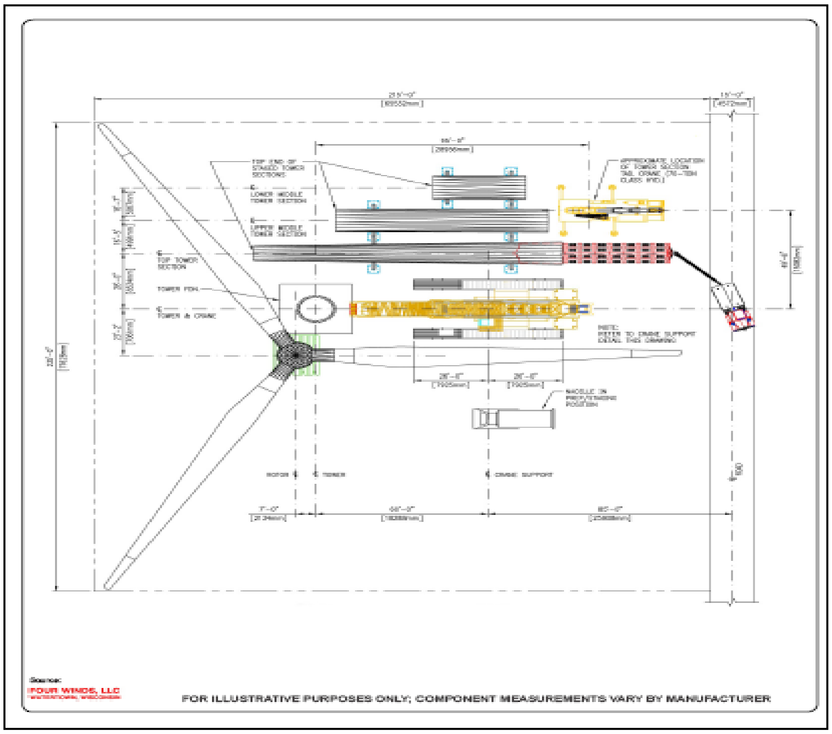
As will be described in the SWPPP to be prepared for this Project, appropriately sized culverts will be placed in any wetland/stream crossings in accordance with state and federal permit requirements. In other locations, culverts may also be used to ensure that the roads do not impede cross drainage. Where access roads are adjacent to, or cross, wetlands, streams or drainage ditches/swales, appropriate sediment and erosion control measures (e.g., silt fence) will be installed according to the SWPPP.

1.6.5 Foundation Installation

The Project will require numerous foundations, including bases for each WTG and pad transformer, junction boxes, the substation equipment, and the O&M facility. Often, separate subcontractors are mobilized for each type of foundation they specialize in constructing.

The Applicant will wind row topsoil during wind turbine installation and will install sediment and erosion control silt fences on the downslope side of topsoil areas, followed by stripping and stockpiling topsoil within a 250-foot radius (or less) around each tower. Stabilization measures for stockpiled topsoil will be developed in consultation with Ag & Markets.

In limited areas where existing topography creates construction constraints or safety concerns, or in areas where additional vehicular turnaround space is needed, a maximum workspace of 250-foot radius may be needed as shown in Exhibit 1.6-2. Once a WTG workspace is prepared, foundation construction occurs in several stages including hole excavation, outer form setting, rebar and bolt cage assembly, casting and finishing of the concrete, removal of the forms, backfilling and compacting, construction of the pad transformer foundation, and foundation site area restoration.



Source:
FOUR WINDS, LLC
WATERTOWN, WISCONSIN

FOR ILLUSTRATIVE PURPOSES ONLY; COMPONENT MEASUREMENTS VARY BY MANUFACTURER

Exhibit 1.6-2 Sample Workspace Layout

Excavation and foundation construction will be conducted in a manner that will minimize the size and duration of excavated areas required to install foundations. Portions of the work may require over excavation and/or shoring. Foundation work for a given excavation will commence after excavation of the area is complete. Backfill for the foundations will be installed immediately after approval by the engineer's field inspectors. The Applicant plans on using on-site excavated materials for backfill to the extent possible. In agricultural areas, excavated subsoil and rock will be segregated from stockpiled topsoil and stabilization measures will be developed in consultation with Ag & Markets. If bedrock is encountered, it is anticipated construction crews can "rip" it and excavate it with backhoe. If the bedrock cannot be ripped, it will be excavated by pneumatic jacking or hydraulic fracturing. No blasting is anticipated; however, should field conditions require blasting, a blasting plan will be submitted to the Town and neighbors will receive notice of the blasting schedule. No blasting will occur without submission of a blasting plan and receipt of written approval from the Town or their designated engineer.

The foundation work requires the use of several pieces of heavy machinery, including track-hoe excavators, drill rigs, front-end loaders, dump trucks, transportation trucks for materials, cranes and boom trucks for off-loading and assembly, compactors, concrete trucks, concrete pump trucks, de-watering equipment, backhoes, and small skid-steer type loaders.

The foundation may be either a concrete caisson or a spread footer or equivalent, as specified by the Project geotechnical/civil engineer. It is currently anticipated that the spread foot foundation will be used. This foundation is approximately 10 to 12 feet deep and approximately 50 to 60 feet in diameter. Each foundation requires approximately 330 to 400 cubic yards of concrete. As discussed in Section 1.5.3, one mobile concrete batch plant will be utilized to accommodate foundation construction. Once the foundation is cured, it will be buried and backfilled with the excavated on-site material. The top of the foundation is an 18-foot diameter pedestal that may be either flush with the ground surface or may extend 6 to 8 inches above grade.

1.6.6 Buried Electrical Collection System Installation

The proposed layout of the interconnect system is illustrated in Figure 1.1-2. As mentioned previously, electrical collection line routes will generally follow Project access roads and field edges wherever possible, but will sometimes cut directly across fields. Electrical collection system routing in active fields will be conducted in accordance with Ag & Markets guidelines and in consultation with Ag & Markets and the landowner. Where buried electrical lines are proposed to cross active agricultural fields, the location of any subsurface drainage (tile) lines will first be determined (through consultation with the landowner) to minimize the possibility that these lines are damaged during cable installation. If a tile is damaged, the tile will be repaired prior to construction to a condition that is at least equal to the original condition. Prior to construction, a plan will be developed for unanticipated excavation of drain tiles.

Installation of underground cables begins once the roads, WTG foundations, and transformer pads are complete for a particular row of WTGs. The high voltage underground cables are fed through the trenches and into conduits at the pad transformers at each WTG. The cables run to the pad transformers' high voltage (34.5 kV) compartment and are connected to the terminals. Low voltage cables are fed through a set of underground conduits from the pad transformer to the bus cabinet inside the base of the wind turbine tower. The low voltage cable will be terminated at each end and the whole system will be inspected and tested prior to energization.

Direct burial methods via cable plow, rock saw and/or trencher will be used during the installation of underground interconnect lines whenever possible. Direct burial via a cable plow will involve the installation of bundled cable (electrical and fiber optic bundles) directly into the ground via a "rip" created by the plow blade. The rip disturbs an area approximately 12 inches wide with bundled cable installed to a minimum depth of 48 inches. An area 15 to 25 feet wide on either side must be cleared of tall-growing woody vegetation and will be partially disturbed by the tracks of the installation machinery. However, this disturbance does not involve excavation of the soil; therefore, no stockpiling or segregation of soils is required. Generally, no restoration of the rip is required, as it closes in on itself following installation. Similarly, surface disturbance associated with the passage of machinery is typically minimal. Should surface restoration be required, it will closely follow the installation via a restoration Bobcat or small bulldozer, which will ride over the rip, smoothing the area.

Direct burial via a trencher or rock saw involves the installation of bundled cable in a similar fashion to cable plow installation. The trencher or rock saw uses a large circular blade or "saw" to excavate a small open trench. The trencher blade creates an approximately 14-inch-wide trench with a sidecast area immediately adjacent to the trench. Similar to cable plow, this direct burial method installs the cable a minimum of 48 inches and requires only minor clearing and surface disturbance (up to 15 to 25 feet wide from the installation machinery and any stockpiled brush). In active agricultural land, up to two parallel collection line circuits can be installed by trenching without the need to strip and segregate topsoil (in accordance with Agricultural Protection Measures). Rock saw trenching equipment will be utilized in areas where bedrock has been identified and tested for strength during a geotechnical investigation. Based on the results of the investigation, the appropriate rock saw trencher will be utilized. Sidecast material will be replaced via a Bobcat or small bulldozer fitted with an inverted blade. All areas will be returned to pre-construction grades, and restoration efforts will be as described above for cable plow installation. Although not anticipated in the current collection system layout, running more than two circuits in parallel through active agricultural fields would require stripping the topsoil as associated stockpiling/segregation, replacement, re-grading, and stabilization by seeding and mulching following installation. Any tile lines that are inadvertently cut or damaged during installation of the buried cable will be repaired as part of the restoration effort.

Installation of utility lines via an open trench will be used in areas where the previously described direct burial methods are not practicable. Areas appropriate for open trench installation will be determined at the time of construction and may include areas with unstable slopes, excessive unconsolidated rock, areas of known drain tiles, and standing or flowing water. Open trench installation will be performed with a backhoe and will generally result in a disturbed trench 36 inches wide and a minimum of 48 inches deep. The overall temporary footprint of vegetation and soil disturbance may be a maximum of 15 to 25 feet due to machinery dimensions, stockpiled brush, and backfill/spoil pile placement during installation. In agricultural areas, all topsoil within the work area will be stripped and segregated from excavated subsoil. Replacement of spoil material will occur immediately after installation of the buried utility. In cases of particularly rocky soil conditions, clean fill will be placed above and below the cables for the first several inches of fill to prevent cable pinching. Once the clean fill is covering the cables, subsurface soil will be replaced around the cable, and topsoil will be replaced at the surface. Any damaged tile lines will be repaired, and all areas adjacent to the open trench will be restored to original grades and surface condition. Restoration of these areas will be completed through seeding and mulching of all exposed soils.

Buried underground infrastructure associated with the Project will be installed with safety markings as required by law, and the locations of the facilities will be on file with the one-call service so as to enable safe continued other infrastructure in the Project Area. All excavation, trenching, and electrical system construction work will be done in accordance to a formal SWPPP for the Project as outlined in Section 2.2, Water Resources.

1.6.7 Overhead Collection Line

Short portions of the collection system will be installed aboveground in areas where belowground installation is not feasible from an engineering or economic point of view, or when it could result in significant safety or environmental impacts. These runs of overhead pole collector line will require a detailed field survey to determine the exact pole locations. Once the survey and design work are done, the installation of poles and cross-arms to support the conductors can commence. The poles are first assembled and fitted with all of their cross-arms, cable supports, and insulator hardware on the ground at each pole location. Holes for each pole will then be excavated or drilled and the poles will be erected and set in place using a small crane or boom truck. Once set in place, concrete will be poured in place around the base of the pole, or a clean fill will be compacted around the tower base according to the engineer's specifications. The overhead lines will connect to underground cables at each end through a switchable, visible, lockable riser disconnect with fuses.

1.6.8 Wind Turbine Assembly and Erection

The wind turbines consist of three main components: the towers, the nacelles (machine house), and the rotor blades. Other smaller components include hubs, nose cones, cabling, control panels, and tower internal facilities such as lighting, ladders, etc. All WTG components will be delivered to the Project Site on flatbed transport trucks and main components will be off-loaded at the individual WTG sites. A large erection crane based on a gravel rectangular crane pad approximately 100 feet by 60 feet will erect the turbine. Turbine erection is performed in multiple stages including setting of the bus cabinet and ground control panels on the foundation, erection of the tower (in three to four sections), erection of the nacelle, assembly and erection of the rotor, connection and termination of the internal cables, and inspection and testing of the electrical system prior to energization.

Turbine assembly and erection involves mainly the use of large track mounted cranes, smaller rough terrain cranes, boom trucks, rough terrain fork-lifts for loading and off-loading materials and equipment, flat bed and low-boy trucks for transporting materials to site.

The erection crane(s) will move from one tower to another along a designated crane path. This path will generally follow Project access roads and only cross or minimally use existing public roads (where permitted and practical). In some places, the crane will be partially disassembled and carried from one tower site to another by a specialized flatbed tractor-trailer. Upon departure of the crane from each tower site, all required site restoration activities will be undertaken. Restoration of crane paths will include removal of all temporary materials. In agricultural fields, restoration will also include subsoil de-compaction (as necessary) and rock removal, spreading of stockpiled topsoil, and reestablishing pre-construction contours. Exposed soils at restored tower sites and along roads and crane paths will be stabilized by seeding and/or mulching, or as required by the Agricultural Protection Measures and SWPPP.

1.6.9 Interconnection Substation Facilities

The construction of the Project collection system substation and POI switchyard involves several stages of work including, but not limited to, grading of the area, the construction of several foundations for the transformers, steel work, breakers, control houses, and other outdoor equipment, the erection and placement of the steel work and all outdoor equipment, and electrical work for all of the required terminations. All excavation, trenching and electrical system construction work will be done in accordance to a formal SWPPP for the Project as outlined in Section 2.2, Water Resources. Once physical completion is achieved, a rigorous inspection and commissioning test plan is executed prior to energization of the substation.

The substation and switchyard construction work requires the use of several pieces of heavy machinery, including a bulldozer, drill rig and concrete trucks for the foundations, a trencher, a back-hoe, front-end loaders, dump trucks for import of clean back fill, transportation trucks for the materials, boom trucks and cranes for off-loading of the equipment and materials, concrete trucks for areas needing slurry backfill, man-lift bucket trucks for the steel work and pole-line work, etc.

The construction schedule for the interconnection substation facilities is largely dictated by the delivery schedule of major equipment such as the main transformers, breakers, capacitors, outdoor relaying equipment, the control house, etc. The Transmission Owner will be heavily involved in the design and the construction of the POI switchyard, as they will own and maintain it.

1.6.10 Plant Energization and Commissioning (Start-Up)

Commissioning follows mechanical completion of the Project. Commissioning of the Project will commence with a detailed plan for testing and energizing Project component with locks and tags on breakers to ensure safety and allow for fault detection prior to the energization of any one component of the system. Once the switchyard and substations are energized, collection lines will be brought on-line one-by-one and then individual turbines will be tested extensively, commissioned, and brought on-line one-by-one. Commissioning does not require any heavy machinery to complete.

1.6.11 Operation and Maintenance Facility Construction

Construction of the O&M facility will commence with the preparation and pouring of its foundation, framing the structure and roof trusses, installing the outer siding, installing plumbing and electrical work, and finishing the interior carpentry.

Construction of the O&M facility will require the use of concrete trucks, boom trucks for roof truss installation, and light trucks for transportation of materials.

1.6.12 Project Construction Clean-Up

Since Project clean-up generally consists of landscaping and earthwork, it is very weather and season sensitive. Landscaping clean-up is generally completed during the first allowable and suitable weather conditions after all of the heavy construction activities have been completed. Disturbed areas outside of the graveled areas will be reseeded to control erosion by water and wind. All construction clean-up work and permanent erosion control measures will be done in accordance to a formal SWPPP for the Project and in consultation with Ag & Markets.

Other Project clean-up activities include finishing of the O&M building, landscaping around the switchyard and substation area, painting of scratches on towers and exposed bolts, as well as other miscellaneous tasks that are part of normal construction clean-up.

Construction clean-up will require the use of a motor grader, dump trucks, front-end loaders, and light trucks for transportation of any waste materials, packaging, etc.

1.7 Operations and Maintenance

The wind turbine models being considered for the Project, including the Vestas V-82, begin to generate electricity at wind speeds of roughly 3 meters per second (m/s) (7 mph) and have a normal operational speed range of 9 RPM to 19 RPM. Depending on the model, turbine blades will pitch/feather when winds reach roughly 13 to 15 m/s (29 to 34 mph) and will turn 90 degrees to the wind, and the generator will shut down when wind speeds continuously exceed 24 to 25 m/s (54 to 56 mph). Each wind turbine has a computer to control critical functions, monitor wind conditions, and report data back to a SCADA system. The SCADA system continually monitors and evaluates turbine operations. In many cases, turbine adjustments and fine-tuning of operations can be accomplished remotely using the automated SCADA system. The facility is expected to be generating power about 80 percent of the time, with an average annual capacity equivalent to roughly 30 percent of the installed capacity, which is competitive for commercial wind farms in New York. Total green electricity expected to be delivered to the grid is anticipated to be approximately 225,000 to 314,000 megawatt-hours (MWh) per annum, equivalent to the annual consumption of approximately 25,000 to 35,000 homes.

1.7.1 Operating Schedule

Operation of the wind turbines and associated components is almost completely automated. However, the operating facility will require a staff of 10 to 15 administrative, operations and maintenance, and environmental personnel. The Project will be in operation 24 hours per day, 365 days per year. The O&M team will staff the Project during core operating hours 8 hours per day, 5 days per week, from 8:00 a.m. to 5:00 p.m. with weekend shifts and extended hours as required. The Project's central SCADA system stays on-line full-time, 24 hours per day, 365 days per year. In the event of turbine or plant facility outages, the SCADA system will send alarm messages to on-call technicians via pager or cell phone to notify them of the outage. The Project will always have a local, on-call local technician who can respond quickly in the event of any emergency notification or critical outage. Operating technicians will rotate the duty of being on-call for outages.

1.7.2 Facility Availability

A power plant's availability is defined as the amount of time the Project is ready and capable of producing power. The Project will utilize heavy-duty, utility grade equipment. Other wind power projects with similar configurations and grades of high quality, reliable and proven equipment have demonstrated operating availability figures in the mid to 80 to 95 percent range over the past decade. The availability of wind power projects rivals that of conventional power plants that are generally in the low to mid-90 percent range. The Project is expected to operate consistently with an availability in the mid to high-90 percent range. Facility unavailability is due to several factors and generally is classified as scheduled (planned) or unscheduled (forced) outages.

1.7.3 Scheduled Maintenance – Planned Outages

The amount of downtime due to scheduled maintenance is generally very predictable from year to year. The proposed Project operating plan includes a planned outage schedule cycle that consists of WTG inspections and maintenance after the first three months of operation, a break-in diagnostic inspection, and subsequent services every six months. The six-month service routines generally take a WTG off-line for just one day. The six-month routines are very rigorous and consist of inspections and testing of all safety systems, inspection of wear-and-tear components such as seals, bearings, bushings, etc., lubrication of the mechanical systems, electronic diagnostics on the control systems, pre-tension verification of mechanical fasteners and overall inspection of the structural components of the WTGs. Blades are inspected and, if heavily soiled, rinsed once per year to maintain overall aerodynamic efficiency. Based on operational experience at other New York wind projects, blade washing may likely be necessary to remove insect debris and grime that can diminish the Project's aesthetics.

Individual WTGs are taken off-line for maintenance, leaving the remaining WTGs in that string fully operational. Electrical equipment such as breakers, relays, transformers, etc. generally require weekly visual inspections, which do not affect overall availability, and testing or calibrations every one to three years which may force outages.

To the extent practical, the short-term off-line routine maintenance procedures are coordinated with periods of little or no generation (i.e., low wind) as to minimize the impact to the amount of overall generation.

1.7.4 Unscheduled Maintenance – Forced Outages

Modern wind power projects generally operate with availabilities in the 95 to 99 percent range. Several components and systems of an individual wind turbine can be responsible for forced, non-routine outages such as the mechanical, electrical, or computer controls. Most of the outages are from auxiliaries and controls and not the heavy rotating machinery. Most developing heavy machinery failures are found prior to failure, during the frequent inspections, so that the failing part is replaced prior to complete failure.

Although the newer control systems have added a high level of detection and diagnostic capability, they normally require frequent minor adjustments in the first few months of operation. As a result, availabilities of a wind power project are generally lower in the first few months until they are fully tuned. Once a wind plant is properly tuned, unplanned outages are generally very rare and downtime is generally limited to the routine service schedule.

The O&M facility is always stocked with sufficient spare parts to support high levels of availability during operation. The modular design of modern wind turbines results in the majority of parts being “quick-change” in configuration, especially in the electrical and control systems. This modularity and the fact that all of the turbines are identical allows for the swapping of components quickly between turbines to quickly determine root causes of failures even if the correct spare part is not readily available in the O&M building. As part of their supply agreements, major turbine equipment vendors guarantee the availability of spare parts for 20 years.

1.8 Decommissioning

Megawatt-scale wind turbine generators available on the market today have a life expectancy of more than 20 years. The tubular steel towers supporting the generators are of simple design and, with basic routine maintenance, will serve many years beyond the life expectancy of the generators.

As the turbine generators to be installed for the Project approach the end of their expected life, technological advances may make available more efficient and cost-effective generators that will economically drive the replacement of the existing generators and thus prolong the economic life of the Project. In the event that this doesn’t happen and the WTG needs to be decommissioned, the following write-up provides a description of the decommissioning work and the estimated costs associated with that work.

1.8.1 Estimated Cost of Decommissioning

The estimated decommissioning costs per WTG were prepared using available information from a variety of credible industry sources. As provided in Table 1.8-1, the current cost of decommissioning is estimated to be approximately $54,000 per turbine in 2007 dollars, taking into consideration the scrap value of the steel and generator components. The actual cost of decommissioning is likely to be lower than this estimate, because the wind turbines are likely to have a salvage value in excess of their pure scrap value. An estimate of decommissioning costs associated with the substation will be prepared once final substation designs have been developed. Pursuant to the towns of Bellmont and Chateaugay Local Laws (No 2 of 2006 and

No 7 of 2006, respectively), this estimate will be reevaluated every three years for changes in costs of decommissioning and restoration as well as adjusted for inflation.

1.8.2 Ensuring Decommissioning and Site Restoration Funds

The Applicant will continuously maintain a surety bond or equivalent financial security instrument payable to the towns for the removal of non-functioning WTGs and appurtenant facilities, in a form and amount approved by the Town Boards for the period of the life of the Project in accordance with the approved Decommissioning Plan to be finalized prior to permitting of the Project.

The costs associated with decommissioning and restoration will be studied by an independent licensed engineer retained by the Applicant on a cycle beginning after the operations date of the wind farm and every three years thereafter for the life of the wind farm. A report of each study will be submitted to the Town Board. Any adjustment in the security value recommended by the engineer's report will be made within 60 days of delivery of the report to the Town Board.

Table 1.8-1. Estimated Cost of Decommissioning Per Turbine a/

Decommissioning cost per tower (in current dollars)		
Removal of a Tower:	270 man-hours x $85/hour	$22,950
	Cranes (2), 5 days use x $6,000/day	$30,000
Removal of concrete to 48 inches below grade:	150 man-hours x $85/hour	$12,750
	Equipment, 3 days use x $2,500/day	$7,500
Removal Collection System (average of 2,112 feet/turbine):	100 man-hours x $85/hour	$8,500
	Equipment, 2 days use x $3,500/day	$7,000
Seeding and Re-vegetation (average of ~2 acres/turbine including collection system):	3 man-hours x $85/hour	$255
	Total Removal Costs	**$88,955**
Salvage value per unit:	Scrap value of tower steel (200 tons x $150/ton):	$30,000
	Scrap value of generator components:	$5,000
	Total Salvage Value	**$35,000**
	Estimated cost of decommissioning, minus salvage value b/	**$53,955**

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a/ Costs estimated using a variety of credible industry sources, the *Blue Book of Building and Construction* , current market prices, and current dollar value.

b/ The costs associated with decommissioning and restoration will be studied by an independent licensed engineer on a cycle beginning after the operations date of the wind farm and every three years thereafter for the life of the wind farm.

1.8.3 Decommissioning Process Description

All decommissioning and restoration activities will adhere to the requirements of appropriate governing authorities, and will be in accordance with all applicable federal, state, and local permits.

The decommissioning and restoration process comprises removal of aboveground structures; removal of belowground structures to a depth of 48 inches; restoration of topsoil, re-vegetation and seeding; de-compaction; and a two-year monitoring and remediation period. Access roads, fencing and residual minor improvements will be removed unless the underlying landowner requests that they remain in place. Decommissioning estimates for these facilities will be provided in accordance with the approved Decommissioning Plan to be finalized prior to permitting and included in the agreed upon surety bond or equivalent financial security instrument.

Above-ground structures include the turbines, transformers, and overhead collection lines, Project-owned portions of the substation, maintenance buildings, and access gates. Below-ground structures include turbine foundations, collection system conduits, and drainage structures.

The process of removing structures involves evaluating and categorizing all components and materials into categories of recondition and reuse, salvage, recycling, and disposal. In the interest of increased efficiency and minimal transportation impacts, components and material may be stored on-site in a pre-approved location until the bulk of similar components or materials are ready for transport. The components and material will be transported to the appropriate facilities for reconditioning, salvage, recycling, or disposal.

1.8.4 WTG Removal

Access roads to turbines may be widened temporarily to sufficient width to accommodate movement of appropriately sized cranes or other machinery required for the disassembly and removal of the turbines. High value components will be stripped. The remaining material will be reduced to shippable dimension and transported off-site for proper disposal. Control cabinets, electronic components, and internal cables will be removed. The blades, hub, and nacelle will be lowered to grade for disassembly. The tower sections will be lowered to the ground where they will be further disassembled into transportable sections. The blades, hub, nacelle, and tower sections will either be transported whole for reconditioning and reuse or dissembled into salvageable, recyclable, or disposable components. The area will be thoroughly cleaned and all debris removed.

1.8.5 WTG Foundation Removal

Topsoil will be removed from an area surrounding the foundation and stored for later replacement. Turbine foundations will be excavated to a depth sufficient to remove all anchor bolts, rebar, conduits, cable, and concrete to a depth of 48 inches below grade. After removal of all noted foundation materials, the hole will be filled with clean sub-grade material of quality comparable to the immediate surrounding area. The sub-grade material will be compacted to a density similar to surrounding sub-grade material. All unexcavated areas compacted by equipment used in decommissioning shall be de-compacted in a manner to adequately restore the topsoil and sub-grade material to the proper density consistent and compatible with the surrounding area. The area will be thoroughly cleaned and all debris removed.

1.8.6 Underground Electrical Collection System

The cables and conduits contain no materials known to be harmful to the environment. All cable and conduit buried greater than 48 inches will be left in place and abandoned.

1.8.7 Overhead Collection Lines

The conductors will be removed and stored in a pre-approved location. Switches and other hardware will be removed and delivered to a processing company for recycling. The supporting poles will be removed and the holes filled in with compatible sub-grade material. In areas where environmental damage from complete removal may outweigh the benefits, the poles will be sawed flush with the surrounding grade (determined by appropriate governing authority). The poles will be stored in a pre-approved location. Stored conductors and poles will be later removed and transported to appropriate facilities for salvage or disposal. The area will be thoroughly cleaned and all debris removed.

1.8.8 Substation Removal

Disassembly of the substation will include only the areas owned by the Applicant. Any system upgrades and attachment facilities installed by or on behalf of the Applicant and conveyed to the Transmission Owner, or any improvements made to the NYSEG local distribution system, will remain in place. Steel, conductors, switches, transformers, etc., will be reconditioned and reused, sold as scrap, recycled, or disposed of appropriately depending upon market value. Foundations and underground components will be removed to a depth of 48 inches and the excavation filled, contoured, and re-vegetated. All unexcavated areas compacted by equipment used in decommissioning shall be de-compacted in a manner to adequately restore the topsoil and sub-grade material to the proper density consistent and compatible with the surrounding area. The area will be thoroughly cleaned and all debris removed.

Improvements to town and county roads that were not removed after construction at the request of the town or county will remain in place.

1.9 Project Cost and Funding

The estimated capital cost to construct the Project ranges from $160 to $200 million dollars. The Applicant to date has committed to investing millions of dollars of at risk capital to option the land and associated wind rights of area landowners, as well as to conduct initial Project feasibility studies. The Applicant anticipates investing between $5 and $10 million dollars to complete the engineering and permitting studies necessary to finalize the Project's design. The Applicant will provide all of the investment capital necessary to take the Project up to construction and operation. The Project will receive no public funding from the federal, state, or local governments during development or construction. The current federal production tax credit program expires on December 31, 2008, but will likely be extended such that the Project will receive tax credits worth $20 for each MWh of power it delivers to the electrical grid for the first 10 years of its operation.

New York State's RPS creates a market for the green energy attributes of wind power that is separate from the market value of the underlying electricity. These attributes, referred to as renewable energy credits (RECs), are generated according to the number of MWh of power the Project produces. The Project must bid for the right to sell its RECs under the State RPS, however, and must compete with all bidders from across New York and adjacent states or provinces. Currently, about 55 wind energy projects representing over 5,500 MW of power have filed interconnection requests with the NYISO. In April 2007, NYSERDA awarded 10-year REC contracts to 9 wind projects totaling roughly 758 MW of nameplate capacity. The average REC price in that April 2007 round of awards was $15/MWh.

The Applicant anticipates bidding in future rounds of REC auctions and/or offering its renewable energy credits to other potential buyers in the region. If the Project is not initially selected, the Applicant can bid the Project again in subsequent NYSERDA auctions. Based upon prevailing electricity prices, the Applicant does not anticipate initiating construction of the Project until it wins a REC award or secures an alternative contract for the offtake of electricity and RECs.

1.10 Permits and Approvals Required

Implementation of the Project will require numerous permits, approvals, and consultations with local, state, and federal agencies. The permits and approvals that are expected to be required are listed in Table 1.10-1.

Table 1.10-1. Permits and Approvals for the Jericho Rise Wind Farm

Agency	SEQRA Agency Status	Description of Permit or Approval Required
Towns		
Town of Bellmont Town Board	Co-lead	Wind Energy Permit Approval SEQRA Lead Agency SEQRA Findings Approval of Town Road Agreements Mitigation Host Agreement License Agreement Septic Permit
Town of Chateaugay Town Board	Co-lead	Wind Energy Permit Approval SEQRA Lead Agency SEQRA Findings Approval of Town Road Agreements Mitigation Host Agreement License Agreement Septic Permit
Town of Bellmont Departments (Public Works, Codes, etc.)	Interested	Issuance of Building Permits Review and Approval of Highway Work Permits Review of Town Road Agreements
Town of Chateaugay Departments (Public Works, Codes, etc.)	Interested	Issuance of Building Permits Review and Approval of Highway Work Permits Review of Town Road Agreements
Franklin County		
Highway Department	Involved	Highway Work Permits SEQRA Findings
Franklin County Industrial Development Agency (IDA)	Involved	Potential Funding through payment-in-lieu of tax (PILOT) Agreement Issuance of SEQRA Findings
New York State		
Department of Environmental Conservation (NYSDEC)	Involved	New York Environmental Conservation Law (NYECL) Article 24 Permit for Disturbances to State Regulated Wetlands NYECL Article 15 Permit for Disturbance of Protected Streams SPDES General Permit Section 401 Water Quality Certification Issuance of SEQRA Findings
Department of Transportation (NYSDOT)	Involved	Special Use Permit for Oversize/Overweight Vehicles Highway Work Permit Issuance of SEQRA Findings
New York State Department of Agriculture and Markets (Ag & Markets)	Interested	Consultation

Table 1.10-1. Permits and Approvals for the Jericho Rise Wind Farm

Agency	SEQRA Agency Status	Description of Permit or Approval Required
Public Service Commission (PSC)	Involved	New York Public Service Law § 68 Certificate Issuance of SEQRA Findings
New York State Energy Research and Development Authority (NYSERDA)	Interested	Possible Funding through Renewable Portfolio Standard Auction
New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP)	Interested	Consultation pursuant to NY Parks, Recreation, and Historic Preservation Law (PRHPL) § 14.09 and Section 106 of the National Historic Preservation Act (NHPA)
Federal		
Federal Aviation Administration (FAA)	N/A	Lighting Plan and Clearances for Potential Aviation Hazard
U.S. Army Corps of Engineers (USACE)	N/A	Section 404 Individual Permit for Placement of Fill in Federal Jurisdictional Wetlands/Waters of the U.S. NEPA Compliance. Compliance with Section 106 of the NHPA. Compliance with Section 7 of the Endangered Species Act
U.S. Fish and Wildlife Service (USFWS)	N/A	Consultation under Section 7 of the Endangered Species Act, Associated with the Aforementioned Section 404 Permit

1.11 Public and Agency Involvement

As the Applicant proceeds through the New York State Environmental Quality Review (SEQR) process, continuing communications with Project neighbors residing within 2,500 feet of a potential turbine location will be a major focus for the Project. Given the large scale of commercial turbines, the Project will have visual and aesthetic impacts on these individuals that are disproportionate to those experienced by the community at large prior to the advent of large wind farms. The Applicant established a website (www.jerichorisewind.com) to share general Project information, as well as SEQR documentation, with the public and will periodically mail neighboring households Project information brochures. The Project will also hold public information meeting in 2008 to further educate the public on the Project and on the SEQR process.

In 2006, the Applicant organized two bus tours to the Maple Ridge Wind Farm in Lewis County and placed invitations to the second tour in the Malone Telegram so the general public in the area would have the opportunity to see and hear a commercial wind farm in action.

The Applicant is committed to pursuing voluntary non-disturbance agreements with all neighbors within 2,500 feet of a proposed turbine. These agreements are designed to share the benefits of the Project with neighbors by paying an amount roughly equivalent to an average upstate New York household electric bill.

Other future public education and outreach efforts will include circulation of newsletters and information pieces to the local residents, as well as presentations to area civic groups aimed at apprising residents of Project developments and affording opportunities to receive answers to their questions.

1.12 SEQRA Process

On June 22, 2007, a Wind Energy Permit Application and Full Environmental Assessment Form (EAF) addressing the proposed wind power Project were submitted by the Applicant to the towns of Chateaugay and Bellmont Town Board pursuant to the State Environmental Quality Review Act (SEQRA). The formal submittal of the EAF initiated the SEQRA process for the subject action. Also on August 8, 2007, a solicitation of Co-lead Agency status was forwarded to involved SEQRA agencies by the Town Boards, along with a copy of the EAF document and draft Scope. All other involved agencies agreed to the Town Boards' assumption of Co-lead Agencies in this matter. On August 9, 2007, the Co-lead Agencies solicited comments on the draft Project Scope from interested agencies. On September 18, 2007, the Town Boards, as Co-lead Agencies, issued a positive declaration, requiring the preparation of this DEIS (see Appendix A for a compilation of agency correspondence). The DEIS scope was accepted by the Co-lead Agencies on October 29, 2007.

The remaining SEQRA process for the Project will include the following actions and anticipated time frames:

- DEIS accepted by Co-lead Agencies (Chateaugay and Bellmont Town Board);
- File notice of completion of DEIS and notice of public hearing and comment period;
- Public hearing on DEIS (must be held at least 14 days after public notice is published);
- 30-day public comment period;
- Revise DEIS as necessary to address relevant comments received;
- Complete Final Environmental Impact Statement (FEIS); document accepted by lead agency;
- File notice of completion of FEIS;
- 10-day public consideration period;
- Co-lead Agencies issue Findings Statement, completing the SEQRA process; and
- Involved agencies issue Findings Statements.

This DEIS, along with a copy of the public notice, will be distributed for review and comment to the public, will be posted on the website (www.jerichorisewind.com), and circulated to the agencies and parties listed in Table 1.10-1.

1.12.1 Agency and Public Review

Opportunities for detailed agency and public review will continue to be provided throughout the SEQRA process, as well as in conjunction with the review of applications for the other permits and approvals needed for the Project, many of which have their own public comment periods. With respect to the completion of the SEQRA process, the DEIS will be available for public review and agency comment as outlined above.

2.0 ENVIRONMENTAL SETTING, IMPACT ANALYSIS, AND MITIGATION MEASURES

2.1 Geology, Topography and Soils

2.1.1 Geology and Topography

2.1.1.1 Existing Conditions

The Project Area is situated in the St. Lawrence Valley glacial plain. The St. Lawrence Valley plain is underlain by sedimentary rocks (sandstone and limestone) that are relatively younger than the bedrock formations south of the Project Area, which consist of syenites, gabbros, and granites. The Project Area is mapped on the United States Geological Survey (USGS) 7.5-minute Brainardsville, Burke, Chateaugay, and Chasm Falls Quadrangle topographic maps. Elevations range from approximately 950 feet above mean sea level in the northwest corner of the Project Area, to 1,480 feet above mean sea level at Kirby Hill in the southeast corner of the Project Area. The southern parts of the Project Area are the highest but have a more level topography. Traveling north through the Project Area, the topography becomes more varied with gullies and ravine features that have much steeper topography. Relief is typically low to moderate, and the general character of the landscape is one of gently undulating terrain.

Bedrock Geology

The majority of bedrock within the Project Area is Cambrian-age (ca. 500 million years ago), Potsdam Sandstone (Isachsen and Fisher 1970). This rock unit is a durable, finely- to massively-bedded sandstone of reddish-brown, buff, gray, or white color. It includes a lower member comprised of conglomeratic quartz sand with a significant percentage of feldspar (arkose and subarkose) and an upper member of more nearly pure quartz (arenite and orthoquartzite). Potsdam sandstone is almost flat-lying, and because of the near-zero dip and resistance to erosion, it tends to form broad, low tablelands along the edge of the St. Lawrence Valley. Bedrock outcrops of underlying buried Paleozoic rock are found in the Chateaugay River channel located in the eastern portion of the Project Area (MacClintock and Stewart 1964). Potsdam sandstone lies unconformably on the much older Grenville-age (ca. 1,100 million years ago) gneisses and metasedimentary rocks that comprise the Adirondack Mountains. An area of this older Precambrian granitic gneiss is mapped in the south-southeastern portion of the Project Area, as are the Precambrian metasedimentary rocks, in much smaller quantities. Kirby Hill, in the south-east corner of the Project Area, is composed of these Precambrian rocks (Isachsen and Fisher 1970). Brainardsville Road (CR 24) at the southern edge of the Project Area approximates the boundary between Potsdam sandstone to the north and the Adirondack gneisses to the south (Isachsen and Fisher 1970; Lavoie 2004; USGS 1964; Van Diver 1985).

Depth to bedrock data, compiled from water supply installation records, were obtained from the NYSDEC Bureau of Water Resource Management. Nine wells were drilled within the Project Area and all of the well logs describe depth to bedrock as being greater than 6 feet from the ground surface. (Depths ranged from 26 to greater than 240 feet below ground surface.) Four wells are located just outside of the Project Area boundary and also have depths to bedrock greater than 6 feet. It is expected that additional site specific information will also be obtained when geotechnical surveys are completed in the Project Area.

Surficial Geology

The Project Area is predominantly made up of glacial till material, with some areas of pebbly sand deposits along the banks of the Chateaugay River, within the eastern portion of the Project Area, and the Little Trout River, in the western portion of the Project Area (MacClintock and Stewart 1964). The most widespread surficial unit is a blanket of late Wisconsinan till informally designated as Malone till, which occurs in all portions of the Project Area. Malone till is dense, stony, silty, and gray-brown to red-brown in color. In the Project Area, it varies from very thin or (rarely) absent to over 100 feet in thickness (Caldwell and Pair 1991; Caldwell et al. 2003; Gibbard and Van Kolfschoten 2004). In the northern, central, and western portions of the Project Area, there are kame gravel deposits, randomly situated but not in great number (MacClintock and Stewart 1964).

Throughout the Project Area, the terrain is crossed by abandoned alluvium filled channel ways. These channel ways are fairly straight trenches filled with boulders, 25 to 75 feet deep, and 300 to 400 feet across. They cut across the northward slope of the land on an east-west diagonal (MacClintock and Stewart 1964). The channel ways were formed during the last part of the Wisconsinan Stage by glacial meltwater flowing westward along the edge of the glacier, into an ice dammed Glacial Lake Iroquois in the Ontario Basin. As the glacier retreated north, the northeast arm of the Glacial Lake Iroquois expanded, forming deltas and beaches along its shores. Layers of clay were deposited in deeper waters farther from the shore. The towns of Potsdam and Malone are located on these Glacial Lake Iroquois deltas (Isachsen et al. 2000).

Groundwater

There is a mapped aquifer beneath the northern section of the Project Area in the Town of Chateaugay (NYS GIS). This aquifer extends west of the Project Area into the Town of Burke. (Specific information regarding groundwater can be located in Section 2.2.1.3.)

Unusual Landforms or Geologic Formations

There are no unique geologic features or state parks with geologic features within or in close proximity to the Project Area (Rogers et al. 1990). There are known fossil deposits in the Potsdam Sandstone throughout the region surrounding the Project Area. In Chateaugay, there are known fossil beds containing trilobites and other similar fossils. These deposits are mostly found in rock outcrops along the Chateaugay River and are not under consideration for preservation by the New York State Geologic Survey (NYSGS). Karst topography, and the potential for ground subsidence, is not anticipated in the Project Area because there are no mapped limestone rock formations or deposits within the Project Area boundaries.

The NYSDEC Environmental Mapper tool, located on the NYSDEC website (NYSDEC Environmental Mapper) shows four active sand and gravel/unconsolidated mining (borrow pit) operations within the Project Area boundaries (see Figure 2.1-1). The closest of these active mines to the Project Area is 296 feet from turbine number 37. There are closed magnetite mines near Chateaugay, New York (Isachsen et al. 2000) and several other sand and gravel borrow pit operations outside of the Project Area. No oil and gas fields or metallic mineral deposits are mapped in or near the Project Area (Isachsen et al. 2000).

Geologic Hazards

The Project Area is located in a low to moderately active seismic region. Several earthquakes of magnitude 5 or greater on the Richter scale have occurred in the region. The largest known earthquake in New York State (Richter scale magnitude 5.8 with a maximum intensity of VIII on the Modified Mercalli scale) occurred along the United States - Canada border in the Cornwall-Massena area in 1944 (Isachsen et al. 2000). Several other earthquakes with magnitudes ranging between 5 and 5.9 have occurred throughout the region as far north as Montreal. There is only one mapped fault line throughout the Project Area in the south east corner of the Project Site (NYSM 1999), suggesting possible seismic activity in that region. According to the USGS seismic risk and probability maps (USGS 1996), the Project Area would be considered to be in an area of moderate seismic activity and risk based on USGS National Seismic Hazard Mapping Project (NSHMP) probability mapping (Frankel et al. 2002).

Sensitive Paleontological Resources

A web search of NYSDEC listed Critical Environmental Areas (CEAs) revealed that there are no CEAs in Franklin County (NYSDEC website CEA definition).

2.1.1.2 Anticipated Impacts

2.1.1.2.1 Construction

During Project construction only minor localized disturbance of existing topography and surficial geology is expected for grading and leveling of the turbine towers and access roads. Potential impacts on groundwater and water supply wells are not anticipated unless the blasting of bedrock in the Project Area will be required. The potential need for blasting will be determined once the results from the geotechnical survey have been completed. Based on the depth to bedrock information from the NYSDEC, the need for blasting of shallow bedrock is not anticipated. The depths to bedrock in the Project Area are greater than 6 feet.

Figure 2.1-1 Mine Locations Within the Project Area

No significant impacts to known geological resources within the Project Area are anticipated. Based upon the width and proposed depth selected for the wind turbine footings, footings may be drilled or hammered in, or shallow bedrock may be ripped or blasted in the discrete area to allow for installation. Excavated or spoil rock from any blasting will be either be hauled offsite or be crushed onsite and be used for Project improvements, including the construction of access roads, where practicable. The actual amount of bedrock that might be affected will be dependent upon final footing locations and results of geotechnical investigations that will be conducted after the micro-siting process has been finalized (likely after SEQR completion). These purpose of these geotechnical investigations would be to verify depth to bedrock and to perform a pre-construction evaluation of surficial and bedrock geology in the proposed turbine and access road locations. These investigations include but are not limited to the following activities:

- Soil, rock sampling and standard penetration testing using geotechnical borings;
- Soil sampling using augur cuttings, split spoon sampling, and/or test pit excavations;
- Seismic testing;
- Installation of piezometers in areas determined to have shallow groundwater conditions identified by the borings; and
- Soil resistivity and thermal conductivity testing.

There are no anticipated impacts on mining operations in the Project Area during construction. The Project has been sited so that construction of Project features will not interfere with any of the borrow pit mining operations. This includes erecting the towers and installing the collection lines.

2.1.1.2.2 Operation

There are no anticipated impacts on geological resources, including to mining operations, associated with operation of the proposed facility. Project features are sited far enough away from the mining locations based on current and anticipated future operations.

2.1.1.3 Mitigation Measures

During construction, it may be necessary to remove bedrock to complete wind turbine platform footings or bury collection lines. The potential for encountering shallow bedrock will be finalized once the geotechnical surveys have been completed. Based on the NYSDEC well logs, the depth to bedrock in the Project Area is greater than 6 feet; therefore, encountering shallow bedrock during construction is not anticipated. If blasting of bedrock or large boulders is found to be necessary, it will be conducted in compliance with a site-specific Blasting Plan; in accordance with all applicable laws to avoid impacts to sensitive receptors; and following approval of the appropriate jurisdictional authorities. The Blasting Plan, if needed, will be developed by an experienced blasting professional and provided to the Town. No blasting shall occur without submission of a blasting plan, and receipt of written approval from the Town, or their designated engineer. Before any blasting occurs site-specific issues such as anticipated impacts to wildlife, habitat, underground facilities (including water supply wells), and structures will be considered. In addition, mitigation measures used to minimize these impacts will also be described. Any blasting activities will be overseen by a qualified blasting contractor, and in compliance with the Blasting Plan. Pre- and post-blasting inspections of all sensitive receptors, structures and appurtenances in the potential impact areas would be conducted to establish a baseline and document any changes that may be perceived to be a consequence of blasting activities.

Mitigation of any impacts on the local mining operations is not anticipated to be required because the Project has been sited to avoid any impacts to the mines' operations.

2.1.2 Soils

2.1.2.1 Existing Conditions

Information for this section was compiled from published federal and state geologic maps, reports and technical studies (as referenced below and listed in the references section), and field observations (conducted by the United States Department of Agriculture [USDA], in cooperation with Cornell University Agricultural Experiment Station-1947) in the Project Area.

2.1.2.1.1 Soil Designations

The soil survey of Franklin County, New York (Carlisle 1958) indicates that the proposed Project Area consists of three predominant soil series. The soil series designations consist of a three-letter code, the first upper case letter which designates the soils series followed by the last two lower case letter indicating the degree of slope. Table 2.1-1 shows the primary soil types.

Westbury Series

The Westbury series have developed on medium-textured glacial till mainly from Potsdam sandstone. The surface texture ranges from fine sandy loam to silt loam, but very fine sandy loam predominates. These soils are somewhat poorly drained, surface drainage ranges from slow to medium depending on slope. The primary soils mapped within the areas of the proposed Project Area include Wma, Wmb, Wna and Woc (see Figure 2.1-2) and have slopes of 0 to 3 percent, 3 to 8 percent, 3 to 8 percent, and 8 to 15 percent, respectively.

Table 2.1-1. Primary Soil Types

Soil Name	Soil Name	Acres Temporary Impact	Acres Permanent Impact
Aab	Adams and Wallace loamy sands 0-3%	0.63	1.04
Abd	Adams and Colton soils 8-25%	1.13	0.26
Ace	Adams and Colton soils 25-60%	1.73	0.11
Bea	Brayton stony loam 0-35%	8.31	1.84
Bfb	Brayton very stony loam 0-8%	0.23	0.00
Caa	Colton and Constable gravelly loamy sands 0-3%	6.13	0.36
Cab	Colton and Constable gravelly loamy sands 3-8%	4.54	0.55
Cbb	Colton and Constable cobbly loamy sands 3-8%	1.46	0.73
Ccc	Colton and Constable gravelly and cobbly loamy sands 3-8%	3.32	0.67
Ccd	Colton and Constable gravelly and cobbly loamy sands 15-25%	0.29	0.00
Daa	Duane gravelly sandy loam 0-3%	2.60	0.28
Dab	Duane gravelly sandy loam 3-8%	0.11	0.17
Eaa	Empeyville stony very fine sandy loam 0-3%	15.22	4.10
Eab	Empeyville stony very fine sandy loam 3-8%	29.39	9.42
Eac	Empeyville stony very fine sandy loam 8-15%	5.63	1.76
Ebb	Empeyville very stony very fine sandy loam 0-8%	29.36	3.71
Ecd	Empeyville and Moria stony very fine sandy loam 15-25%	1.68	0.33
Edc	Empeyville and Moria stony very fine sandy loam 8-25%	14.74	1.90
Saa	Saco and Sloan soils 0-2%	1.52	0.07
Sea	Scarboro fine sandy loam 0-3%	1.69	0.00
Sh	Scarboro fine sandy loam 0-3%	0.75	0.22
Sk	Stony land, Worth and Parishville soils	2.02	0.12
Sma	Sun stony loam 0-5%	0.04	0.06
Sna	Sun very stony loam 0-5%	1.03	0.03
Tca	Tughill and Dannemora stony very fine sandy loams 0-3%	2.70	4.17
Tda	Tughill and Dannemora very stony very fine sandy loams 0-3%	22.61	3.49
Wca	Walpole sandy loam 0-6%	0.25	0.00
Wha	Walpole and Au Gres loamy sands 0-6%	2.50	0.64
Wma	Westbury and Dannemora stony very fine sandy loams 0-3%	46.75	29.09
Wmb	Westbury and Dannemora stony very fine sandy loams 3-8%	28.07	26.74
Wna	Westbury and Dannemora very stony very fine sandy loams 03-8%	50.82	8.99
Woc	Westbury and Brayton very stony very fine sandy loam 8-15%	3.03	0.45
Wqb	Worth Stony fine sandy loam 3-8%	7.48	1.67
Wqc	Worth Stony fine sandy loam 8-15%	0.78	0.78
Wsb	Worth very stony fine sandy loam 0-8%	2.63	0.98
Wsd	Worth very stony fine sandy loam 8-25%	2.88	0.14
Wte	Worth and Parishville 25-60%	5.93	1.18

Figure 2.1-2 Project Area Soils

Empeyville Series

The Empeyville series have developed on medium-textured stony glacial till mainly from Potsdam sandstone but partly from Beekmantown limestone. Fine sandy loam, very fine sandy loam and silt loam types occur in complex patterns in many places, but the very fine sandy loam type is predominant. The surface texture ranges from fine sandy loam to silt loam, but very fine sandy loam is predominant. Surface stoniness ranges from slightly stony to very stony. The Empeyville soils are moderately well drained. The Empeyville soils mapped within the proposed Project Area include Eaa, Eab, Eac, Ebb, Ecd and Edc (see Figure 2.1-2) and have slopes of 0 to 3 percent, 3 to 8 percent, 8 to 25 percent, 0 to 8 percent, 15 to 25 percent, and 8 to 25 percent, respectively.

Tughill Series

The Tughill series have developed from medium-textured glacial till derived from Potsdam sandstone. They occupy nearly level or slightly depressed areas in the smooth till plain. Some fine sandy loam, very fine sandy loam and loam types occur. Stoniness ranges from slightly stony to very stony. Surface runoff and internal drainage is very slow. The Tughill soils mapped within the areas of the proposed Project Area include Tca and Tda (see Figure 2.1-2) and have slopes of 0 to 3 percent.

A summary of available soil properties considered during construction activities for the various soil series presented in Carlisle (1958) and a summary of properties listed for the soils mapped within the Project Area is included in Table 2.1-2.

2.1.2.1.2 Prime Farmland

Prime Farmland, as defined by the USDA, is "land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water. The soils are of the highest quality and can economically produce sustained high yields of crops when treated and managed according to acceptable farming method" (USDA). Very specific technical criteria were established by Congress to identify prime farmland soils. In general, the criteria reflects adequate natural moisture content; specific soil temperature range; pH between 4.5 and 8.4 in the rooting zone; low susceptibility to flooding; low risk to wind and water erosion; minimum permeability rates; and low rock fragment content" (USDA). Prime farmland can include land that possesses the above characteristics but is being used currently to produce livestock or timber. Soils that do not meet the above criteria may be considered prime farmland if the limiting factor is mitigated (e.g., using artificial drainage or irrigation).

Table 2.1-2. General Description of Soil Series

(Taken from Soil Survey of Franklin County, New York. Carlisle 1958)

Soil	Hydrologic Group a/	Water Table Depth (ft)	Bedrock Depth (ft)	Permeability (in/hr)	pH	Risk of Corrosion		Erosion Factors K	Unified Soil Classification b/	Plasticity Index
						Uncoated Steel	Concrete			
Westbury	NA	1.5 - 4	NA	NA	NA	NA	NA	NA	SM or ML	NA
Empeyville	NA	2.5 - 6	NA	NA	NA	NA	NA	NA	SM or ML	6
Tughill	NA	Shallow	NA	NA	NA	NA	NA	NA	SM or ML	NA

NOTES:

a/ 1) Definition

Hydrologic group is a group of soils having similar runoff potential under similar storm and cover conditions. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonally high water table, intake rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The influence of ground cover is treated independently.

2) Classes

The soils in the United States are placed into four groups, A, B, C, and D, and three dual classes, A/D, B/D, and C/D. In the definitions of the classes, infiltration rate is the rate at which water enters the soil at the surface and is controlled by the surface conditions. Transmission rate is the rate at which water moves in the soil and is controlled by soil properties. Definitions of the classes are as follows:

A. (Low runoff potential). The soils have a high infiltration rate even when thoroughly wetted. They chiefly consist of deep, well drained to excessively drained sands or gravels. They have a high rate of water transmission.

B. The soils have a moderate infiltration rate when thoroughly wetted. They chiefly are moderately deep to deep, moderately well drained to well drained soils that have moderately fine to moderately coarse textures. They have a moderate rate of water transmission.

C. The soils have a slow infiltration rate when thoroughly wetted. They chiefly have a layer that impedes downward movement of water or have moderately fine to fine texture. They have a slow rate of water transmission.

D. (High runoff potential). The soils have a very slow infiltration rate when thoroughly wetted. They chiefly consist of clay soils that have a high swelling potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. They have a very slow rate of water transmission.

(1) Dual hydrologic groups, A/D, B/D, and C/D, are given for certain wet soils that can be adequately drained. The first letter applies to the drained condition, the second to the undrained. Only soils that are rated D in their natural condition are assigned to dual classes. Soils may be assigned to dual groups if drainage is feasible and practical.

b/ Unified Soil Classification, see ASTM D2487.

NA -not available

Soils designated by the Natural Resources Conservation Service (NRCS), a subsidiary of the USDA, as Prime Farm Soils, Prime Farmland Soils when drained, and Farmland Soils of Statewide Significance which are defined as lands containing “nearly” prime farmland as determined by the state agency or agencies and contain similar criteria for classification as prime farmland were obtained from the NRCS for the regional area. Table 2.1-3 provides potential impact in acres to these soils during construction based on GIS data.

Table 2.1-3. Total Impacted Prime Farmlands

	Total Acreage	
	Temporary Impact	**Permanent Impact**
Prime Farmland Soils		
Wqb	7.48	3.28
Total	**7.48**	**3.28**
Prime Farmland When Drained		
	0	0
Total	**0**	**0**
Farmland of Statewide Significance		
Aab	0.63	1.04
Bea	8.31	1.84
Bfb	0.23	0.00
Caa	6.13	0.36
Cab	4.54	0.54
Cbb	1.46	0.73
Daa	2.60	0.36
Saa	1.52	0.00
Woc	3.03	0.45
Wqc	0.78	3.28
Total	**29.23**	**8.6**

2.1.2.2 Anticipated Impacts

2.1.2.2.1 Construction

Temporary impact will be encountered during construction of the turbines and associated facilities (access roads, trenches for interconnect lines, foundations, substations, and transmission line facilities). As a result of the Project Area’s topographical features and drainage characteristics, grading will disrupt soils and increase potential for erosion during construction. In addition, the short-term removal of vegetation, and especially root system from portions of the Project Site, will create a greater susceptibility to exposed soils to erosive factors such as wind, rain, and surface runoff. Soil transported by surface runoff could potentially find its way into the nearby surface waters where it may settle out as sediment.

Approximately 323 acres of surface soils will be disturbed during the construction of the Project. Once construction activities are complete, approximately 72 percent of the disturbed area, or approximately 232 acres of surface soil, will be restored. Table 2.1-4 provides the approximate areas of both temporary and permanent soil disturbance.

Table 2.1-4. Approximate Area of Soil Disturbance

Component	Temporary Impact (acres)	Permanent Impact (acres)
Turbines	226	9
Access Roads	90	61
Underground Collection System	43	0
Substation	0	16
Overhead Line	<1	0
Laydown Yard	20	0
O&M Building	5	5

Temporary equipment storage and staging areas will be used to provide general construction support. The laydown area will be used to temporarily store construction materials, equipments, turbine components, supplies, and vehicle parking. The laydown areas will be restored upon completion of the construction of the facility.

Materials Sources

Sources for roadway aggregate and concrete for foundations have not yet been selected. There are several aggregate mines and concrete batch plants in the region that could provide these raw materials. If the contractor elects to supply aggregate from on-site borrow sources, additional soil impacts could occur. For borrow areas, similar soil erosion impacts would be realized as a result of stripping and excavating borrow materials. Designated work areas for rock screens and crushers would be constructed and would also result in a temporary disturbance. It is not anticipated that aggregate material will be removed from the construction area.

Agricultural and Wooded Area Impact:

There are several mapped soil types within the Project Area that can be categorized as "Farmland Soils of Statewide Significance." In total, the Project will temporarily affect 29.23 acres of Farmland of Statewide Significance. A total of 8.6 acres of Farmland of Statewide Significance may be permanently affected during operation of the Project.

Based on the proposed layout and GIS mapping (Table 2.1-3), construction of the Project would temporarily have an impact within the Project Site on approximately 7.5 acres of prime farmland soil and 3.3 acres will be permanently affected during operation of the Project. These impacts would result primarily from vehicular traffic along the construction right-of-way, construction of access roads, turbine pads, and other Project facilities. Most impacts would be short term and would not affect the potential use for prime farmland for agricultural purposes. These impacts could include interference with agricultural drainage, loss of soil through erosion, mixing of topsoil and subsoil, and compaction.

Overall, wind turbines and associated facilities have been located to minimize loss of active agricultural land and interference with agricultural operations. Limited impacts to agricultural uses may include temporary access restrictions while access roads are constructed and temporary impacts to subsurface drainage systems.

Construction impacts to wooded areas have also been minimized by siting turbines in previously disturbed areas and using the existing network of roads to accommodate proposed access road and interconnect routes.

Liquid Spills

Wind generation facilities do not require cooling towers or generate liquid effluents that require discharge on land. Chemical uses at wind power facilities are primarily related to fluids used in turbines and substation/transformer equipment. These fluids include gear oil, lubricating oil, mineral oil, and greases. There is some risk of spillage during transport or delivery of these fluids to the site. Spills of fuels, lubricating oils, and mineral oil could occur as a result of vehicle accidents, equipment malfunction, human error, terrorism, sabotage, vandalism, or aircraft impact. A Project-specific Spill Prevention Containment and Countermeasure Plan (SPCC Plan) will be developed prior to construction in accordance with EPA requirements.

2.1.2.2.2 Operation

Facility operations will result in minimal land disturbances. Each turbine location and all associated infrastructure will be constructed with sufficient space for maintenance vehicle access. Repair of underground lines, if required, would result in temporary disturbance, but these disturbances can be readily mitigated. Roads and parking areas will be graded to direct stormwater runoff and prevent ponding. Gravel surfaces will be used for the majority of road and parking areas, to enhance stormwater infiltration, and limit the need for stormwater catchment and management. When needed, stormwater drainages will include appropriate controls (vegetation buffers, check dams, infiltration ponds, etc.) to prevent increased turbidity loading to surface water bodies. There is a minor risk of chemical spills during operations. Wind turbines and associated equipment use lubricating and insulating oils in a closed system. Catastrophic failure or a release during maintenance-related fluid replacement could result in impacts.

Decommissioning

Decommissioning of the Project would result in a similar level of land disturbance as occurred during construction of the Project. Erosion control measures and monitoring would be required during removal of facility structures and equipment, and a robust mitigation program would be required to revegetate areas of the facility occupied by the equipment and infrastructure.

Decommissioning of the facility would also require handling and disposal of insulating and lubricating oils in the turbines and associated facilities. A SPCC Plan will be developed as part of the SWPPP for the construction and operation of the Project as required by the SPDES permits. The SPCC Plan would be submitted to local emergency response organizations for review and approval prior to the start of construction. Spills, should they occur, would likely be confined to the Project Site.

2.1.2.3 Mitigation Measures

2.1.2.3.1 Temporary Mitigation Measures

The Project has followed the New York State Department of Agriculture and Markets Guidelines for Agricultural Mitigation for Windpower Projects (Ag & Markets 2007) during the preliminary design of the Project. In an effort to minimize the impacts to active agriculture fields, the Project has also taken steps in the preliminary design of the wind farm to locate the Project facilities within non-productive agriculture fields whenever possible.

To avoid and/or mitigate adverse impacts to environment, the Project will obtain a SPDES permit and conduct all work in strict compliance with the provisions and limitations of the permit. The permit and compliance framework generally consists of the following:

- Consulting with the County or regional land use agency to determine compatibility of the Project with local land uses ordnances and zoning designations;
- As a part of the Project SWPPP, which is required by the SPDES permit for construction, an Erosion and Sediment Control Plan (ESCP) will be prepared that describes monitoring and mitigation procedures during construction-related disturbances;
- Implementing BMPs to mitigate construction-related disturbances;
- Implementing a monitoring and reporting program in full compliance with the permit requirements; and
- Carrying out post-construction documentation and reporting.

Implementation of effective BMPs will serve as the primary measure to minimize soil impacts. At a minimum, Project BMPs will be developed and implemented as identified and described below.

- BMPs for erosion control during land clearing, site preparation, and grading including:
  1. Limit permanent road widths to a maximum of 34 feet or less, and where possible, follow hedgerows and field edges to minimize loss of agricultural land and potential drainage impacts.
  2. Avoid disturbance of surface and subsurface drainage features where possible (e.g., ditches, diversions, etc.).

   3. Prohibit vehicular access to turbine sites until topsoil has been stripped and permanent access roads have been constructed. Prohibit stripping of topsoil or passage of heavy equipment during saturated conditions.
   4. Maintain access roads throughout construction in a manner that allows continued access, crossing, and use of access roads for farm machinery and forest practices operations.
   5. Use appropriate erosion controls (e.g., silt fence, bio-filter bags, straw bales) to control short-term erosion impacts.

- BMPs such as diversion berms and conveyance channels for erosion control and during trench excavations for underground interconnect.
- BMPs such as vegetative strips, channel check structures that address erosion impacts during transport of heavy equipment and materials. Use appropriate erosion controls (e.g., silt fence, bio-filter bags, and straw bales) to control short-term erosion impacts can also used to mitigate the erosion impacts.
- BMPs for short and long-term storage of construction materials (both equipment and stockpiled soils/gravel).
- BMPs for handling and disposal of Project-derived waste materials including:
   1. Remove all solid waste, hazardous materials, and construction debris from the site and manage disposal in a manner consistent with all applicable state and federal regulations.
   2. Dispose excess concrete in a designated area. Under no circumstances shall excess concrete be left on the surface in active agricultural areas.
   3. Rinse concrete trucks in designated areas, outside of active agricultural areas. Manage all rinsate in accordance with the requirements of the SWPPP permit.
- BMPs for operation of on-site borrow areas (if applicable).
- BMPs for stabilizing and re-vegetating disturbed areas.

To minimize and/or mitigate impacts to active agricultural operations, effective coordination and communications will occur with the Landowner and the Ag & Markets to ensure that the agricultural activities are not affected because of construction activities.

Mitigation measures to protect and restore agricultural soils will be undertaken during and after construction, and will include restoration of temporarily disturbed agricultural land (see Agricultural Protection Measures in Appendix C). The Project will minimize the impacts to Agriculture land by locating turbines that will provide the maximum agricultural production, locate site access roads and underground collection systems along field edges, fences, or existing farm lanes, minimize overhead poles within agricultural fields. During the construction, the Project cranes will not cross fields during saturated conditions when such actions would damage agricultural soils. The construction of the access roads will have the topsoil in the work area stripped and stockpiled outside the area of disturbance, but on the property from which it was removed. Temporarily stockpiled topsoil will be stabilized through means such as covers and mulches. All vehicular movements and construction activity will be restricted to areas where topsoil has been removed.

Proposed agricultural soil protection measures are included in Appendix C. Soil impacts during construction will also be minimized by providing the contractor and subcontractors with copies of the final construction documentation and plans, which will contain applicable soil protection erosion control and soil restoration measures. One or more pre-construction meetings will be held between the construction contractor(s) and a representative of the Ag & Markets. During construction, environmental inspectors and Ag & Markets representatives will monitor compliance with the soil protection measures described above and included in Appendix C.

The locations of prime farmland soils and soils within active agricultural fields will be identified on final Project plans for application of the best management practices to minimize construction impacts.

2.1.2.3.2 Permanent Mitigation Measures

Approximately 232 acres out of 323 acres of disturbed soils will be restored once construction activities have been completed, including 4.2 acres of Prime Farmland. The areas that will be restored include temporary disturbances to the Project laydown yard, turbine site work areas, access road work areas, pathways of underground and overhead collection line facilities, substation and interconnection facilities work areas. Restoration activities will be conducted in accordance with a number of BMPs including the implementation of an Invasive Species Management Plan to be developed prior to construction. This process will generally involve the following sequence of activities:

- Removal of gravel or other temporary fill;
- De-compaction of compacted subsoils using a deep ripper;
- Disking and removal of stones from de-compacted subsoil;
- Spreading of stockpiled topsoil over de-compacted subsoil;
- Re-spreading of topsoil so as to reestablish pre-construction contours to the extent practicable;
- Disking and removal of stones from re-spread topsoil; and
- Seeding and mulching topsoil. Seed selection in agricultural fields will be based on guidance provided by the landowner and Ag & Markets.

In addition to use during construction, the Project SPCC Plan will be updated and maintained onsite throughout Project operation.

2.2 Water Resources

The following section describes surface waters, wetlands, and groundwater resources within the Project Area.

2.2.1 Existing Conditions

2.2.1.1 Surface Waters

The Project Area is located within the English-Salmon drainage basin (USGS Hydrologic Unit 04150307) which spans 797 square miles across Clinton, Franklin, and St. Lawrence counties. Major water bodies in the English-Salmon drainage basin that are crossed by the Project include the Chateaugay and Little Trout rivers. The Chateaugay River and its tributaries drain the east and northeast portions of the Project Area; the remainder is drained by the Little Trout River and its tributaries. In general, surface water quality appears to be unimpaired throughout the Project Area[1], and the potential for agricultural runoff is low (NYSDEC 1998). According to the Unified Watershed Assessment Report (NYSDEC 1998), the English-Salmon watershed harbors endangered species (discussed in Section 2.3 of this DEIS), and modifications to water flow were noted; however, this watershed was assigned a Class IV, indicating sufficient information to evaluate the need for restoration and water quality goals is lacking.

In Franklin County, surface waters account for 60 percent of recorded water use (USGS 2000). These waters are used for public water supply systems, irrigation, and industrial purposes; when combined, these uses average 5.2 million gallons per day. Figure 2.2-1 illustrates how surface and ground water is used within the Franklin County.

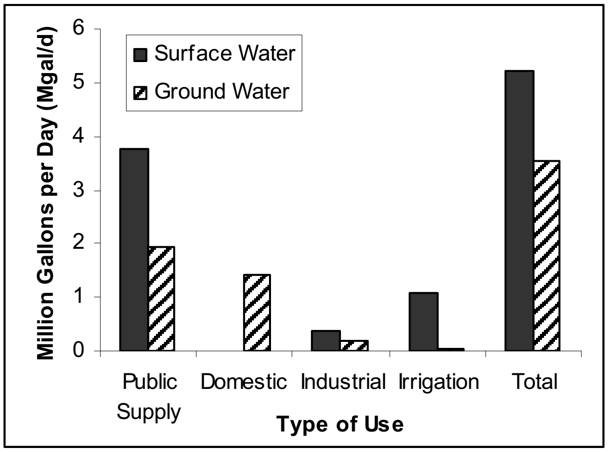

Figure 2.2-1 Year 2000 Water Usage in Franklin County, New York, as Reported by USGS.

Policy to preserve and protect New York lakes, rivers, streams, and ponds is established under the Environmental Conservation Law (Article 15). New York designates surface freshwater resources based on best usage classifications and standards (6 NYCRR Part 701) or on wild, scenic, and recreation value (6 NYCRR Part 666). Wild, scenic and recreational rivers were not identified within the Project Site. Certain waters of the state are protected on the basis of their classification pursuant to 6 NYCRR Part 608 Protection of Waters. Protected waters include those with the classification and standards of: AA, AA(t), A, A(t), B, B(t), or C(t). State water quality classifications of waterbodies within the Project Area

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[1] Waters within the proposed Project do not appear on the Section 303(d) List of Impaired Waters (EPA 2007); impaired surface waters were not identified by NYSDEC in its Unified Watershed Assessment Program (NYSDEC 1998).

are Class C(t) or lower. Classification C is for waters supporting fisheries and suitable for non-contact activities. A waterbody with a standard of (t) indicates that it may support a trout population. In addition, small lakes and ponds with a surface area of 10 acres of less, located within the course of a stream, are considered to be part of a stream and subject to corresponding regulations.

Protected streams, pursuant to 6 NYCRR Part 608, within the proposed Project Area include Alder Brook, Allen Brook, Chateaugay River, and Little Trout River. These streams are shown in Figure 2.2-2. Eighteen of these waters are designated as Class C(t) and may support trout populations. Of the remaining 14 waters, 8 are designated as Class D and 6 are unclassified by the NYSDEC. Table 2.2-1 lists each waterbody and its corresponding NYSDEC ID and Class.

2.2.1.2 Wetlands

Wetlands provide critical habitat to a variety of plants and animals, which are often dependent upon the characteristic attributes of wetland ecosystems. These areas are typically abundant with vegetation that offers food, nesting substrates, and essential cover for numerous species during breeding seasons, migration, and winter months. In addition to wildlife value, wetlands offer hydrological benefits such as water quality improvement, floodwater retention, and erosion control. Water quality is improved through the removal and retention of nutrients, the processing of organic and chemical wastes, and the reduction of sediment load. During flood periods, wetlands act to alleviate rising storm waters by serving as temporary storage areas and protecting downstream areas from flood damage. Also, because wetlands serve as buffers between land and water, they significantly decrease stream-bank and shoreline erosion. Alteration or destruction of wetlands may result in a decline in downstream water quality or in adjacent lakes. In addition, wetlands have a recreational significance as they contribute to the aesthetic value of the landscape, as well as provide habitat to numerous game species of fish and wildlife.

In New York, impacts to wetlands are regulated at the state and federal level. Wetlands that measure 12.4 acres or greater in size, or smaller wetlands of unusual local importance, are regulated by Article 24 of the New York State Environmental Conservation Law. An adjacent buffer area that extends 100 feet from the wetland boundary is also regulated under Article 24 to further protect the wetland. A wetland is ranked into one of four classes according to its ability to perform wetland functions and provide wetland benefits. Class 1 wetlands have the highest rank, and the ranking descends through Classes 2, 3, and 4. Disturbance to state-regulated wetlands would require a permit from NYSDEC. Waterbodies and wetlands that have an apparent hydrologic connection to waters of the United States or significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters are regulated by the USACE. Activities that would introduce fill or dredged material into waters of the United States, which includes wetlands, are regulated at the federal level by Section 404 of the Clean Water Act. The Section 404 permit program is administered by the USACE.

Figure 2.2-2 Surface Waterbodies in the Project

Table 2.2-1. Surface Waters Within the Project Area

Stream Name	NYSDEC ID	NYSDEC Class	Field ID	Flow
Access Roads				
Allen Brook (trib)	A15P910-25	D	IC-2-DR-ST-A	Perennial
Little Trout River (trib)	-	-	IC-27-DR-ST-A	Intermittent
Little Trout River (trib)	A15P910-90	D	AR-44-DR-ST-A	Intermittent
Little Trout River (trib)	A15P910-89	C(T)	AR-37-DR-ST-A	Intermittent
Unknown tributary	-	-	AR-38-DR-ST-A	Intermittent
Allen Brook (trib)	A15P910-25	D	WTG-21A	Perennial
Allen Brook (trib)	A15P910-87	D	IC-11-DR-A	Perennial
Collection Lines				
Allen Brook	A15P910-24	C(T)	IC-3-DR-ST-A	Perennial
Allen Brook	A15P910-24	C(T)	IC-7-DR-ST-A	Perennial
Allen Brook	A15P910-24	C(T)	IC-6-DR-ST-A	Perennial
Alder Brook (trib)	A15P910-87	D	IC-8-DR-ST-A	Perennial
Alder Brook	A15P910-86	C(T)	IC-16-DR-ST-A	Perennial
Alder Brook (trib)	A15P910-86	C(T)	IC-18-DR-ST-A	Perennial
Chateaugay River	A15P910-23	C(T)	IC-14-DR-ST-A	Perennial
Chateaugay River (trib)	-	-	IC-53-DR-ST-A	Intermittent
Chateaugay River (trib)	A15P910-23	C(T)	IC-53-DR-ST-B	Intermittent
Little Trout River (trib)	A15P910-89	C(T)	IC-45-DR-ST-A	Intermittent
Little Trout River (trib)	A15P910-85	D	IC-29-DR-ST-A	Intermittent
Little Trout River (trib)	A15P910-85	D	IC-29-DR-ST-B	Intermittent
Little Trout River (trib)	A15P910-89	C(T)	IC-42-DR-ST-A	Intermittent
Little Trout River (trib)	A15P910-89	C(T)	IC-40-DR-ST-A	Intermittent
Little Trout River (trib)	A15P910-89	C(T)	IC-38-DR-ST-A	Intermittent
Little Trout River (trib)	A15P910-89	C(T)	IC-36-DR-ST-A	Intermittent
Little Trout River (trib)	A15P910-85	D	IC-35-DR-ST-A	Intermittent
Unknown tributary	-	-	WTG-112B-DR-ST	-
Little Trout River (trib)	A15P910-89	C(T)	IC-79-A/B-DR-ST	Intermittent
Turbines				
Chateaugay River (trib)	A15P910-23	C(T)	IC-94-ST-A	Intermittent
Allen Brook (trib)	-	-	IC-3-DR-ST-B	Intermittent
Little Trout River (trib)	A15P910-89	C(T)	IC-42-DR-ST-A	Intermittent
Little Trout River (trib)	-	-	WTG-84A-DR-ST	Intermittent
Overhead Transmission				
Chateaugay River	A15P910-23	C(T)	IC-14-DR-ST-A	Perennial
Little Trout River	A15P910-84	C(T)	IC-113B-DR-ST	Perennial
Little Trout River (trib)	A15P910-89	C(T)	IC-69A-DR-ST	Perennial

Of nearly 7,000 acres within the extent of the Project Area (including non-participating parcels of land), 6 percent of the area is covered by wetlands. Review of NYSDEC freshwater wetland maps indicate that two state-regulated forested wetlands totaling 18.4 acres occur within the proposed Project Area. Neither of these wetlands or adjacent upland buffers would be crossed by the footprint of the proposed Project. A total of 68 wetlands mapped by National Wetland Inventory (NWI) occur within the Project Area, totaling 418 acres (this acreage does not include areas that overlap with NYSDEC regulated wetlands). Of these wetlands, 307 acres occur as palustrine forested wetlands (PFO), while only 58 acres occur as emergent and scrub-shrub wetlands (PEM and PSS, respectively). Wetlands located within the Project Site are shown in Figure 2.2-3. A summary of NYSDEC and NWI wetlands that occur in the Project Site are listed in Table 2.2-2. Federally regulated wetlands are anticipated to occur within the proposed Project and will be delineated in accordance with the methods outlined for routine, on-site determinations (Environmental Laboratory 1987) in summer 2008 prior to the submittal of the FEIS.

Table 2.2-2. Mapped Wetlands Located in the Project Area

Mapped Wetland	NYSDEC Data (if applicable)	Cover Type a/	Wetland Acreage within Project Site
NYSDEC	CG-6, Class 3	PFO1/SS1A	16.8
NYSDEC	CG-4, Class 2	PFO1E	1.6
NWI	-	PEM5	11.1
NWI	-	PFO1	86.4
NWI	-	PFO1/4	29.2
NWI	-	PFO1/EM5	4.1
NWI	-	PFO1/SS1	52.7
NWI	-	PFO4	10.2
NWI	-	PFO4/1	123.9
NWI	-	PSS1	43.2
NWI	-	PSS1/EM5	3.7
NWI	-	PUB	1.4
NWI	-	R3UBH	51.6

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a/ Note that acreages from 68 total NWI wetlands were summarized by cover type. Cover types listed in this table are described in Cowardin et al. 1979). PFO1: palustrine forested broadleaf deciduous wetland; PFO4: palustrine forested needle-leaved evergreen; PSS1: palustrine scrub-shrub deciduous wetland; PEM5: palustrine emergent broadleaved nonpersistent wetland; PUB: palustrine unconsolidated bottom; R3UBH: riverine, upper perennial, unconsolidated bottom, permanent waterbody.

Figure 2.2-3 Wetlands in the Project

A review of the National Hydric Soil List for Franklin County, New York indicates that portions of the Project Site contain hydric soils, as determined by the NRCS (2007). Hydric soils are poorly or very poorly drained and their presence indicates the potential occurrence of wetlands. Ten hydric soils occur in the Project Area, as listed in Table 2.2-3. These soils are found in depressions throughout the Project Area, and often correlate with the locations of stream channels, NYSDEC mapped wetlands, and NWI mapped wetlands. Figure 2.2-4 shows locations of hydric soils within the Project Area. Based on the mapped presence of hydric soils in the Project, NYSDEC and NWI maps likely underestimate the presence of wetlands in the Project Area.

Table 2.2-3. Hydric Soils Within the Project Area

Map Unit Name and Map Symbol	Percent slopes	Drainage Class	Comments a/
Saco and Sloan soils (SaA)	0-2	Very poorly drained	Saco soils occur in floodplains, while Sloan soils occur in depressions. Both soils are frequently flooded but not ponded.
Scarboro fine sandy loam (SeA)	0-3	Very poorly drained	This soil occurs in depressions and is frequently ponded.
Sun very stony loam (SnA)	0-5	Very poorly drained	This soil occurs in depressions and is frequently ponded.
Tughill and Dannemora stony very fine sandy loam (TcA)	0-3	Poorly drained (Dannemora) to very poorly drained (Tughill)	Both soil types occur in depressions. Tughill soils are frequently ponded. Dannemora soils are not frequently ponded or flooded.
Tughill and Dannemora very stony very fine sandy loam (TdA)	0-3	Poorly drained (Dannemora) to very poorly drained (Tughill)	Both soil types occur in depressions. Tughill soils are frequently ponded. Dannemora soils are not frequently ponded or flooded.
Walpole sandy loam (WcA)	0-6	Poorly drained	This soil occurs in depressions and is not ponded or frequently flooded.
Walpole fine sandy loam, neutral variant (WdA)	0-3	Poorly drained	This soil occurs in depressions and is not ponded or frequently flooded.
Walpole and Au Gres loamy sands (WhA)	0-6	Poorly drained (Walpole) to somewhat poorly drained (Au Gres)	Walpole soils occur in depressions, whereas Au Gres soils occur in deltas, outwash plains and terraces. Walpole soils are hydric, whereas the Au Gres soils do not meet hydric criteria.
Westbury and Dannemora stony very fine sandy loams (WmA)	0-3	Somewhat poorly drained (Westbury) to poorly drained (Dannemora)	Westbury soils occur on drumlinoid ridges and till plains. Dannemora soils occur in depressions. Westbury soils do not meet hydric criteria.
Westbury and Dannemora very stony fine sandy loams (WmA)	0-8	Somewhat poorly drained (Westbury) to poorly drained (Dannemora)	Westbury soils occur on drumlinoid ridges and till plains. Dannemora soils occur in depressions. Westbury soils do not meet hydric criteria.

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a/ NRCS 2007

Figure 2.2-4 Hydric Soils in the Project

2.2.1.3 Groundwater

The predominant source of drinking water in Franklin County is from surface water; however, groundwater is likely the major water source in the Project Area and surrounding areas. Groundwater in Franklin County is mostly used for public and domestic water supply, but is also used for the purposes of industry and irrigation (Figure 2.2-1). Based on personal communication with Kevin Scheuer, Senior Sanitary Engineer with the New York Department of Public Health, Saranac Lake District Office, there are a total of 26 public water supply groundwater wells in the general Project Area (including the towns of Bellmont, Chateaugay, and the neighboring town of Burke), providing water to a population of approximately 3,600 people. Groundwater quality does not appear to be affected by pollution in Franklin County (New York State Department of Health 2006). A water well inventory of the Project Area is planned for early 2008; the results of this inventory will be included in the FEIS.

Two aquifers underlie portions of the Project Area, including the Glacial Delta Deposits Sand and Gravel Aquifer and the Cambrian Potsdam Sandstone Aquifer (Olcott 1995). The Glacial Delta Deposits Sand and Gravel Aquifer is a surficial aquifer system created by continental glacial advance and retreat that took place during the Wisconsinan Stage between 21,000 to 12,000 years ago. Depth to the groundwater in this aquifer is typically shallow and water yields are variable. Yields from wells completed in glacial till typically yield between 1 to a few gallons per minute. In areas where wells are set in valley-fill glacial aquifers consisting primarily of ice-contact deposits, yields typically range from 10 to 1,000 gallons per minute. The USGS reports from a well set in this aquifer in Burke that the average annual depth to groundwater is 2.7 feet. Prior to construction, a geotechnical investigation will be conducted to determine depth to groundwater in areas slated for construction. Additionally, piezometers may be used in areas to monitor the depth to groundwater as indicated through geotechnical borings.

The Cambrian Potsdam Sandstone Aquifer forms a discontinuous fringe around the northern and western borders of the Adirondack Mountains. The typical depth of this aquifer ranges from immediately below ground surface to 200 feet. Aquifers in the Cambrian sandstone of New York typically yield small quantities of water and are therefore used primarily for supplying water to households and commercial establishments that require modest quantities of water. No sole source aquifers occur in Franklin County.

2.2.2 Anticipated Impacts

2.2.2.1 Construction

Through an iterative process, the Project layout was created using information about the locations of sensitive resources in conjunction with Project constraints, as described in Section 1.0. The result is a facility layout that avoids or minimizes impact to the surrounding landscape. As part of this effort, surface waterbody and wetland presence were assessed through field reconnaissance in late 2006 and desktop evaluations of recent aerial photography, NYSDEC mapped surface water information, NWI maps, USGS topographic quadrangles, and NRCS soils information. Results of the field reconnaissance and desktop evaluations were used to identify sensitive wetland and surface water resources, associated with the proposed layout that could be affected by construction and operation of the proposed Project. Subsequent modifications to the facility layout reduced the potential to affect sensitive resources. Surface waterbodies and wetlands that occur throughout the Project Site will be thoroughly assessed in 2008 during routine on-site wetlands delineation. The results of these studies will be included in the FEIS.

Surface Waters and Wetlands

During the construction of the Project, direct and indirect impacts to wetlands and waterbodies may result from such activities as developing access roads, improving local public roads, trenching electrical collection lines, creating temporary workspaces around turbine locations, and erecting poles for aboveground transmission. Direct impacts may include excavating, grading, direct placement of fill in wetlands, and vegetation clearing associated with developing workspaces and access roads. Creating temporary workspaces would result in temporary effects to wetlands, whereas developing access roads would result in permanent effects to wetlands. Installing buried electrical collection systems would cause temporary effects to wetlands and streams by disturbing the soils during trenching and backfill. Forested wetlands crossed by the collection system would be permanently affected through conversion to non-forested wetlands by vegetation clearing activities during the operational phase of the Project. Indirect impacts may occur due to increased erosion and sedimentation resulting from soil disturbance and vegetation clearing that are necessary to install Project components. Precipitation events could indirectly affect water quality throughout the Project Area by introducing loose fines disturbed during construction into nearby surface waters.

As discussed in Section 2.2.1, the presence of wetlands and streams within the proposed Project Area was assessed during reconnaissance-level field inventories in September and November of 2006. Desktop evaluations of recent aerial photography, NYSDEC mapped surface water information, NWI maps, USGS topographic 7.5-minute quadrangles, and NRCS soils maps for Franklin County were used to augment the reconnaissance site surveys. These field inventories and desktop reviews were compared against the facility layout to identify sensitive resources that could be affected through construction and operation of the proposed Project.

Early facility layouts were surveyed in the field and in desktop review for the presence of sensitive resources. Reconnaissance level field inventories of wetlands and streams followed methods described in the New York State Freshwater Wetlands Delineation Manual (Brown et al. 1995) to identify areas that could be affected by the proposed Project. For these field inventories, wetland boundaries were based on visual inspection of vegetation and hydrology and recorded using a GPS with sub-meter accuracy. Wetlands were identified within 250 feet of the proposed turbine locations; a 40-foot-wide corridor (20 feet on either side of the centerline) for the proposed access roads; and a 30-foot buried utility corridor (15 feet on either side of centerline). Subsequent changes in the facility layout were selected to minimize impacts to wetlands and waterbodies as well as to optimize other areas of constraint.

Based on the results of the field reconnaissance inventory, 68 wetlands were identified within the Project Area. Wetland cover classes included PEM, PSS, PFO, and wetland complexes of PFO/PSS, PFO/PEM, and PSS/PEM within the Project Area. One of these wetlands was NYSDEC wetland CG-4, a Class 2 wetland. Results of the field inventory indicated that 95 percent of wetland areas were forested, most commonly with red maple (*Acer rubrum*), gray birch (*Betula populifolia*), and balsam fir (*Abies balsamea*). The NWI maps also indicated palustrine forested, broad-leaved deciduous wetlands (PFO1) are the prevalent wetland types in the Project Area. The Wetland Inventory Report (Tetra Tech 2007) provides insight about the character and occurrence of wetlands within the greater landscape of the proposed Project boundary, and is presented in Appendix D.

Potential impacts to wetlands through soil disturbance were considerably higher in early planning phases. In an early revision of the facility layout, effects to wetlands were expected to be as high as 46 acres of temporary and 16 acres of permanent impacts. The Project, as currently planned, would be expected to temporarily affect 8.81 acres and permanently affect 0.87 acre of wetlands. In addition to anticipated permanent impacts to wetlands, routine vegetation maintenance practices along the underground collection system would permanently convert PFO wetlands to other non-woody wetland cover types, representing a change to the structure and function that forested wetlands provide. These areas most often occur along the collection system. Because of the requirement to connect turbines to each other, impacts to converted PFO wetlands did not significantly change throughout the development of the layout; however, the current layout would have the least anticipated impact on this type of wetland. Table 2.2-4 illustrates how revisions to the facility layout reduced anticipated affects to wetlands by wetland cover class. The substation and overhead collection system would not affect wetlands.

Based on the current layout, construction of the proposed Project may affect 25 wetlands (some crossed more than once), as well as 31 streams (some crossed more than once). Wetlands that would be crossed by the proposed Project are listed by facility in Table 2.2-5. These effects would involve both temporary and permanent placement of fill to develop proposed Project access roads, temporary placement of fill in turbine work spaces, and temporary soil disturbance associated with the installation of the underground collection system. The USACE requires compensation for wetland disturbance that depends upon the affected coverclass, including a 2:1 compensation ratio for forested wetlands; 1.5:1 for scrub-shrub wetlands, and 1:1 for emergent wetlands.

Table 2.2-4. Reduction of Potential Impacts to Wetlands through Changes in Project Layout

NWI Cover Type by Project Facility	Temp. Soil Disturbance		Perm. Soil/Vegetation Disturbance	
	Rev. 5	**Current**	**Rev. 5**	**Current**
Access Roads				
PEM	0.26	0	0	0
PSS	0	0.09	0.15	0.15
PFO	3.75	0.45	0.72	0.72
Collection Lines				
PEM	0.07	0.84	0	0
PSS	0.04	0	0	0
PFO	2.65	1.89	0	0
Cover Class Conversion a/		0	*2.65*	*1.49*
Laydown Areas				
PFO	1.59	0	0	0
Substations				
PFO	0	0	0	0
Turbines				
PEM	0.5	0.07	0	0
PSS	2.12	0	0	0
PFO	34.86	5.47	0	0
Subtotal by Facility				
Subtotal Access Roads	4.01	0.54	0.87	0.87
Subtotal Buried Collection	2.76	2.73	0	0
Subtotal Turbines	37.48	5.54	0	0
Subtotal Laydown Area	1.59	0	0	0
Subtotal Substation	0	0	0	0
Subtotal by Cover Type				
Subtotal PEM	0.83	0.91	0	0
Subtotal PSS	2.16	0	0	0
Subtotal PFO	42.85	7.81	0.72	0.72
Total Soil Disturbance b/	**45.84**	**8.81**	**0.87**	**0.87**
Total Cover Class Conversion a/			**2.65**	**1.49**

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a/ Cover Class Conversion represents the area of forested wetlands that would be permanently converted to nonforested palustrine wetlands through routine vegetation maintenance practices (e.g., a forest canopy would not be permitted to develop).

b/ Total soil disturbance wetland impact calculations do not include cover class conversion subtotals.

Table 2.2-5. Wetlands Crossed by the Project

Facility	Wetland ID	NWI Cover Type	Temporary Soil Disturbance (ac)	Permanent Soil Disturbance (ac)	Cover Type Conversion (ac)
Access Roads	WTG-16-A/B	PFO4/PFO1	0.04	0.01	0.00
	AR-65-A/B	PFO1	0.29	0.49	0.00
	WTG-58-A/B	PSS	0.09	0.15	0.00
	WTG-112-A	PFO1	0.12	0.22	0.00
Collection Lines	IC-18-DR-A	PFO	0.13	0.00	0.13
	IC-11-DR-A	PFO	0.21	0.00	0.08
	IC-49-DR-A	PEM	0.12	0.00	0.00
	WTG-26-DR-A	PFO	0.07	0.00	0.00
	IC-27-DR-A	PFO	0.09	0.00	0.09
	IC-37-DR-A	PEM	0.37	0.00	0.00
	AR-22-DR-A	PEM	0.35	0.00	0.00
	WTG-21-A	PFO4	0.37	0.00	0.37
	WTG-50-A/B	PFO1	0.19	0.00	0.00
	AR-90-1A/B	PFO1	0.03	0.00	0.03
	IC-89-A/B	PFO1	0.05	0.00	0.05
	AR-112-A/B	PFO1	0.38	0.00	0.37
	WTG-94-5A-DR	PFO	0.25	0.00	0.26
	IC-114A-DR	PFO	0.05	0.00	0.05
	IC-79D-DR	PFO	0.07	0.00	0.06
Laydown Areas	N/A				
Substations	N/A				
Turbine	WTG-26-DR-A	PFO	1.69	0.00	0.00
	IC-27-DR-B	PFO	1.08	0.00	0.00
	WTG-21-A	PFO4	0.00	0.00	0.00
	WTG-105-A	PFO/PEM	0.12	0.00	0.00
	WTG-124-A/B	PFO1	0.69	0.00	0.00
	WTG-59-A	PEM	0.07	0.00	0.00
	IC-89-A/B	PFO1	0.73	0.00	0.00
	WTG-112-A	PFO1	0.15	0.00	0.00
	AR-103-A/B	PFO1	0.48	0.00	0.00
	IC-114A-DR	PFO	0.33	0.00	0.00
	IC-79C-DR	PFO/PEM	0.20	0.00	0.00
		Total	**8.82**	**0.88**	**1.50**

The conversion of forested wetlands to non-forested wetlands constitutes a permanent change in wetland vegetation composition under NYSDEC regulations. While this conversion from one cover class to another does not constitute a net loss of wetlands, it may alter the structure and function of these wetland habitats. Therefore, impacts to forested wetlands that are converted to either emergent or scrub-shrub wetlands are considered permanent impacts and would require mitigation at a ratio of 1:1. Acceptable compensation for the loss of functions and values associated with the permanent conversion of forested NYSDEC wetlands include restoration and enhancement. Construction of the Project would permanently convert 2.43 acres of forested wetlands to non-forested wetland cover classes.

Construction of wind turbine foundations would require the permanent conversion of lands within a 50-foot radius of the turbine site for Project facilities, and temporary disturbance within a 250-foot radius. Because Project siting avoided placement of turbines within 100 feet of wetlands and surface waters, these sensitive resources would not be subject to permanent effects. Additionally, the locations of NYSDEC regulated wetlands and wetland buffers were intentionally avoided during turbine siting, thus avoiding impacts to those sensitive resources. Construction of turbines would temporarily affect 5.54 acres of wetlands and four intermittent streams. Forested wetlands that are adjacent to wind turbines would not be converted to other wetland cover types.

Construction of access roads would require temporary disturbance of vegetation within a 100-foot-wide corridor, and permanent conversion of lands within a 54-foot-wide corridor. Construction of access roads is anticipated to permanently affect 0.87 acre of wetlands, three perennial waterbodies, and four intermittent waterbodies. Based on the current layout, temporary effects to wetlands associated with access roads are not anticipated.

The electrical collection system would occur as both underground and overhead facility components. The underground collection system would require vegetation clearing of a 75-foot-wide corridor, with an operational corridor width of 45 feet. Construction of the underground collection system would temporarily disturb 2.73 acres of wetlands. It would also cause the permanent conversion of 1.5 acres of forested wetlands to non-forested cover classes through routine vegetation maintenance. The underground collection system would cross 19 streams, of which 7 are perennial waterbodies. Wherever feasible, the underground collection system would be installed in the alignments of access roads to minimize disturbance to wetlands and waterbodies. In contrast, the overhead collection system would require vegetation clearing within a 150-foot-wide corridor that would be periodically maintained during the operational phase. Wetlands are not crossed by the overhead collection system; however, three perennial waterbodies would be spanned by the overhead lines. No impacts are expected to occur to streams crossed by the overhead collection system.

Based upon the above information, construction of the substations and switchyards, equipment laydown yards, and the O&M building would not impact wetlands or surface waters.

Groundwater

Based on the small amount of increased impervious surface area that would be created by Project development relative to the large size of the Project Area and the large distances between Project components, the Project is anticipated to have minimal impacts to regional groundwater recharge. Potential minor, localized impacts to groundwater may occur due to various construction activities necessary to the development of the Project. Turbine foundations may cause minor groundwater chemical composition alterations due to establishing concrete bases and local interruptions to natural groundwater flow patterns downgradient of turbines. Dewatering of foundation holes may also result in minor and local lowering of the water table, which could impact proximate water wells. Given the minor and highly localized character of these impacts, local water supply wells would not be adversely affected. A water supply well inventory will be conducted prior to construction and included in the FEIS to ensure that damage to such wells, most of which are expected to be in close proximity to residences and thus distant from turbines, access roads and collection lines, will be avoided during construction. The greatest potential impacts to groundwater resulting from Project disturbances may result from developing the foundations of the turbines. Each turbine would be located a minimal distance of 1,000 feet in the Town of Bellmont, and 1,200 feet in the Town of Chateaugay, away from existing residential structures, thereby minimizing the risk of impacts to private wells in the area, which are assumed to be located in proximity to the structures they serve. Development of the turbine foundations may require subsurface blasting, which could potentially fracture bedrock and affect groundwater and the water table in the immediate vicinity of the disturbance. These disturbances would be localized and groundwater is anticipated to resume its natural course of flow downgradient of the foundation. It may be necessary to pump out any accumulated groundwater in the excavation during construction. All dewatering of the excavation would be discharged into the surrounding surface and allowed to infiltrate back into the ground.

Additional construction activities would have minimal impacts to groundwater. In some areas, backfilled collection system trenches could promote the flow of shallow groundwater to follow the course of the trench. Any construction activities resulting in the fill of wetlands or the compaction of surfaces may cause minor and localized decreases to groundwater recharge. The operation of mechanical equipment may also pose a small risk of discharging pollutants, such as petroleum products due to leaks or spills, into the groundwater supply.

2.2.2.2 Operation

Surface Waters and Wetlands

The routine operation and maintenance of the Project facilities is anticipated to have no significant impacts to wetlands and waterbodies, as most of the Project impacts are attributed to the construction phase. Operational actions which may have an impact on wetlands include routine maintenance or emergency repairs to underground collection systems and other Project components, culvert maintenance, access road repairs, and/or accidental fuel spills. Unforeseen equipment failures may require the use of large equipment for repairs, in which permits for the proposed action and subsequent affects may be required. Some forested wetlands along the interconnect routes would be altered and maintained for the life of the Project through routine vegetation thinning to become scrub-shrub or emergent wetlands.

Permanent impacts to surface waters and wetlands (loss of surface water/wetland acreage) would result from the placement of fill material to construct proposed permanent access roads for long-term maintenance and operation activities. Other long-term impacts to wetlands would result from clearing activities (e.g., brush-hogging underground collection systems) in forested wetlands that would not result in a net loss of wetland acreage, but would result in the conversion of forested wetlands into wetland systems dominated by shrub and herbaceous vegetation (scrub-shrub/wet meadow/emergent).

Groundwater

The routine operation and maintenance of the Project facilities is anticipated to have no significant impacts to groundwater, as most of the Project impacts are attributed to the construction phase. As previously mentioned, minor additional impervious surface areas due to the Project are not anticipated to have any significant impacts to regional hydrology such as groundwater recharge. Shallow groundwater flow rates and patterns may exhibit inconsequential deviations from pre-construction conditions in the immediate area surrounding the foundations of turbines and meteorological towers. Shallow groundwater flow may also deviate slightly from original directional flows where groundwater encounters backfilled trenches.

2.2.3 Mitigation Measures

The Project has been designed to avoid and minimize wetland impacts to the greatest extent practicable. As the Project design is revised into completion, additional opportunities to avoid and minimize impacts to wetlands and waterbodies will be pursued and implemented. Continued correspondence with environmental regulatory agencies throughout Project development may identify additional opportunities to avoid and reduce impacts to wetlands. Potential actions to further reduce impacts to wetlands and waterbodies may include modifying the locations of Project components and using directional drilling beneath wetlands recognized to be sensitive or of high value. To mitigate for unavoidable permanent impacts to wetlands and waterbodies resulting from Project development and operations, the Applicant would pursue adequate compensatory mitigation, as discussed in Section 2.2.4, likely through the replication or restoration of comparable in-kind wetland environments a ratio of 2 to 1 (mitigation to impact) for forested wetlands, 1.5 to 1 for scrub-shrub wetland, and 1 to 1 for emergent wetlands. The final establishment of mitigation for unavoidable permanent wetland impacts would be determined through the permitting process with the NYSDEC and USACE. Wetland impact mitigation would be commensurate with the final quantification of permanent wetland impacts once that has been determined.

A key aspect of mitigation is ensuring that measures to which the Applicant agrees are implemented by its contractors. An environmental inspector would be employed by the applicant to document compliance with environmental permits and regulations. The environmental inspector would coordinate with the construction teams on a daily basis and act as a liaison between the construction personnel and agency field representatives. In this capacity, the environmental inspector will ensure that required inspection resources are present when construction activities are scheduled in all areas. The environmental inspector would ensure that all construction activities are performed in accordance with all applicable mitigation requirements, permit conditions, and environmental specifications. The environmental inspector would be familiar with all wetland permitting conditions. The environmental inspector would assess work area conditions ahead of construction, noting concerns and requirements in advance of construction activity. This inspector would have a significant role to play in suggesting methods to bring construction activity into compliance and/or to temporarily halt certain activities that may cause damage to sensitive environmental resources. The environmental inspector would submit weekly reports, which are provided to regulating agencies that document compliance with the Project's environmental permits.

Impacts to streams and wetlands would be avoided and minimized through crossing waterbodies in the fewest locations possible and giving preference to existing crossings or narrow crossings when trespass is deemed necessary. Establishing defined crossings and improvement of existing crossings would discourage equipment from entering prohibited wetland areas. Work spaces through wetlands would be reduced to the minimum necessary to complete the work where ever practicable; this may necessitate additional temporary workspaces beyond the limits of the wetland or waterbody to accommodate segregated soil stockpiles, Project equipment, etc. Impacts to water quality, aquatic organisms, and hydrology would be minimized through establishing restrictions to herbicide use, implementing sediment and erosion controls, using low impact crossing techniques, and restricting specific equipment from use in wetlands. Thinning of vegetation in wetlands would be performed at the least amount necessary for safe task completion. Best Management Practices recommended by the NYSDEC and USACE and established in the wetland permits order of conditions would be implemented where wetland and waterbody disturbance is necessary.

Mitigation measures implemented to protect wetlands and waterbodies would include establishing "No Equipment Access Areas" and "Restricted Activities Areas." All wetlands and waterbodies will be designated as No Equipment Access Areas, except where defined crossings are established or work in wetlands is deemed essential and permissible under the conditions of the wetlands permits. The designation of No Equipment Access Area would forbid the use of machinery or motorized equipment from these areas. Designated Restricted Activities Areas would limit the extent of permissible activities within an established buffer zone of 100 feet surrounding essential construction activities within wetlands and waterbodies. Restricted activities in these areas would include the following:

- No degradation of stream banks;
- No storage of construction debris within the area;
- No equipment refueling or washing within the area;
- Limited use and strict adherence to manufacturer's instructions for the application of herbicides;
- No storage of any chemical substances, combustible fuels, or petroleum products within the area; and
- No deposition of slash within or adjacent to a wetland or waterbody.

Where access to wetlands is necessary, construction activities would use methods of least potential impact where possible, such as identifying and using higher ground and edges, crossing wetlands at the narrowest crossing point, and using timber mats. Culverts would be installed where permanent stream crossings are developed. Culverts would be designed to maintain the natural flow of water on both the upgradient and downgradient side of the stream. The Applicant would comply with any stream crossing restrictions imposed under permit conditions, such as possible seasonal restrictions and/or alternative stream crossing techniques.

The Project does not anticipate any adverse impacts to wetlands attributed to modified stormwater drainage, as the proposed increase of impervious area is minimal. However, potential stormwater related impacts to wetlands would be addressed and mitigated for in the SWPPP. The SWPPP would include provisions to identify the need for measures such as temporary sediment retention basins, water bars, culverts, and/or trenches to manage drainage problems. Sediment and erosion control devices could include the use of silt fencing, hay bales, and siltation basins, among others. At a minimum, erosion controls would be necessary in areas where slopes measured 15 percent or greater or other highly erodible areas; within 100 feet of a wetland; or within 100 feet of a waterbody. In some areas, the application of mulch or erosion control fabric could be used to reduce runoff potential of exposed soils. These control devices would be inspected and maintained throughout the duration of construction until surrounding substrates are permanently stabilized. As construction progresses, additional erosion and sedimentation controls may be necessary beyond those foreseen at the onset of construction. The addition of erosion and sedimentation controls would be implemented at the discretion of environmental inspectors. As soon as possible, or within 14 days, the areas would be reseeded with regionally appropriate seed mixes in consultation with the local NRCS office. If reseeding is impractical due to time of year, application of mulch may be an acceptable temporary mitigation until reseeding can occur. Temporary erosion controls would not be removed until permanent erosion controls are in place. Copies of all applicable local, state, and federal wetland permits, site specific mitigation measures, construction methodologies, the SWPPP, the SPCC Plan, and any additional wetlands and waterbodies protection measures would be provided to the construction contractors to ensure compliance with these regulations and standards. In the event that an unforeseen drainage problem arises during construction, the environmental inspector would consult with appropriate agency representatives and responsible parties to take prompt and reasonable corrective actions. Fugitive dust would be controlled through application of water or other approved dust-suppression substances along public roads as well as Project access roads as needed throughout the duration of construction activities. The environmental inspector or other appropriate inspectors would be responsible for identifying the need for dust controls.

Potential impacts to wetlands from the possible release of hazardous substances would be addressed and mitigated for in the SPCC Plan. The SPCC Plan outlines mandatory BMPs that the Project would include to prevent and minimize potential impacts to wetlands in the event of an accidental hazardous substance spill. This plan designates Project personnel who are required to be notified in the event of a spill and provides contact information. The only petroleum products, hazardous, or controlled substances anticipated for use on-site during Project construction and operation will be small quantities of equipment oils and lubricants. Gasoline, diesel fuel, and fertilizer will not be stored in construction work areas.

As previously stated, impacts to groundwater are not anticipated. In the event that blasting is necessary, a blasting plan would be prepared and submitted to the Town(s) that would be designed and implemented to keep the impacts localized and fracture the least amount of bedrock necessary to perform the construction. A groundwater well survey will be conducted prior to the FEIS to determine the location and proximity of any known wells to any blasting site. No blasting shall occur without submission of a blasting plan, and receipt of written approval from the Town, or its designated engineer.

Wetland Compensation Plan

A Wetland Compensation Plan is under development to ensure ‘no net loss’ of wetland functions that could result from Project activities. ‘No net loss’ of wetland functions is achieved through the creation and restoration of self-sustaining, contiguous wetland systems capable of replacing wetland functions and values that would be affected by the construction of the Project. The Wetland Compensation Plan will be provided in the FEIS and will be developed through consultation with USACE and NYSDEC. This plan will identify suitable mitigation sites, provide engineering plans, and address the following six key features:

- Selection of Mitigation Sites: Criteria used to screen potential sites included: parcel size (with a preference for areas large enough to accommodate Project mitigation requirements); parcels where property owners were amendable to their use for mitigation; parcels containing sufficient upland areas adjacent to existing wetlands or surface water bodies; and locations that demonstrated potential for creation or restoration.
- Mitigation Types: Create forested wetlands from uplands, restore disturbed forested wetlands and enhance existing scrub shrub and emergent wetlands through the planting of tree species.
- Groundwater Data: To determine depth and seasonality (timing and duration) of groundwater fluctuations at the proposed mitigation areas, piezometers would be installed. Groundwater elevations would be monitored at least once a week during periods of high water (April/May) or drawdown (July/August) and biweekly throughout the rest of the growing season.
- Micro Environments: Micro-environments such as upland hummocks and depressional ponded areas should be incorporated into the mitigation design.
- Stream Impacts: The use of environmentally friendly culvert types (i.e., bottomless or oversized culverts with a gravel base) is preferred to minimize stream impacts. The use of these culvert types along currently affected surface waterbodies (i.e., inadequately sized culverts or areas where surface water flows over existing seasonal or year round dirt access roads) may be credited toward mitigation.
- Temporary Impacts: Wetland areas and riparian zones temporarily impacted during the construction of the wind farm will be restored to pre-construction contours and revegetated with native (non-invasive) plant material or seeds immediately following the completion of regulated activities at each site.

Post-Construction Monitoring Plan

A comprehensive Post-Construction Monitoring Plan will be developed prior to construction to be implemented during the restoration phase to ensure proper reestablishment of vegetation in areas slated to return to their original or restored conditions. This will include the employment of an environmental inspector to periodically field-verify the progress of the restoration and determine if additional restorative work is required.

2.3 Biological, Terrestrial, and Aquatic Ecology

The following section describes ecological resources within the Project Area, including vegetation, ecological communities, wildlife, and listed threatened and endangered species.

2.3.1 Existing Conditions

2.3.1.1 Vegetation and Ecological Communities

Tetra Tech used National Land Cover Data (NLCD) information compiled by the United States Geological Survey (USGS) to determine the land cover in the Project Area. The Project Area and adjacent parcels loosely encompass 7,000 acres of mostly forested and agricultural lands, as shown in Table 2.3-1. Slightly more than half (54 percent) of the Project Area is characterized as upland forest. Upland forested lands found within the Project Area consist of deciduous, evergreen, and mixed forests. Upland forest communities, as described by Edinger et al. (2002), include hemlock-northern hardwoods, pine-northern hardwoods, and successional northern hardwood forests. Large forested tracts in excess of 100 acres are not uncommon within the Project Area; however, these tracts are often bisected by agricultural lands or other developed areas, as shown in Figure 2.3-1. Agricultural lands, present in the form of pasture, hayfields, and croplands, are also abundant in the Project Area (27 percent). Approximately 7 percent of lands within the Project Area are old field (grasslands/herbaceous; 5 percent), or abandoned pastures with shrubby growth (shrub/scrub; 2 percent). The remaining lands within the Project Area include wetland habitats (forested and non-forested; 9 percent) and other land covers (developed lands and open water; 3 percent). Figure 2.3-1 depicts land cover classes in the Project Area. As recommended by the USFWS in its letter dated September 13, 2007, mapping of important ecological communities, based on information from Edinger et al. (2002) and any other types identified by local or state agencies, will be conducted concurrent with the routine, on-site wetland boundary determination in 2008.

Table 2.3-1. Land Cover Classes found within the Project Area

Land Cover Class	Acres	Percent Cover (%)
Cultivated Crops	476	7
Pasture/Hay	1422	20
Grasslands/Herbaceous	340	5
Shrub/Scrub	118	2
Upland Forest Types		
Deciduous Forest	2,244	32
Evergreen Forest	1,077	15
Mixed Forest	466	7
Forested Wetlands	626	9
Non-forested Wetlands	12	0
Other	207	3
Total	**6,988**	

Source: NLCD 2001

Figure 2.3-1 Vegetative Covertypes Within the Project Area

2.3.1.2 Significant Ecological Communities and Rare Plant Species

Written replies to requests for information regarding listed threatened and endangered species were received from the USFWS and the New York Natural Heritage Program (NHP) on September 25 and September 4, 2006, respectively. According to these responses, no state-listed threatened or endangered plant species have been documented to occur within the Project Area (see Appendix A for Agency Correspondence). Subsequently, no rare plant species or significant ecological communities were observed during reconnaissance-level wetland inventories performed by Tetra Tech in the fall of 2006. Although the Project is located outside of the Adirondack Park, the southern portion of the Project Site abuts the northern boundary of the park. The Adirondack Park is a 6-million-acre tract of forested conservation land under both public and private ownership.

2.3.1.3 Wildlife and Terrestrial Habitat

Wildlife species and wildlife habitat within the Project Area were identified based on existing data sources such as the New York State Breeding Bird Atlas (BBA) and the New York State Reptile and Amphibian Atlas. This information was supplemented through correspondence with the NHP, the USFWS, and through observations made during reconnaissance-level wetland inventories performed by Tetra Tech during the fall of 2006. Additionally, Western EcoSystems Technology, Inc. (WEST) conducted site-specific surveys for bat and bird populations during spring, summer, and fall seasons in 2007.

Birds

To identify birds that could be affected by the Project, avian surveys and desktop studies targeted breeding birds, migratory raptors, nocturnal migratory birds, and special status species. Survey information presented in this section summarizes the studies conducted by WEST; more detailed information, as well as an assessment of the potential risk to these resources, is provided in Appendix E.

<u>Breeding Bird Survey</u>

As part of the desktop study of the Project, Tetra Tech reviewed data from the New York State BBA study. Survey blocks 5697C, 5697D, 5696A, and 5696B, which occur within and immediately surrounding the Project Area, were queried for potential breeding bird species. According to this query, 101 species of birds were observed within the survey blocks; however, only 26 species exhibited behaviors that confirmed breeding activity. Many of these species are protected by the Migratory Bird Treaty Act (MBTA) of 1918, which prohibits the taking, killing, possession, transportation, and importation of the migratory birds, their eggs, parts and nests, with few exceptions. Special status species are discussed in Section 2.3.1.4 of this DEIS.

A breeding bird survey of the Project Area was conducted by WEST during June/early July 2007 based on the regional timing recommended by USGS. The objective of the breeding bird survey was to estimate the spatial and temporal use of the Project Area by breeding resident birds.

A total of 1,466 birds of 82 species were recorded during three surveys (see Appendix E). European starling (*Sturnus vulgaris*), American crow (*Corvus brachyrhynchos*), and red-winged blackbird (*Agelaius phoeniceus*) were the most common passerines observed. The diversity of species observed is indicative of the mosaic of habitat types in the Project Area. Three species of conservation concern, wood thrush (*Mycteria Americana*), chestnut-sided warbler (*Dendroica pensylvanica*), and bay-breasted warbler (*D.* castanea), were recorded in the study area; more information about these species is presented in Section 2.3.1.5

Migratory Raptors

Insight about migratory raptor presence in northern New York is gained through review of published information from the Hawk Migration Association of North America, which monitors 13 sites in New York. During spring migration, raptor movement is concentrated along shorelines of the Great Lakes as raptors avoid crossing large bodies of water. In fall, raptor migration occurs primarily along ridgelines of central and eastern New York. Though there are no hawk watch sites in Franklin County, two established sites are located along the St. Lawrence River in Quebec, approximately 20 to 30 miles north of the Project Area. Eagle Crossing Hawk Watch (spring migration) and Montreal West Island (fall migration) report modest raptor numbers each year, as raptors are diffusely concentrated along the St. Lawrence corridor.

Migratory raptor surveys were conducted by WEST at four survey points in the Project Area during spring and fall 2007. The objective of the migratory raptor surveys was to estimate spatial and temporal use of the site by raptors and other diurnal migrants during spring and fall migration seasons. Appropriate sampling periods for maximizing observations were determined by consulting existing data from nearby raptor migration watch sites in New York and Canada. In spring, each point was surveyed 8 times, for a total of 32 surveys conducted between April 4 to May 28, 2007. A total of 112 individual raptors of 10 species were observed. On average, migratory passage rate in spring was three raptors per surveyor hour. On the same survey days, Eagle Crossing Hawk Watch reported an average passage rate of 6 raptors per surveyor hour, while spring hawk watch sites in New York reported an average of 44 to 50 raptors per surveyor hour. During fall migration, each survey point was sampled 7 times (28 surveys) from September 12 through October 26, 2007. Fifty-nine individual raptors of seven species were observed; the most common species were turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), and northern harrier (*Circus cyaneus*). Passage rates in fall at the Project Area were lower (two raptors per surveyor hour) than reported for the same sample days at Montreal West Island Hawk Watch (five raptors per surveyor hour) or New York fall migration hawk watch sites (9 to 18 raptors per surveyor hour).

Typical northern New York raptors were observed during spring and fall migrant raptor surveys, including turkey vulture, red-tailed hawk, northern harrier, and American kestrel. Several species of special concern were observed during the surveys and are discussed in

Section 2.3.1.4. Exposure indices for species were calculated to determine potential collision risk based on use and flight height information gathered during surveys. Fewer than half of the individual raptors flew within the approximate zone of risk (defined as 25 to 125 meters). Detailed information about these studies is found in Appendix E.

In conjunction with migrant raptor surveys, other diurnal migrants were observed in the Project Area in abundance in both spring and fall, including Canada goose, American crow, and ring-billed gull. These species were observed in large flocks over the Project Area, which is typical for this region. Each of these species is abundant and widely distributed (Mowbray et al. 2002; Ryder 1993; Verbeek and Caffrey 2002).

Nocturnal Migrants

Publicly available nocturnal radar surveys were used to characterize avian migration over the Project Area. In 2005, two extensive nocturnal radar studies were conducted by Woodlot Alternatives (2006a, 2006b) and Mabee et al. (2006) for the Marble River Wind Farm and the Noble Clinton Windpark; each is located less than 10 miles east of the Jericho Rise Wind Farm and data for these studies are publicly available. In addition to these surveys, 16 regional studies of nocturnal avian migration (11 New York sites, 2 Vermont sites, 2 Pennsylvania sites, and one site in West Virginia) were compared with the results of the Marble River Wind Farm and Noble Clinton Windpark. Given the amount of existing local and regional information about the Project Area, a field-based radar study for nocturnal migrants was not required for this Project, as agreed to by the NYSDEC (Appendix A). WEST evaluated existing X-band marine radar data of these local and regional studies using methods recommended by NYSDEC to determine the potential relative magnitude and characteristics of nocturnal migration over the Project Area (see Appendix E).

In general, results from Marble River Wind Farm and Noble Clinton Windpark were largely similar to other sites studied in the eastern United States. Overall passage rates were lower at the nearby Noble Clinton Windpark (110 targets per kilometer per hour (t/km/hr), spring; 197 t/km/hr, fall) and Marble River Wind Farm (254 t/km/hr, spring; 152 t/km/hr, fall) sites than other radar sites studied in New York. Mean spring flight direction recorded at Noble Clinton Windpark and Marble River Wind Farm, 30° and 40° respectively, and mean fall flight direction, 162° and 193° respectively, were similar to other studies which documented a northeasterly heading for spring migrants and southwesterly heading for fall migrants. Mean flight height of targets at the Noble Clinton Windpark site (338 meters, spring; 333 meters, fall) was lower than Marble River Wind Farm (422 meters, spring; 438 meters, fall) in both seasons and both sites reported similar or lower flight heights than other recent studies in the United States. The percent of targets which flew below the zone of risk, defined as below 125 meters, was higher at the Marble River Wind Farm and Noble Clinton Windpark sites than in other studies where flight height was recorded with vertical mode radar.

Mammals

Previous correspondence with NYSDEC indicated that there is a bat hibernaculum located in the township of Bellmont. Personal communication with NYSDEC bat specialist Al Hicks indicated that this hibernaculum is not known to host Indiana bats, nor are Indiana bats believed to be in the Project Area. The closest hibernaculum used by Indiana bats is in the township of Mineville in Essex County. This hibernaculum is approximately 50 miles southeast of the Project Site. A letter dated September 25, 2006 from the USFWS indicates that Indiana bat presence is unlikely due to geographic location and elevation compared to the current understanding of Indiana bat roosting habitat in New York State.

A query of the New York NHP database for Rare Species and Ecological Communities identified one species and three ecological communities near the Project Area. *Myotis leibii*, commonly known as the eastern small-footed myotis, has been documented in the area of Ausable in Clinton County. Additionally, two bat colonies (species unknown) are known to exist within 40 miles of the Project Area, one in Bellmont and one in Ausable.

WEST conducted surveys during summer and fall 2007 to assess the use of the Project Area by migratory and resident breeding bats. The results of these surveys are summarized below. Results of the migratory and resident bat surveys are provided in Appendix E.

Migratory Bats

Migratory bats traveling through the Project Area were sampled using acoustic recording and marine radar. The objective of acoustic surveys was to record the relative abundance of echo-locating bats flying through the Project Area during the fall migration season. Information on passage rates, flight direction, and flight altitude of nocturnal targets was gathered by a single radar unit operating at the site during the month of August, a period historically associated with elevated collision risk to migratory bats.

Bat activity at the site was acoustically recorded during the fall migration season (August 1 through October 15) using six AnaBat II ultrasonic bat detectors at three survey stations along forested edges within the Project Area. At each sampling station, two AnaBat units were deployed at different levels (ground and canopy) for passive sampling from 1900 to 0700 hours nightly. The total number of calls (ranging from 212 calls to 3628 calls) and number of calls/night (ranging from 3.5 calls/night to 134.4 calls/night) were highly varied by sampling location. Analysis of bat calls was conducted using Analook software (DOS version). Calls were categorized as high frequency if greater than 35 kilohertz (kHz) or low frequency if less than 35 kHz. Identification of bat vocalizations to species was aided by characteristics such as slope, frequency, minimum frequency, consistency of minimum frequency, and shape of the pulse. Many calls could not be identified to species, either because the call did not contain enough pulses or the call characteristics overlapped more than two species. High frequency calls similar to those of *Myotis* species were further examined to determine if any calls were characteristic of small-footed bat (*Myotis leibii*). A few calls with characteristics similar to those of small–footed bat were detected at the passive monitoring stations; however, low numbers of pulses and infrequency of calls often precluded a conclusive determination about the presence of this species.

Radar sampling was conducted during August 2007, which targeted migratory bats. A single mobile Furuno FR1510-MKIII radar lab was deployed at a fixed sampling location within the Project Area. Analyses were conducted on data in both horizontal and vertical modes. Passage rates in the Project Area are very low (on average, 11 t/km/hr in horizontal mode and 59 t/km/hr in vertical mode), particularly when compared to passage rates collected during avian fall migration. These passage rates suggested that large concentrations of bat migrants were absent during the sampling period. Passage rate varied greatly by night, with the greatest nightly passage rates in both horizontal and vertical modes occurring on a few nights in August (August 16, 26, and 30). At its peak on these nights, passage rate was 25 t/km/hr in horizontal mode and 160 t/km/hr in vertical mode (August 26). Mean target flight height (323 meters) was similar or slightly lower to that recorded by avian radar surveys; however, higher proportions of targets (31 percent) had flight altitudes less than 125 meters (the zone of risk posed by turbines) and a similar percentage of targets occurred between 100 and 200 meters. Potential increased risk to targets also occurred on four nights during the sampling period when more than half of the targets were recorded flying within rotor-swept heights. These four nights also had very low passage rates. Passage rates on August 22 and 23 were the two lowest recorded (20 t/km/hr in vertical mode); these dates also coincided with the lowest average nightly flight altitudes recorded (approximately 150 to 180 meters).

Resident Bats

To determine resident species composition and the potential presence of special status species within the Project Area, AnaBat sampling and mist net surveys were conducted during the summer breeding season. A mobile AnaBat unit was deployed on nine nights (three sampling periods of three consecutive nights each) in habitats likely to have high numbers of bats (e.g., forest edges and riparian areas) to collect bat calls of resident/breeding bat species. Concurrent with acoustic bat surveys, mist net sampling was conducted to determine presence of resident bat species within the Project Area. Ground surveys of the Project Area were also conducted to map caves, mines, karst habitat, or other potential bat colony sites. Though several wetland wooded areas exist within the Project Area as potential roosting habitat, no potential hibernacula were located within the Project Area.

Summer sampling with the mobile AnaBat unit recorded 589 bat calls. Species encountered frequently during mobile surveys include eastern red bat, little brown bat, and big brown bat. Other species, hoary bat and eastern pipistrelle, were recorded to a lesser extent. A few calls with characteristics similar to silver-haired bat were recorded, though calls of this species are very similar to big brown bat and are, therefore, difficult to confirm. No calls with characteristics typical of Indiana bat, northern myotis, and small-footed bat were recorded during mobile AnaBat surveys.

Mist-net capture surveys occurred on 10 nights from July 10 to 30, 2007. Up to four net locations with single net or multiple net set (up to four stacked nets) were established during each sample night. Little brown bat (76 percent) and eastern red bat (21 percent) comprised the majority of the total captures (n=121). One eastern pipistrelle was captured on July 12, 2007 and two hoary bats were captured on July 15, 2007. No listed species were captured during mist-netting.

Other Mammals

No formal surveys for mammal presence were conducted for the study area; however, inferences can be made about common wildlife species that are likely to occur based on the predominant vegetative cover and land use. Additionally, species likely to occur in the largely agricultural and fragmented forest habitats that typify the Project Area are those that tolerate or benefit from an association with human presence. These species include whitetail deer, black bear, eastern cottontail, eastern chipmunk, woodchuck, gray squirrel, red squirrel, raccoon, red fox, muskrat, skunk, opossum, coyote, and a variety of mice, voles and shrews. Each of these species is common and widely distributed throughout New York State.

Reptiles and Amphibians

The potential occurrence of reptile and amphibian species within the Project Area was assessed through review of the New York State Amphibian and Reptile Atlas (NYSDEC 2007a). Data for the Atlas was collected over a period of 10 years (1990 through 1999) and organized according to USGS 7.5-minute quadrangles. Based on the Atlas data, assessment of suitable habitat in the vicinity of the Project Area, and reptile and amphibian distribution ranges and habitat requirements, it is estimated that over 22 species could occur within the area (Table 2.3-2).

Fish

Waterbodies within the Project Area support both warm water and cold water freshwater fish populations, some of which are stocked. Of the 33 waterbody crossings described in Section 2.2.1.1, 19 streams are likely to support trout fisheries (as denoted by the NYSDEC Classification of (T)), while the remaining waterbodies are likely to support cool water or warm water fisheries. Waters within the Project Area are not considered suitable for trout spawning (6 NYCRR Part 910). Based on the available surface water resources, fish species such as sunfish, smallmouth bass, largemouth bass, creek chub, brook trout, brown trout, shiners, and dace are likely to occur within the Project Area. A number of state-classified trout streams occur within the Project Area consisting of headwaters and tributaries to Alder Brook, Allen Brook, Little Trout River, and Chateaugay River. These trout streams support a cold water fish community. Ponds within the Project Area likely support a warm water fish community. Information from the NYSDEC (2006) indicates that the Chateaugay River in the area of

Chateaugay and Bellmont is stocked with brown trout, rainbow trout, and brook trout. Alder Brook and Little Trout River are stocked with brown trout.

Table 2.3-2. Reptiles and Amphibians that Potentially Occur in the Project Area

Common Name	Scientific Name
Alleghany dusky salamander	*Desmognathus ochrophaeus*
blue-spotted salamander a/	*Ambystoma laterale*
Bullfrog	*Rana catesbeiana*
common garter snake	*Thamnophis sirtalis*
common snapping turtle	*Chelydra serpentine*
eastern American toad	*Bufo americanus*
eastern ribbon snake	*Thamnophis sauritis*
gray treefrog	*Hyla versicolor*
green frog	*Rana clamitans melanota*
mink frog	*Rana septentrionalis*
northern brown snake	*Storeria dekayi*
northern dusky salamander	*Desmognathus fuscus*
northern leopard frog	*Rana pipiens*
northern red-backed salamander	*Plethodon cinereus*
northern redbelly snake	*Storeria occipitomaculata*
northern slimy salamander	*Plethodon glutinosus*
northern spring peeper	*Pseudacris crucifer*
northern two-lined salamander	*Eurycea bislineata*
painted turtle	*Chrysemys picta*
red-spotted newt	*Notophthalmus viridescens*
spotted salamander	*Ambystoma maculatum*
wood frog	*Rana sylvatica*

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a/ State-listed Species of Special Concern
Source: New York State Amphibian and Reptile Atlas (NYSDEC 2007a)

Wildlife Habitats

As described in Section 2.3.1.1, the Project Area supports a variety of ecological community types. The value of these communities to wildlife species is summarized below.

Agricultural Land and Successional Old Field Habitats: The dominance of graminoid vegetation in these habitats provides suitable nesting and foraging habitat for grassland species of birds, such as eastern meadowlark, bobolink, red-winged blackbird, savannah sparrow, and American kestrel. Open expanses of dense tall grasses and herbaceous plants provide food and cover for birds, small mammals, whitetail deer, woodchuck, and eastern cottontail. Raptors and mammalian predators, such as eastern coyote and red fox, use open fields to hunt for prey. Crops that are farmed in monotypic plots provide less suitable habitat for native birds and mammals because they consist of same-aged, non-native vegetation with reduced cover, nesting and foraging value. Frequent disturbance from plowing, seeding, and harvesting further reduces the suitability of this community type to wildlife. Despite the limited benefits of agricultural lands, black bear may forage on maturing crops (NYSDEC 2007b).

Forested Habitats: Dense tracts of evergreen and deciduous forested lands may provide suitable habitat for interior forest species, such as eastern wood pewee, red-eyed vireo, ruffed grouse, hermit thrush, and tufted titmouse. Mammals found within forested areas include eastern chipmunk, gray squirrel, and whitetail deer. From a regional context, large contiguous tracts of forested lands may provide dispersal corridors for long ranging large mammal species, such as black bear, moose, and fisher. Large tracts of forested lands associated with Adirondack Park are located adjacent to the Project along the southern boundary. Although black bear typically occur within large forested tracts, they are known to use open fields and forest fragments that are found within the Project Area (NYSDEC 2007b).

Forested Wetlands: Red maple-hardwood swamps are common within the Project Area, and may provide habitat for waterfowl, beaver, river otter, and mink. These swamps may also provide breeding habitats for wetland-obligate reptiles and amphibians, such as American toad, wood frog, and spotted salamander. Overwintering deer prefer to browse on hemlock and maples (Latham et al. 2005), which are common to forested wetlands in the Project Area. Forested wetlands are important for black bear that feed on succulent vegetation during spring (NYSDEC 2007).

Shallow Emergent Marsh, Vernal Pool, and Open Water Habitats: Aquatic habitats support a variety of frogs, turtles, fish, birds, mammals, and aquatic invertebrates. Emergent vegetation provides habitat for secretive species of marsh birds, such as rails, American bittern, common yellowthroat, and American woodcock. Many insectivorous birds and bats prefer to forage for insects in proximity to aquatic habitats. Vernal pools are often found in upland forest habitats, but may also occur within other palustrine or terrestrial communities. Many salamanders and frogs are obligate breeders in vernal pools and ponds with organic leaf litter substrates. Additional species expected to use wetlands for habitat include raccoon, muskrat, beaver, mink, painted turtles, great blue herons, and wood ducks.

2.3.1.4 Threatened and Endangered Species

An assessment of federal and/or state-listed wildlife species that potentially occur within or near the Project Area was performed through correspondence with the USFWS and the NHP, observations documented during on-site wetland inventories, and the extrapolation of existing data from the New York Amphibian and Reptile Atlas and the New York BBA. This information is supported by results of avian and bat studies conducted by WEST in 2007, as well as observations made during formal wetland delineations.

As a result of these assessments, 16 New York special status species potentially occur near the Project Area; no federal listed species were identified within or near the Project Area. Two state endangered and four state threatened bird species were identified during this assessment; the remaining species were state species of special concern, as listed in Table 2.3-3. Seven species listed in Table 2.3-3 were documented within the Project Area during breeding bird or migratory raptor surveys conducted by WEST in 2007.

Table 2.3-3. New York State Special Status Wildlife Likely to Occur in the Project Area

Species	NYS Status	Ecology Comments a/
golden eagle *Aquila chrysaetos*	Endangered	Rare in the eastern United States. Breeds in eastern Canada. Prefers open country, prairies, and coniferous forest in hilly or mountainous regions. Nests on cliff ledges and in trees. Little suitable habitat present; rare transient individuals may occur in the Project Site. One golden eagle was observed during fall migration surveys.
peregrine falcon *Falco peregrinus*	Endangered	Breeds in Adirondack Mountains, Hudson River, and NYC. Nests on cliffs and tall buildings. Little suitable habitat present; rare transient individuals may occur in the Project Site. One peregrine falcon was observed during spring migration surveys.
bald eagle *Haliaeetus leucocephalus*	Threatened	Typical breeding habitat includes rivers, lakes, or other bodies of water where prey, including fish, waterfowl, and seabirds are plentiful. Preferentially roosts in conifers or other sheltered sites in winter; typically selects the larger, more accessible trees. Little suitable habitat present; rare transient individuals are expected to occur in the Project Site. One bald eagle was observed during spring migration surveys.
least bittern *Ixobrychus exilis*	Threatened	Breeds in tall emergent vegetation in marshes with scattered bushes or other woody growth. Feeds on small fishes, amphibians, and invertebrates. Few emergent wetlands are present in the Project Site. Although rare transient individuals may occur in the Project Site, this species was not observed during WEST's surveys.
northern harrier *Circus cyaneus*	Threatened	Marshes, meadows, grasslands, and cultivated fields. Perches on ground or on stumps or posts. Nests on the ground, commonly near low shrubs, in tall weeds or reeds, sometimes in bog; or on top of low bush above water, or on knoll of dry ground, or on higher shrubby ground near water, or on dry marsh vegetation. Forages on small birds and small mammals from grassy fields. Habitat for this species is prevalent in the Project Site; both migrant and breeding residents are expected to occur in the Project Site. Northern harriers were observed during spring (15 birds) and fall (8 birds) migration surveys. One harrier was observed during breeding bird surveys.
upland sandpiper Bartramia *longicauda*	Threatened	Preferred habitat includes large areas of short grass for feeding and courtship with interspersed or adjacent taller grasses for nesting and brood cover. Feeds on insects. Little suitable habitat present. Although rare transient individuals may occur in the Project Site, this species was not observed during WEST's surveys.
American bittern *Botaurus lentiginosus*	Special Concern	Breeds in large freshwater marshes where cattails, sedges, or bulrushes are plentiful, with access to open water and aquatic beds. Feeds on fishes, crayfishes, amphibians. Little suitable habitat present. Although rare transient individuals may occur in the Project Site, this species was not observed during WEST's surveys.
blue-spotted salamander *Ambystoma laterale*	Special Concern	Generally associated with lowland swamps and marshes and surrounding uplands with sandy or loamy soils in overgrown pastures. Feeds on aquatic and terrestrial invertebrates. Forested wetland habitats are present in the Project Site; this species may occur in the Project Site.
common loon *Gavia immer*	Special Concern	Breeds in lakes containing both shallow and deep water areas; nest sites often occur in marshy portions of shallow lakes. Feeds on fishes, amphibians, invertebrates. Lakes are not present in the Project Site; this species is not expected to occur in the Project Site. This species was not observed during WEST's surveys.

Table 2.3-3. New York State Special Status Wildlife Likely to Occur in the Project Area

Species	NYS Status	Ecology Comments a/
Cooper's hawk *Accipiter cooperii*	Special Concern	Forest raptor that specializes in eating birds. Breeds in deciduous, mixed, and coniferous forests of eastern United States. Becoming more common in urban areas. Large concentrations can be seen during migration. Suitable habitat occurs in the Project Site; this species may occur in the Project Site. Three Cooper's hawks were observed during fall migration surveys.
eastern small-footed myotis *Myotis leibii*	Special Concern	Hilly or mountainous areas; deciduous or evergreen forest; open farmland. May prefer heavy hemlock forests in the foothills of mountains that rise to 2,000 feet (600 meters). Warm-season roosts include hollow trees, spaces beneath the loose bark of trees, cliff crevices, buildings, bridges, and towers. Forages over ponds and streams. Marginal summer roosting habitats occur in the Project Site. Riparian corridors that may be used for feeding occur in the Project Site. This species may occur in the Project Site. This species was not observed during WEST's mist-net surveys.
grasshopper sparrow *Ammodramus savannarum*	Special Concern	Preferred breeding habitat is grasslands of intermediate height; occasionally inhabits cropland, such as corn and oats, but at much lower densities than in grasslands. Eats insects, other small invertebrates, grain, seeds. Habitat for this species occurs in the Project Site. This species may occur in the Project Site; however, it was not observed during WEST's avian surveys.
horned lark *Eremophila alpestris*	Special Concern	Grassland, areas with scattered low shrubs, grazed pastures, stubble fields, open cultivated areas, and rarely open areas in forest. Nests in hollow on ground often next to grass tuft or clod of earth or manure. Eats seeds. Habitat for this species occurs in the Project Site. This species may occur in the Project Site; however, it was not observed during WEST's avian surveys.
osprey *Pandion haliaetus*	Special Concern	Primarily along rivers, lakes, reservoirs, and seacoasts, occurring widely in migration, often crossing land between bodies of water. Nests in dead snags, living trees, cliffs, utility poles; usually near or above water. Nests often used in successive years. Eats almost exclusively fishes. Little suitable habitat present; rare transient individuals are expected to occur in the Project Site. Two osprey were observed during spring migration surveys.
sharp-shinned hawk *Accipiter striatus*	Special Concern	Woodland raptor typically found in deciduous or mixed woodlands. Common breeder in forests throughout New York. Suitable habitat occurs in the Project Site; this species may occur in the Project Site. Four sharp-shinned hawks were observed during spring migration surveys.
vesper sparrow *Pooecetes gramineus*	Special Concern	Prairie, dry shrublands, weedy pastures, fields, and woodland clearings. Feeds on seeds and insects from or near the ground. Nests on ground in small depression. Habitat for this species occurs in the Project Site. This species may occur in the Project Site; however, it was not observed during WEST's avian surveys.

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a/ Ecology comments from NatureServe Explorer, 2007.

According to the New York BBA, two state-listed threatened species (northern harrier and bald eagle), and five state-listed species of special concern (American bittern, grasshopper sparrow, horned lark, osprey, and vesper sparrow), are documented in the BBA blocks that overlap with the Project boundaries. In addition to data from the BBA, correspondence with NHP identified the occurrence of three state-listed threatened bird species (upland sandpiper, northern harrier, and least bittern), and one state-listed special concern bird species (common loon) within proximity to the Project Area. The NHP reports rare avian occurrences within a 10-mile radius of the Project boundaries. According to the USFWS response letter dated September 25, 2006, bald eagles are known to nest within a 20-mile radius outside of the Project boundary. Although bald eagles were removed from protection by the Endangered Species Act of 1973, they are protected by the Bald and Golden Eagle Protection Act of 1940, the MBTA, and by the state of New York where they are designated as state-threatened.

WEST conducted sensitive species surveys to determine the presence/absence and spatial distribution of state and federal listed avian species in the Project Area. Sensitive species surveys were conducted in appropriate nesting habitat on six days in 2007 between June 9 and June 14, five days between June 27 and July 1, and five days between July 9 and 13. A total of 50 hours were spent during June and 20 hours during July covering roads in the Project Area in an attempt to document presence/absence of sensitive species. Three northern harriers were located in the Project Area during the presence/absence surveys. No upland sandpipers or short-eared owls, species which may be present but difficult to detect, were documented in the Project Area during the surveys. No other avian species of concern were observed during the surveys, though several species were recorded during other surveys at different times during the year. One northern harrier was observed during breeding bird surveys and 23 were documented during migratory raptor surveys. Two additional northern harriers were observed incidentally by biologists while working in the area in early fall. Several other listed species were also recorded during migratory raptor surveys, including one bald eagle, one golden eagle, one peregrine falcon, one osprey, three Cooper's hawks, and four sharp-shinned hawks. These species are likely migrants passing through the Project Area and not breeding residents.

According to the New York Amphibian and Reptile Atlas (NYSDEC 2007), one state-listed species of special concern (blue-spotted salamander), is known to occur near the Project Area. Blue-spotted salamanders require forested upland habitat with dense organic leaf litter, roots, and woody debris for winter hibernacula in proximity to seasonal vernal pools with a leaf litter substrate as obligate breeding habitat. Individual vernal pools are typically small (<0.5 acre), are surrounded by upland forest with trees that overhang the pool, providing a continuous leaf litter substrate, and are generally sparsely vegetated and fishless. Vernal pools are recognized by the presence of obligate vernal pool species, such as fairy shrimp, fingernail clams, the mole salamanders and the wood frog. Targeted searches for potential vernal pools will be conducted concurrently with routine, onsite wetland delineations planned for 2008; the results of this survey will be included in the wetland delineation report in support of the FEIS.

No listed endangered, threatened, or special concern mammal species were observed in the Project Area or reported through correspondence with the USFWS and the NHP. Based upon existing habitat conditions and the known habitat requirements of special status mammal species in New York, special status mammals are not expected to occur in the vicinity of the

Project Area. According to the NHP, two occurrences of eastern small-footed myotis, a state-listed species of concern, and two known bat colonies exist beyond the Project Area within 40 miles of the site. No eastern small-footed myotis were captured and no calls with characteristics of small-footed myotis were recorded during surveys conducted by WEST during summer 2007. Though some individuals may disperse from nearby hibernacula, breeding populations are either absent within the Project Area or exist in such small numbers as to be difficult to detect with capture techniques. A few calls with characteristics of small-footed myotis were recorded during fall migration; however, low numbers of pulses and infrequency of calls makes it difficult to conclusively determine their presence.

The NHP maintains a list of rare plants by county, which is updated on a periodic basis. This list is published to assist the conservation and protection efforts of government and private organizations as well as the public. This information can also be used in the environmental review process. Although correspondence with the NHP and USFWS did not indicate the presence of rare plant species in or near the Project Site, Young (2007) list 32 state-listed and 9 rare or unprotected plant species occurrences in Franklin County, as listed in Table 2.3-4.

Table 2.3-4. Rare Plants that Occur in Franklin County a/

Scientific Name	Common Name	Global Rank	State Rank	State Status	Wetland Indicator
Arethusa bulbosa	Dragon's Mouth Orchid	G4	S2	T	OBL
Betula pumila	Swamp Birch	G5	S2	T	OBL
Calamagrostis stricta ssp. inexpansa	New England N. Reedgrass	G5T5	S2	T	FACW+
Carex arcta	Northern Clustered Sedge	G5	S1	E	OBL
Carex haydenii	Cloud Sedge	G5	S1	E	OBL
Carex houghtoniana	Houghton's Sedge	G5	S2	T	NI
Carex merritt-fernaldii	Fernald's Sedge	G5	S2S3	T	NI
Carex wiegandii	Wiegand's Sedge	G4	S1	E	OBL
Cynoglossum virginianum var. boreale	Northern Wild Comfrey	G5T4T5	S1S2	E	NI
Cyperus echinatus	Globose Flatsedge	G5	S1	E	FACU
Diphasiastrum sitchense	Sitka Clubmoss	G5	S1	E	NI
Dracocephalum parviflorum	American Dragonhead	G5	S1	E	FACU-
Dryopteris fragrans	Fragrant Cliff Fern	G5	S1	E	NI
Eleocharis ovata	Blunt Spikerush	G5	S1S2	E	OBL
Eriophorum angustifolium ssp. scabriusculum	Narrow-leaf Cottongrass	G5T5	SH	E	OBL
Hedeoma hispida	Mock-pennyroyal	G5	S2S3	T	NI
Hippuris vulgaris	Common Mare's-tail	G5	S1	E	OBL
Lycopus rubellus	Gypsy-wort	G5	S1	E	OBL
Myriophyllum farwellii	Farwell's Water-milfoil	G5	S2	T	OBL
Piptatherum canadense	Canada Ricegrass	G5	S2	E	NI
Podostemum ceratophyllum	Riverweed	G5	S2	T	OBL
Potamogeton alpinus	Northern Pondweed	G5	S2	T	OBL
Potamogeton diversifolius	Water-thread Pondweed	G5	S1	E	OBL
Rhododendron canadense	Rhodora	G5	S2	T	FACW
Salix pyrifolia	Balsam Willow	G5	S2S3	T	FACW
Schoenoplectus heterochaetus	Slender Bulrush	G5	S1	E	OBL
Solidago leiocarpa	Alpine Goldenrod	G4	S2	T	NI
Sparganium natans	Small Bur-reed	G5	S2	T	OBL

Table 2.3-4. Rare Plants that Occur in Franklin County a/

Scientific Name	Common Name	Global Rank	State Rank	State Status	Wetland Indicator
Subularia aquatica var. americana	Water Awlwort	G5T5	S1S2	E	OBL
Symphyotrichum boreale	Northern Bog Aster	G5	S2	T	OBL
Vaccinium boreale	High-mountain Blueberry	G4	S2	E	NI
Viola nephrophylla	Northern Bog Violet	G5	S1	E	FACW
Bidens beckii	Water-marigold	G4G5	S3	T	NI
Calamagrostis pickeringii	Pickering's Reedgrass	G4	S3	U	FACW
Carex cryptolepis	Northeastern Sedge	G4	S3	U	OBL
Carex oligosperma	Few-seed Sedge	G5?	S3	U	OBL
Ceratophyllum echinatum	Prickly Hornwort	G4?	S3	T	NI
Oclemena nemoralis	Bog Aster	G5	S3	U	FACW+
Scheuchzeria palustris	Pod Grass	G5	S3	R	OBL
Symphyotrichum ontarionis	Ontario Aster	G5	S3	U	FAC
Utricularia geminiscapa	Hiddenfruit Bladderwort	G4G5	S3	U	OBL

a/ Young 2007

Global Rank
G1 = Critically imperiled throughout its range due to extreme rarity (5 or fewer sites or very few remaining individuals) or extremely vulnerable to extinction due to biological factors. (8 taxa in 2007)
G2 = Imperiled throughout its range due to rarity (6 - 20 sites or few remaining individuals) or highly vulnerable to extinction due to biological factors. (11 taxa in 2007)
G3 = Either very rare and local throughout its range (21 - 100 sites), with a restricted range (but possibly locally abundant), or vulnerable to extinction due to biological factors. (47 taxa in 2007)
G4 = Apparently secure throughout its range (but possibly rare in parts).
G5 = Demonstrably secure throughout its range (but possibly rare in parts).
GH = No extant sites known but it may be rediscovered.
GX = Species believed extinct.
TU & T? = Status of the subspecies or variety unknown.

State Rank
S1 = Critically imperiled in New York State because of extreme rarity (5 or fewer sites or very few remaining individuals) or extremely vulnerable to extirpation from New York State due to biological or human factors.
S2 = Imperiled in New York State because of rarity (6 - 20 sites or few remaining individuals) or highly vulnerable to extirpation from New York State due to biological or human factors.
S3 = Rare in New York State (usually 21 - 35 extant sites).
S4 = Apparently secure in New York State.
S5 = Demonstrably secure in New York State.
SH = Historical. No existing sites known in New York State in the last 20-30 years but it may be rediscovered.
SX = Apparently extirpated from New York State, very low probability of rediscovery.
SR = Reported from the state, but existence has not been documented.
SU = Status uncertain because of the cryptic nature of the plant.

State Legal Status
E = Endangered Species
T = Threatened
R = Rare
V = Exploitably vulnerable
U = Unprotected

Wetland Indicator Status – Based on the 1996 NWI Vascular Plant List
OBL = Obligate Wetland; Occurs almost always (estimated probability 99%) under natural conditions in wetlands.
FACW = Facultative Wetland; Usually occurs in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.
FAC = Facultative; Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
FACU = Facultative Upland; Usually occurs in non-wetlands (estimated probability 67%-99%), but occasionally found on wetlands (estimated probability 1%-33%).
UPL = Obligate Upland; Occurs in wetlands in another region, but occurs almost always (estimated probability 99%) under natural conditions in non-wetlands in the regions specified. If a species does not occur in wetlands in any region, it is not on the National List.
NI = No indicator; Insufficient information was available to determine an indicator status.

Surveys can confirm the presence of rare plants on a site, but negative results do not guarantee that rare plant species are absent. However, for practical purposes, surveys that adhere to standardized methods provide reasonable evidence that rare plants do not occur in the survey area. Rare plant surveys will be conducted by qualified biologists and will target the phenology, based on Young (2007) and other sources, and preferred habitats of each protected species that are likely to occur in the Project Area. Either systematic or random meander search patterns will be used to survey areas that appear likely to support rare taxa based on habitat. Much of the Project footprint is limited to relatively narrow rights-of–way; many of which are currently used or have historically been used as access roads. For these areas a random meander search pattern will be used. For the turbine work areas, a systematic approach will be used to provide greater coverage of the area and minimize overlap. Results of this survey will be included in the FEIS.

2.3.1.5 Other Sensitive Wildlife Resources

During breeding bird surveys, WEST identified three species in the Project Area noted to be in decline by the USFWS *Birds of Conservation Concern 2002* (*BBC 2002*), including wood thrush, chestnut-sided warbler, and bay-breasted warbler. The intent of *BCC 2002* is to identify the migratory and non-migratory bird species that represent to the USFWS high conservation priorities and draw attention to species in need of conservation action. It accomplishes this by identifying geographic region(s) where a species may be in decline to identify the need for, and achieve through proactive measures, targeted conservation. While all of the bird species included in *BCC 2002* are priorities for conservation action, the USFWS list makes no finding with regard to whether they warrant consideration for listing in accordance with the Endangered Species Act of 1973 (ESA). While these three species are not protected by the ESA or by NYSDEC (beyond the MBTA), each merits a brief discussion, as follows:

> *Wood Thrush* – This species breeds in interior and edges of deciduous and mixed forests, with preference for upland mesic well-developed forests (Roth et al. 1996). WEST made 9 observations of this species. BBA data (2000) indicate that the wood thrush is a probable breeder in the area, and it was observed in each of the four survey blocks queried for this DEIS. This species is likely to be present in the Project Area during the breeding season.
>
> *Chestnut-sided Warbler* – This species breeds in deciduous second growth of large forest clearings of uplands and wetland or riparian areas (Richardson and Brauning 1995). WEST noted 13 observations of this species. The BBA data (2000) noted confirmed breeding activity of this species from 3 of 4 survey blocks queried for this DEIS. Richardson and Brauning (1995) note that this species has benefited by creation of successional habitats (e.g., abandoned farmlands and regenerating clear-cut areas). This species is likely a breeding resident in the Project Area.

Bay-breasted Warbler – This species breeds mainly in dense, boreal spruce-fir forests, especially mature stands; sometimes in pine (*Pinus*) and occasionally in hemlock (*Tsuga*), often near water, and occasionally in mixed forest or in bogs or swamps (Williams 1996). WEST made one observation of this species. The BBA data (2000) did not list this species from any of the survey blocks queried for this DEIS. According to Williams (1996), the Adirondack Mountains represent the southern breeding limit for this species, and notes that this species is a late season migrant (May and June). It is likely that this single observation represents a transient migratory individual; as such, this species is unlikely to be present in the Project Area during the breeding season but may be occasionally present during migration.

Hunting, trapping, and fishing are common recreational activities throughout New York. Wildlife management areas do not occur within or adjacent to the Project Area; therefore, these recreational activities would occur on private property. Big game species likely to occur within the Project Area include whitetail deer, bear, coyotes, and bobcat. Small game and furbearing mammals are also hunted/trapped in the Project Area, including cottontail, frogs, pheasant, grouse, squirrel, varying hare, turkey, raccoon, fox, opossum, and weasel.

Two state-operated fish hatcheries and six privately held fishing preserves are located near the Project Area. State fish hatcheries rear landlocked salmon and trout species that are released into public streams, rivers, and ponds across New York. In multiple locations near the Project Area, 500 pounds of brown trout, 10,100 pounds of brook trout, and 2,700 pounds of rainbow trout were released into the Chateaugay River (NYSDEC 2006). Approximately 3,200 pounds of brown trout were stocked into the Little Trout River (NYSDEC 2006). These hatcheries receive freshwater inflows from rivers and streams that may be crossed by the Project. Privately-held fishing preserves are typically ponds where angling is permitted for a fee, and fishing restrictions (e.g., time of year, size limits) may be enforced. Fish hatcheries and preserves that are located near the Project are listed in Table 2.3-5. These hatcheries and fishery preserves do not occur within the footprint of the Project and are not anticipated to be affected by construction or operational activities.

Table 2.3-5. Fish Hatcheries and Fishing Preserves Located near the Project

Facility Type	Name	Location	Species
Private	Cold Brook Farm	Vermontville, NY	Rainbow Trout
Private	Fisherman's Paradise	Chateaugay, NY	Rainbow and Golden Trout; Atlantic Salmon
Private	Hichinbrooke Fish Hatchery	Chateaugay, NY	Brook and Rainbow Trout; Coho and Atlantic Landlocked Salmon
Private	Restful Ponds	Brainardsville, NY	Rainbow Trout; Speckled and Bullheads
Private	Smooth Flow Ponds	Malone, NY	Speckled and Rainbow Trout; Coho and Atlantic Salmon

Table 2.3-5. Fish Hatcheries and Fishing Preserves Located near the Project

Facility Type	Name	Location	Species
Private	Spring Brook Farms	Chateaugay, NY	Brook and Rainbow Trout
NYSDEC	Chateaugay Hatchery	Village of Chateaugay, NY	Raquette Lake strain lake trout, brown trout, rainbow trout and brook trout, including the Temiscamiex domestic hybrid (90,000 pounds annually)
NYSDEC	Adirondack Hatchery	Village of Saranac Lake, NY	Landlocked Atlantic salmon (30,000 pounds annually)

2.3.2 Potential Impacts

2.3.2.1 Construction

Vegetation

The Project was designed to minimize impacts to vegetation communities through siting Project components away from sensitive and valuable areas and using degraded and previously disturbed areas where possible. Construction activities will cause temporary and permanent impacts to vegetative communities and associated wildlife habitats; however, significant adverse effects to vegetation are not expected, because vegetative communities present in the Project Area are locally and regionally common. Activities that would result in direct impacts to vegetation include the cutting and clearing of vegetation, the removal of rooted systems and stumps, and soil disturbance. Indirect impacts to vegetation may include increased soil erosion and sedimentation, greater solar exposure and a higher heat index, and the establishment of invasive species and noxious weeds.

Construction of the Project is anticipated to temporarily affect 426.5 acres of vegetative communities, primarily upland forests (53 percent), and lands under active agricultural practices (e.g, cultivated crops, pasture, and hay; 35 percent). Of upland forest cover classes, deciduous forest communities would be most affected by Project construction (31 percent of the Project Site). Forest cover in the Project Site would be cleared to create temporary workspaces and would regenerate through time. Logging activities occur in Franklin County, and temporary clearing of upland forests during construction of the Project would be consistent with this use. Within the Project Site, pasture and hay fields account for more than one-quarter of temporarily affected vegetation communities, and croplands account for another 10 percent. Construction-related disturbance in active agricultural lands is consistent with typical land use practices, where disturbance and vegetation alterations through mowing, plowing, and harvesting activities occur on a routine basis. Vegetation types that are temporarily affected during construction are expected to quickly recolonize after construction is complete. Overall, 6 percent of vegetation in the Project Area would be temporarily affected by construction activities. Table 2.3-6 lists the anticipated effects to each vegetative cover class crossed by the Project.

Only 88.6 acres of vegetative communities would be permanently converted to Project facilities. As with temporary effects to vegetation, upland deciduous forests and pasture/hay fields account for much of the permanent disturbance in the Project Site. Combined, forested uplands would account for 40.6 acres of disturbed land, followed by cropland, pasture and hay fields (36.5 acres), wetlands (6.6 acres), and grasslands (2.8 acres). Only 1 percent of vegetation in the Project Area would be permanently affected by construction activities. Table 2.3-6 lists the anticipated impacts to each vegetative cover class crossed by the Project.

Table 2.3-6. Vegetative Cover Classes Affected by the Jericho Rise Wind Farm

Land Use Class	Temporary Impacts		Permanent Impacts	
	Acres	Percent Cover (%)	Acres	Percent Cover (%)
Cultivated Crops	43.2	10	9.8	11
Pasture/Hay	110.5	26	26.8	30
Grassland/Herbaceous	11.1	3	2.8	3
Scrub/Shrub	0.0	0	0.0	0
Upland Forests				
Deciduous Forest	132.7	31	27.1	31
Evergreen Forest	65.3	15	7.5	8
Mixed Forest	35.8	8	6.0	7
Forested Wetlands a/	28.0	7	6.6	7
Non-Forested Wetlands a/	0.0	0	0.0	0
Total	**426.5**		**86.5**	

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a/ Affected acreage of wetlands are from NLCD 2001 coverages and thus are estimated; wetland presence will be verified during formal wetland delineations scheduled for early 2008.

Source: National Land Cover Dataset 2001; Tetra Tech EC 2007

Birds and Bats

The Project was designed to minimize impacts to bird and bat populations through siting Project components away from sensitive habitats and using degraded and previously disturbed areas where possible. Significant impacts on migrant or resident birds and bats are not expected during the construction of the Project. While some avian species may avoid the Project Area during active construction, most birds observed during breeding bird surveys are strongly linked with disturbed lands and thus are unlikely to be affected by construction. The most abundant resident bird species found in Jericho Rise Wind Farm avian surveys, including starlings, crows, and blackbirds, are species that cause crop damage and are managed in some areas as agricultural pests (Cabe 1993; Verbeek and Caffrey 2002; Yasukawa and Searcy 1995). These species will not be significantly affected by construction.

Indirect impacts to birds and bats could occur as a result of habitat alteration during construction; however, these displaced species are expected to disperse to suitable habitats that occur adjacent to the Project or use temporarily disturbed habitats. Additionally, construction-related disturbance is consistent with current agricultural practices, such as land clearing and plowing, which occur with regularity in the Project Area. Anticipated permanent loss of forested habitats, which provide nesting and roosting sites for many bird and bat species, is expected to be minimal. Relative to the larger Project Area, a loss of only one percent of forest cover in the Project Site is expected. Clearing required for construction and operation of Project facilities may result in the creation of suitable edge habitat for foraging birds and bats.

Fish and Wildlife

The Project has been designed to minimize impacts to fish and wildlife through siting Project components away from sensitive and valuable habitat resources and using degraded and previously disturbed areas where possible. Impacts to wildlife due to construction activities may include displacement due to noise and human activity, incidental mortality of less mobile species, habitat loss and fragmentation, and temporary siltation and sedimentation impacts to aquatic habitats. Displacement of wildlife species will vary based on construction activity, seasonal timing, and species sensitivity. Species most likely to be displaced or disturbed by construction activities are forest-dependent species. Incidental mortality and injury to sedentary and slow moving species, which are unable to evade construction machinery, is anticipated. Seasonal effects may occur during the breeding season to the eggs and young of birds, reptiles, amphibians, and small mammals. Interior forest species may be affected by “edge effects” caused by fragmenting forested lands.

Fish and wildlife populations within the Project Area appear to be stable and are locally common. Although wildlife will be affected by construction, these impacts would not cause significant reductions in local resident populations. Most adult wildlife species are expected to disperse to adjacent, undisturbed areas.

Aquatic systems may also be temporarily affected as a result of construction activities. Impacts to fisheries are expected to be minor and of short-term duration. Vegetation clearing for temporary workspaces may increase solar radiation and temperature of aquatic systems, which may lower habitat quality for fishes and aquatic species. Stream crossing methods such as dam-and-pump may temporarily obstruct fish passage, whereas flume pipe methods allow for unrestricted fish passage. Seasonal work restrictions, such as ceasing work in and around trout streams during spawning seasons, will be enforced in accordance with state and federal permits. Impacts to protected fisheries are not anticipated.

During spring and early summer, many fishes, reptiles and amphibians depend on aquatic habitats for breeding and feeding habitats. Siltation could result in direct mortality of eggs, or indirectly affect the ability of organisms to survive through reduced access to prey or reduced habitat quality. In waters designated Class D or unregulated waters, open cut waterbody crossing methods may be implemented, which may result in siltation. These affects would be minor and of short-term duration.

Threatened and Endangered Species

As discussed in Section 2.3.1.4, the USFWS reports that bald eagles are known to nest within 20 miles of the Project Area. One bald eagle was observed in the Project Area during migrating raptor surveys; however, suitable nesting habitat was not noted for this species during avian surveys. Although transient individuals may occur, this species is not likely to be significantly affected during construction of the Project.

The NHP reports that eastern small-footed myotis and three occurrences of a significant habitat (bat colonies) are known to occur in the vicinity of the Project Area. WEST did not capture any listed bat species during its mist-net surveys, nor did it record calls with characteristics typical of listed *Myotis* species during mobile AnaBat surveys. Though some individuals may disperse from nearby hibernacula, breeding bat populations are either absent within the Project Area or exist in such small numbers as to be difficult to detect with capture techniques. Low passage rates of bats during fall migration suggest that concentrations of bat migrants are absent during the sampling period (WEST 2007; see Appendix E).

Though no eastern small-footed myotis were documented in the Project Area, breeding populations are either absent or exist in such small numbers as to be difficult to detect with capture or acoustic techniques. WEST identified only marginal winter and summer roosting habitat for this species in the Project Area, as preferred habitats (caves, mines, cliffs, and rock outcrops) were absent. As such, adverse impacts to winter and summer roosting habitats of this species are anticipated to be low. The removal of deciduous and mixed forested habitats from the Project Area may adversely affect the foraging habitats of this species. Because these habitat types are prevalent throughout the Project Area, bats would be expected to forage in other adjacent suitable habitats. Although bats are expected to be affected by habitat removal during construction of the Project, significant adverse effects to bats are not expected.

The NHP also listed four bird species, including upland sandpiper, northern harrier, common loon, and least bittern in its response letter. The BBA indicates that five species of listed bird species (American bittern, grasshopper sparrow, horned lark, osprey, and vesper sparrow) have been observed in the BBA blocks in or adjacent to the Project Area. Several other listed species were also recorded during WEST's migratory raptor surveys, including one bald eagle, one golden eagle, one peregrine falcon, one osprey, three Cooper's hawks, and four sharp-shinned hawks. These species are likely migrants passing through the Project Area and not breeding residents.

The listed bird species have differing habitat preferences ranging from open grassland (upland sandpiper, northern harrier, grasshopper sparrow, horned lark, and vesper sparrow), forested (Cooper's hawk, sharp-shinned hawk, osprey, and eagles), emergent wetland (least bittern, American bittern), and open water (common loon, osprey, and bald eagle). Because the Project construction will occur within or adjacent to all of these habitats, construction associated impacts to each of these species are possible. Potential impacts could include mortality to eggs and young, avoidance, displacement and disturbance due to noise, and direct habitat loss. Minimizing impacts to grasslands, forests, wetlands, and open water will minimize potential impacts to these species and their habitats.

The New York Amphibian and Reptile Atlas indicates that one species of amphibian, the blue-spotted salamander, may occur in the Project Area. This slow-moving species could be affected by injury or death, and by habitat loss from vegetation clearing activities or permanent habitat loss. Potential vernal pools will be identified during the routine, on-site wetland delineations and will be documented in the delineation report, as described in Section 2.3.1.4. If potential vernal pools are observed during these surveys, the Applicant will modify the Project to avoid impacts to that resource.

Construction of the Project is not likely to impose any impacts to rare plants, as no rare plants were reported to occur in the vicinity of the Project Area during consultation with NHP and USFWS. As discussed in Section 2.3.1.4, a field plant survey will be conducted to document the presence of rare plants prior to the FEIS. Because construction techniques that employ best management procedures for wetlands will be used, it is likely that construction of the Project will have minimal effects on rare plant species. In the event that state-listed plants are identified in the Project Site, the Applicant will consult with NYSDEC to develop an appropriate management plan for those taxa.

2.3.2.2 Operation

Vegetation

Operation of the Project would result in the permanent conversion of 86.5 acres of vegetated lands into Project components, such as access roads, turbines, crane pads, operations and maintenance facilities, and a substation. As listed in Table 2.3-6, the Project is anticipated to permanently affect 40.6 acres of upland forests, 36.5 acres of cropland, pastures and hay fields, and 2.8 acres of grassland. The Project would also permanently affect 0.88 acres of wetlands (this amount will be verified during wetland delineations in 2008). Relative to the larger Project Area, only one percent of vegetated habitats would be permanently affected during operation. Vegetation communities will not be adversely affected by operation of the Project. Minor disturbances may occur to vegetation as a result of routine maintenance and unforeseen necessary repairs. The application of herbicides or pesticides would be prohibited.

Birds

Operation of the Project is expected to contribute to avian mortality, although mortality caused by turbine collision is expected to be low, comparable with other nearby wind generation facilities. Based on the available data, the Project Area is unlikely to have a concentration of spring or fall migrant raptor movement. Passage rates of migrant raptors in the Project Area indicate that use is relatively low. Hawk watch sites located near the St. Lawrence River report much higher passage rates. The lack of geographic and topographic features within the Project

Area suggests that concentration of migrants during spring and fall would be low. These observations are comparable to results presented in avian risk studies of the Noble Clinton Windpark and Marble River Wind Farm sites. Though some species may be at risk of collision based on abundance and flight height characteristics, the number of raptor fatalities is expected to be low.

Based on the radar data collected at the Noble Clinton and Marble River sites, it does not appear that the Project Area will occur within an area with a concentration of spring or fall avian songbird migration. The migration characteristics at both sites were similar to numerous other studies conducted at proposed wind projects and similar characteristics would occur at Jericho Rise. Based on these studies, impacts to avian migrants from the Project would be similar or less than other eastern and New York wind projects. More information about migrant songbirds is found in Appendix E.

Because a high diversity of birds was observed during breeding bird surveys, potential impacts are expected to be spread over several species. Based on breeding bird survey data, the Project Area does not appear to support large or unusual populations of resident birds. At all eastern wind generation facilities where post-construction monitoring was conducted, 60 to 80 percent of avian mortality is from migratory species, rather than breeding resident species (Appendix E). Based on observations from regional and site-specific avian surveys, breeding resident birds would not be adversely affected by the Project.

In accordance with USFWS Interim Guidance on Avoiding and Minimizing Impacts to Wildlife from Wind Turbines (2003), the Applicant will conduct post-construction bird and bat mortality monitoring during Project operation to determine if or to what extent mortality occurs. The Applicant will consult the USFWS and NYSDEC to develop a post-construction mortality monitoring plan. Mortality reports will be submitted to federal and state wildlife agencies for their review. Mortality monitoring will be used to assess the significance of impacts to birds and bats, and also to determine factors that may contribute to increased mortality, such as certain weather conditions. If impacts to wildlife are deemed to be significantly adverse, mitigation strategies would be developed that could be used to reduce potentially significant adverse impacts to those species.

Bats

The mechanism(s) causing elevated mortality to some species of bats at certain wind projects is not clearly understood by bat biologists. Research efforts have been undertaken by scientists, regulatory agencies, wind developers, and conservation organizations; studies investigating these mechanisms are ongoing. In its report for this Project, WEST summarized mortality studies of bats at wind projects in the United States and emphasized several common trends: a) Risk to bats from wind turbines is unequal across species and seasons. The majority of bat fatalities at wind projects in the United States and Canada are from long-distance migrant tree bats of the *Lasiurus* genus, while the least common fatalities are of big brown bats and *Myotis* species (Johnson 2005; Kuntz et al. 2007); b) The highest mortality occurs during the fall migration period for bats from late-July to mid-September (see Johnson 2005). Information from previous studies indicates that baseline AnaBat data do not appear to be predictive of post-construction impacts. Some new information from the Maple Ridge post-construction monitoring appears to indicate higher bat mortality than what was expected based on the pre-construction surveys using AnaBat. Studies at Buffalo Ridge, Minnesota and Buffalo Mountain, Tennessee, did not find a correlation between the number of AnaBat calls recorded and mortality; c) AnaBat surveys and fatality surveys show a general association between the timing of the greatest number of bat calls and mortality, with both call rates and mortality the highest during the fall; and d) Studies at different locations in the United States and Canada appear to indicate that bat mortality is not related to site features or habitat. While it is hypothesized that eastern deciduous forests in mountainous areas may be high risk areas, high bat mortality also occurred at wind projects in prairie/agricultural settings and mixed deciduous woods, and agricultural settings.

Survey methods commonly used to assess pre-construction bat activity and/or presence, such as mist-netting and acoustic sampling, are limited in their predictive abilities in terms of post-construction mortality. Capture surveys can provide information on species present within the Project Area; however, mist-nets cannot sample air space occupied by wind turbine blades. Acoustic surveys can cover larger areas with passive and active sampling; however, the nature of AnaBat analysis makes it difficult to determine if calls are being made by multiple bats or single passes made by one individual. Additionally, neither sample technique has been shown to reliably predict risk to bats at wind facilities. Mist-net surveys conducted during breeding season in the Project Area were unable to confirm the presence of bats species of special concern. Data collected at other wind facilities and site-specific data collected for the Project suggest that impact to resident bats will be lower than to migratory bats. Fall migratory bat activity recorded in the Project Area is as great or greater than acoustic activity recorded at wind facilities that also reported high bat mortality. Based on acoustic data, it is possible that mortality risk will be similar or higher in the Project Area than other eastern wind facilities; however, correlations between acoustic activity and wind facility mortality are weak and limited.

To address the commonly acknowledged limitations of these survey methods, WEST conducted a radar study of the Project Area during August 2007 to quantify bat activity during the fall migration. No known pre-construction radar study has attempted to address this particular period of activity typically associated with elevated levels of bat mortality at wind facilities. In contrast to the acoustical analysis, bat passage rates recorded during the fall migration radar survey were very low, particularly when compared to passage rates collected during avian fall migration. These passage rates suggest that, despite higher numbers of fatalities reported during this fall period in operating wind generation facilities, concentrations of bat migrants might actually be low in this Project. Based on these radar data, risk to migratory bats may be elevated only on certain nights when high percentages of targets are recorded flying at rotor-swept heights, despite low passage rates on these nights. Weather conditions, such as wind speed, may contribute to fluctuations in passage rates and flight height characteristics that influence bat presence within the rotor-swept area.

Though the extent of fatalities is difficult to estimate, it is likely that the Project will result in some fatalities to migratory bats. Based on data collected from other wind facilities and site-specific surveys, the species most likely to be affected include eastern red bat and hoary bat, with fewer numbers of other species. It is unlikely that federal or state protected bat species will be documented as fatalities at this location. Risk to migrant bats is expected to increase during the period of August and September, particularly on nights with conducive weather conditions. Annual bat fatality estimates from the Maple Ridge Wind Farm, the nearest monitored project to the Project, varied from 15 to 24 bats per turbine. Although the Maple Ridge monitoring study demonstrated higher bat mortality than what was expected based from pre-construction AnaBat surveys, it is important to note that AnaBat surveys were conducted during summer, a time when bat activity is thought to be low relative to fall activity. The Maple Ridge Wind Farm pre-construction acoustic surveys averaged 20.6 calls per detector-hour. In this Project, fall surveys found an average of 4.6 calls per detector-hour, with a range between 0.4 and 14.9. Maple Ridge bat fatality studies indicated that peaks in bat mortality coincided with the period of fall bat migration. Post-construction bat mortality in the Project may be similar to that documented at Maple Ridge Wind Farm and other wind facilities in the eastern United States.

Drawing comparisons between the Maple Ridge Wind Farm pre-construction radar-based passage rates (Mabee et al. 2005) with the observed post-construction mortality (Jain et al. 2007) offers insight to potential mortality in this Project; however, direct comparisons between these two projects are difficult because the pre-construction studies at Maple Ridge only targeted the time of year when avian migration occurred, which differs from the time of year that bat migration takes place. It is important to note that radar studies report “targets per hour” because bat flight speeds overlap with passerine flight speeds, and thus, scientists are not able to definitively differentiate between the two. Much of the discussion regarding passage rates in Mabee et al. (2005) reflects what is known about passerines. For this Project, WEST conducted radar studies that focused on the time of year when migratory bats are thought to be most active. Although somewhat speculative in nature, WEST differentiated between possible avian and bat presence based on information about the observed flight patterns (e.g., flight speed and direction, time of night) for this Project. From this study, WEST concluded that migrant bat passage rates were low, and that passage rates did not suggest the presence of large concentrations of migrant bats moving through the Project Area. While it is difficult to make comparisons of bat activity between Maple Ridge and this Project, overall bat activity appears to be lower at Jericho Rise. More information is found in Appendix E.

As previously discussed, the Applicant will conduct post-construction bird and bat mortality monitoring during Project operation to determine if or to what extent mortality occurs. Mortality monitoring will be used to assess the significance of impacts to birds and bats, and also to determine factors that may contribute to increased mortality, such as certain weather conditions. If impacts to wildlife are deemed to be significantly adverse, mitigation strategies would be developed that could be used to reduce potentially significant adverse impacts to those species.

Fish and Wildlife

Operational impacts to fish, wildlife, and their habitats are minimized through siting Project components away from high quality habitats, such as expanses of grasslands, wetlands, and forested land to the greatest extent practicable. Operational impacts to wildlife and wildlife habitat may include direct and indirect mortality resulting from collisions with wind turbines, loss of habitat, forest fragmentation, and displacement due to disturbances caused by the presence of wind turbines.

Loss of Habitat: The Project would result in the permanent loss of 86.5 acres of wildlife habitat, as presented in Table 2.3-6. Most of these impacts would be to forested habitats (40.6 acres), some of which will be converted and managed as a non-forested vegetative community. These converted forestlands would be maintained as shrubland or grassland, or would be converted to Project facilities (e.g., crane pads, access roads, etc.). In addition to the direct loss of habitat, this action may have indirect effects on interior forest wildlife species that maintain a preferred distance away from forest edges. All things considered, loss of habitat from operation of the Project is expected to be only one percent of the larger Project Area.

Agricultural land would also be affected during operation of the Project. Active agricultural lands (9.8 acres) consisting of row crops are of poor vegetative habitat quality and are frequently disturbed through management practices, such as, tilling, planting, and harvesting. This habitat type is of limited value to grassland species that prefer native graminoid vegetation, which is absent in this type of agricultural land use. Pasturelands and hay fields may also represent less optimal grassland bird habitat if they are grazed or harvested prior to the completion of the breeding season for grassland bird species, typically mid-July. In contrast, fallow pastures and late-harvest hay fields may present ideal breeding, foraging, and refuge habitats for grassland birds. Vegetation clearing activities in fallow pastures and late-harvest hay fields would reduce available habitats to grassland birds, which may adversely affect their reproductive success. Effects of habitat loss on wildlife are expected to be minimal and localized. The Project would permanently affect less than two percent of pasture and hay field habitats in the Project Area. Although some habitat would be lost to development of permanent Project facilities, new habitats would be added because a portion of permanently affected lands would be maintained as non-forested areas (e.g., areas associated with the underground collection system rights-of-way). Vegetation maintenance activities would maintain open areas such as those used by grassland birds.

Forest Fragmentation: The loss of forested land would also locally increase forest fragmentation. Fragmentation restricts the ability of wildlife and plant seed dispersal throughout the entire forest, an effect that potentially results in loss of those species that require larger blocks of habitat. Effects of fragmentation caused by the Project are expected to be minor, as the width of buried utility collection systems and access roads through forested areas are relatively narrow and should not discourage dispersal movements of forest wildlife species among forest tracts. This disturbance may also have minor effects on predator-prey relationships as predators may benefit from the additional exposure their prey may encounter in areas with reduced vegetative cover. The amount of fragmentation that is expected to occur within the footprint of the Project is consistent with surrounding land uses, which include logging activities and land clearing for agricultural purposes.

Displacement/Disturbance: The effects of displacement and disturbance are expected to be high during the construction phase of the Project due to human activity and the operation of machinery and low during the operational phase. Wildlife are expected to acclimate to the presence and operation of wind turbines. Some disturbance to wildlife is expected due to noise in the vicinity of the turbines and during routine maintenance of the facilities. Grassland species sensitive to the visual presence of large objects in their habitats may suffer greater disturbances than forest wildlife species. Routine vegetation maintenance along buried utility collection corridors would also result in temporary or permanent displacement of locally abundant wildlife species.

Threatened and Endangered Species

Although bald eagles are known to nest within 20 miles of the Project Area, only transient individuals are expected to occur in the Project during operation. No known bald eagle casualties have been documented at wind projects in the United States that have been studied (Erickson et al. 2001, 2002). This species is unlikely to be adversely affected during operation of the Project.

The NHP reported that eastern small-footed myotis and three occurrences of a significant habitat (bat colonies) are known to occur in the vicinity of the Project Area. As discussed in Section 2.3.2.1, WEST did not capture any listed bat species during its mist-net surveys, nor did it record calls with characteristics typical of listed *Myotis* species during mobile AnaBat surveys. Data from WEST's study suggest that large concentrations of migrant bats are absent during the sampling period (see Appendix E). Although bats may occur in the Project at low density, WEST indicated that certain environmental factors, such as weather, may cause changes in migrant bat flight patterns that increase their risk of collision with rotor blades. Local and migrant bat populations are likely to be affected, but not significantly affected by operation of the Project. Post-construction monitoring of bat mortality will be implemented to document the extent to which bat fatalities occur; the results of these studies will be submitted to USFWS and NYSDEC wildlife agents.

Several other listed species were recorded during WEST's migratory raptor surveys, including one bald eagle, one golden eagle, one peregrine falcon, one osprey, three Cooper's hawks, and four sharp-shinned hawks. These species are likely migrants passing through the Project Area and not breeding residents. In general, results from avian surveys of the Project and nearby wind farms indicate that the Project Area does not overlap with an area of concentrated spring and fall migrant birds. Impacts to these transient migrants would be minor and localized and are unlikely to cause significant adverse affects to regional populations.

Though no eastern small-footed myotis were documented within the Project, WEST concluded that breeding populations are either absent or exist in such small numbers as to be difficult to detect with capture or acoustic techniques. WEST identified only marginal winter and summer roosting habitat for this species in the Project Area, as preferred habitats (including caves, mines, cliffs, and rock outcrops) were absent. As such, impacts to winter and summer roosting habitats of this species are anticipated to be minor. The removal of deciduous and mixed forested habitats from the Project may adversely affect the foraging habitats of this species. Because these habitat types are prevalent throughout the Project Area, these bats would be expected to forage in other adjacent suitable habitats. Although bats are expected to be affected by habitat removal during construction of the Project, significant adverse effects to the small-footed myotis are not expected.

According to the NHP, four listed bird species, including upland sandpiper, northern harrier, common loon, and least bittern occur within 10 miles of the Project Area. Additionally, the BBA indicates that five species of listed bird (American bittern, grasshopper sparrow, horned lark, osprey, and vesper sparrow,) have been observed in the BBA blocks in or adjacent to the Project Area. Of these nine species, only the northern harrier and osprey were observed during WEST's breeding bird and migrant bird surveys (Appendix E). Although northern harriers are commonly found near wind farms, they are not a common turbine fatality (Erikson et al. 2001). Though northern harriers are relatively common in open agricultural areas, harriers on breeding grounds generally fly close to the ground (less than five meters) and rarely soar (Macwhirter et al. 1996). Because of its typical behavior, this species is unlikely to be significantly affected by turbine collisions. Based on the lack of suitable habitat in proximity to the turbines, the operation of the Project poses little risk to open water and emergent marsh bird species, such as osprey, least bittern, American bittern, and common loon. These species exhibit strong habitat associations and are unlikely to occur to an appreciable extent in the vicinity of the turbines. Rarely, a transient individual may occur within the locations of the turbines during dispersal. While minor and localized affects to species could potentially occur, none of the nine species identified by the NHP and BBA are expected to be adversely affected by operation of the Project.

The New York Amphibian and Reptile Atlas indicates that one species of amphibian, the blue-spotted salamander, may occur in the Project Area. This slow-moving species could be affected by injury or death, and by habitat loss from vegetation clearing activities or permanent habitat loss. The blue-spotted salamander records from Franklin County are not from areas within or adjacent to the Project Area, nor was this species identified in consultation with NHP (2006).

Potential vernal pools will be identified during the routine, on-site wetland delineations and will be documented in the delineation report, as described in Section 2.3.1.4. If potential vernal pools are observed during these surveys, the Applicant will modify the Project to avoid impacts to that resource. This species is not likely to be affected by the Project.

Bird and bat mortality studies will be conducted to assess impacts to wildlife during Project operation. If federal- or state-listed species are identified in these studies, the Applicant will work with the NYSDEC and USFWS to determine the extent to which these impacts could potentially occur. If appropriate, mitigation strategies would be developed and implemented to reduce potentially significant adverse impacts to those species.

Operation of the Project is not likely to impose any impacts to rare plants, as no rare plants were reported to occur in the vicinity of the Project Area during consultation with NHP and USFWS. As discussed in Section 2.3.1.4, a field plant survey will be conducted to document the presence of rare plants prior to the FEIS. In the event that state-listed plants are identified in the Project Site, the Applicant will consult with NYSDEC to develop an appropriate management plan for those taxa.

2.3.3 Mitigation

2.3.3.1 Vegetation

The Project has been designed to avoid sensitive ecological communities, such as wetlands and mature forest, and to minimize permanent impacts to vegetation to the greatest extent practicable. From a regional perspective, the overall loss of vegetative cover resulting from the Project development and operation is anticipated to be localized and minor. The Project will result in the net loss of only 1.3 percent of the total area of vegetated land in the Project Area. Project access roads and electric collection systems have been designed to maximize the use of previously disturbed areas.

The Applicant will develop and implement comprehensive sediment and erosion control plans and a SWPPP to reduce the potential indirect effects of sedimentation and erosion resulting from the loss of vegetation and ground disturbance. As discussed in Section 2.2.3, an environmental inspector will be responsible for ensuring that measures outlined in the erosion sediment and erosion control plans as well as the SWPPP are implemented during construction. All temporarily disturbed vegetated areas will be reseeded with regionally appropriate seed mixes[2] and stabilized following construction. Restoration will be monitored to ensure successful re-establishment of appropriate vegetation. The Applicant will also develop an invasive species/noxious weed control plan to reduce the potential introduction and spread of invasive species throughout the Project. The environmental inspector is responsible for clearly establishing the boundaries of sensitive vegetative communities, educating construction

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[2] Regionally appropriate seed mixes to be used by the Project will be developed through consultation with the local NRCS and affected landowners.

personnel on established work restrictions and prohibitions pertaining to sensitive areas, employing, enforcing compliance with restrictions, and ensuring that BMPs throughout all phases of construction are implemented by the contractor.

During operation of the Project, periodic vegetation maintenance would be required along collection line corridors. Vegetation maintenance activities would be timed to avoid sensitive breeding periods of birds and small mammals that may use habitats affected by mowing. According to the Cornell Cooperative Extension (2006), conducting mowing and vegetation clearing after August 15 would prevent disturbance or injury to birds and most ground-dwelling species, as well as promote optimal growth of grassland vegetation. The application of herbicides or pesticides would be prohibited.

2.3.3.2 Fish and Wildlife

As detailed in Section 2.3.2, construction related impacts to fish and wildlife would potentially include displacement due to human activities and noise, disturbance associated with the operation of construction machinery, injury and mortality due to vehicle movement and construction operations, silt sediment impacts to aquatic species, and collisions with wind turbines. The Project considered each of these potential impacts and has been designed to avoid and minimize these impacts to the greatest extent practicable.

Habitat loss and fragmentation is avoided and mitigated directly through siting Project components to minimize disturbance, and restoring all temporarily disturbed areas. All construction employees will receive environmental training that emphasizes mitigation measures to be implemented during all phases of construction. In addition, as described in Section 2.2.3, at least one professional environmental monitor will be contracted during the construction period to provide guidance and ensure the enforcement of environmental protection criteria outlined in the permits.

Results of the site surveys indicated that federal-listed species are unlikely to occur in the Project Area, and state-listed species, as well as commonly occurring wildlife species, are unlikely to be adversely affected by development and operation of this Project. Surveys also indicated that adjusting the locations of turbines or Project facilities would cause little or no change to the impact assessment. The results of the raptor migration surveys showed variation across the study area; however, raptor migration through the area was low and potential impacts are expected to be low. Use of tubular towers to deter perching, underground electrical collection system, and non-guyed met towers would reduce collision risks for avian species. Results of the bat migration surveys also showed variation across the study area; however, impacts from wind turbines to bats are variable by season and species. Minimizing impacts to forested areas may minimize potential impacts to tree-dwelling migratory species, which are most at risk. Any necessary aboveground power lines will be routed, designed, constructed, and operated in accordance with guidance provided by the Avian Power Line Interaction Committee.

Although significant bird and bat mortality is not anticipated, the Project will implement a post-construction bird and bat mortality monitoring program as recommended by the USFWS Interim Guidance on Avoiding and Minimizing Impacts to Wildlife from Wind Farms (2003). Though this study is not a required mitigation measure for this Project, the information obtained may be useful to add to the base of knowledge about avian and bat impacts from wind projects, and could aid in the design of future wind energy facilities to minimize impacts to these species. The monitoring program would be overseen by a Technical Advisory Committee consisting of members of regulatory agencies, environmental organizations, the wind power industry, and landowners to assure unbiased reporting of avian and bat mortality. If the Technical Advisory Committee concludes that turbine-related mortality of birds or bats is biologically significant, the Applicant will consult with the Technical Advisory Committee to develop an adaptive management plan. This adaptive management plan would examine post-construction survey protocols to determine if changes were necessary, as well as identify potential mitigative strategies that could be implemented to minimize or avoid adverse effects to wildlife.

Potential impacts to fish and aquatic organisms will be mitigated through strict adherence to and approved sediment and erosion control plan and SWPPP. The plans will be designed to comply with New York State Water Quality Standards and the NYSDEC SPDES regulation. Additionally, the Project will develop a SPCC Plan, designed with approved standards outlining measures to prevent accidental spills of hazardous contaminants from entering aquatic systems. Construction of necessary stream crossings will be performed under dry conditions to prevent impacts to fish and aquatic species. For perennial streams, this may involve installing temporary dikes and pumping water around the work site. Impacts associated with sedimentation are expected to be localized and of short duration, because stream crossings typically require less than 48 hours to complete. Where necessarily applicable, the Project may use directional drilling to cross beneath streams. Seasonal work restrictions, such as ceasing work in and around trout streams during spawning seasons, will be enforced in accordance with state and federal permits. The use of culverts to minimize impacts to fish and fish habitat may be used where applicable. Proper installation techniques and selection of appropriate culverts will be determined through consultation with NYSDEC.

2.4 Climate and Air Quality

2.4.1 Existing Conditions

2.4.1.1 Climatic Condition

The U.S. National Climatic Data Center (NCDC) maintains climate data for numerous weather measurement station locations throughout the United States, including data collected at nearby Malone, NY, which is located approximately 7 miles west of the Project Site. The NCDC data for Malone is representative of the Project Area and includes normal value averages for the measurement period 1971 through 2000. Based on these 30-year averages, the average annual mean temperature is 41.7°F, average annual daily maximum temperature is 50.6°F, and the average daily minimum temperature is 32.6°F. Historically, January is the coldest month with an average daily temperature of 13.7°F, and July is the warmest month with an average daily temperature of 66.9°F (NCDC 2007).

The 30-year average precipitation recorded in Malone is 37.81 inches per year. August, with an average precipitation of 4.63 inches, is historically the wettest month of the year, and February, with an average of 2.00 inches, is the driest (NCDC 2007). The average annual snowfall for Franklin County (recorded in Tupper Lake) is 100 inches. Historically, December is the snowiest month with 25.1 inches (NYSC 2007).

The hub height of the proposed wind turbine generators is 80 meters above ground surface. This is the height corresponding to the height of the flow of wind that will power the Project. The Applicant analyzed wind speeds in the Project Area at this height above ground surface, utilizing a combination of wind resource maps created by AWS Truewind (www.AWStruewinds.com) and on-site meteorological towers across the Project Area. These efforts determined that the wind resource in the Project Area is competitive with other established commercial wind sites across New York. They also verified the prevailing and most energetic wind direction is from the west/southwest. As described in Section 1.0, the turbines have been sited in arrays perpendicular to the prevailing winds with sufficient spacing to minimize wake effects on nearby turbines and to maximize the areas having the greatest wind resources.

Additional climatic information relating to severe weather is discussed in Section 2.10 Public Safety.

2.4.1.2 Air Quality

Within the Project Area, air emissions generated are related primarily to vehicular travel and farm operations. Vehicles produce exhaust emissions along with dust from unpaved road surfaces. Routine odors are associated with farming practices like manure spreading. Although these odors can be perceived as an aesthetic annoyance, they do not have a significant effect on local air quality.

Within New York State, the DEC's Division of Air Resources is responsible for monitoring ambient air quality. Each year it publishes air quality data for New York State that provide a comparison between the ambient air and the ambient air quality standards for a calendar year. The most recent summary of air quality data available for the state is the *2006 New York State Air Quality Report: Data Tables* (NYSDEC 2007). Included in this report are the most recent ambient air quality data, as well as long-term monitoring trends in air quality that have been collected and compiled from numerous state and private (e.g., industrial, utilities) monitoring stations across the state, assessed according to NYSDEC region number. The Project Area is located within NYSDEC Region 5. The parameters monitored in the ambient air that are collected as continuous measurements include ozone (O_3), SO_2, NO_x, carbon monoxide (CO), and inhalable particulates with diameters less than 10 microns (PM_{10}) and 2.5 microns ($PM_{2.5}$).

The monitoring data are used to determine whether various areas are in attainment with the National Ambient Air Quality Standards (NAAQS), which are designed to protect public health and welfare.

At the federal level, the U.S. Environmental Protection Agency (USEPA) publishes the Green Book, which lists nonattainment areas for criteria pollutants. The list is county-specific and the criteria pollutants include 1-hour O_3 and 8-hour O_3, CO, NO_x, SO_2, $PM_{2.5}$, PM_{10}, and lead. All criteria pollutants in Franklin County are in attainment.

2.4.1.2.1 Conventional Power Plants and Air Pollution

Across Western New York and the rest of the country, conventional power plants are a major source of air pollution, with coal-fired power plants producing 59 percent of total United States SO_2 pollution and 18 percent of total NO_x every year (USEPA 2003). Coal-fired power plants are also the largest polluter of toxic mercury pollution (USEPA 2000), largest contributor of hazardous air toxics (Clean Air Task Force 2002), and release about 50 percent of particle pollution. Additionally, power plants release over 40 percent of total U.S. carbon dioxide emissions, a prime contributor to global warming (USEPA 2000).

Conventional power plants are second only to automobiles as the greatest source of NOx emissions (USEPA 1998) that are a key component of ground level ozone. Of the six major criteria air pollutants regulated by the USEPA, NOx emissions have historically been the hardest to control. One of the contributing factors is that NOx emissions from coal plants in one region can easily pollute areas hundreds of miles downwind. The American Lung Association estimates that almost half (48 percent or 140.5 million) of Americans live in areas with unhealthy levels of smog.

Coal-fired power plants are also the largest single source of sulfur dioxide, releasing about 2/3 of the total SO_2 pollution each year (USEPA 2003). Sulfur dioxide, which can travel long distances in the atmosphere before falling down to the land, can cause problems on its own as well as when it combines with other pollution to form other dangerous compounds (USEPA 2000). In addition to acid rain, SO_2 can combine with NOx and other particles to form particulate matter, which is sometimes called soot. Particulate matter, which can also be released directly from the smokestacks of coal-fired power plants, is often divided into categories based on the size of the particles—coarse, fine, and ultrafine—and all three are considered hazardous to human health and the environment (American Lung Association 2006).

Particle pollution is considered by the American Lung Association to be one of the most dangerous air pollutants, and over 64 million Americans are estimated to breathe air that has so much particle pollution that it puts their health at risk. Particle pollution can trigger heart attacks and strokes, lead to cardiac arrhythmia (irregular heartbeat), cause respiratory irritation, and worsen asthma. Both short-term and long-term exposure can cause premature death. In fact, particle pollution from power plants in the United States leads to over 30,000 deaths each year–

a shocking figure when compared to the 17,000 homicides committed each year. Cutting power plant emissions by 75 percent could avoid more than 18,000 of the deaths caused by particle pollution (Clean Air Task Force 2000).

In addition to its health impacts, particle pollution is also the number one cause for haze, or reduced visibility, in the United States. Regional haze from airborne pollutants has reduced annual average visibility in the United States from natural conditions to about one-half in the west and to one-third in the east (USEPA 2006).

Coal-fired power plants are the largest single man-made source of mercury pollution in the United States (USEPA 2000), and are the largest contributor of hazardous air pollutants. In smokestack tests, coal-fired power plants were found to release 67 air toxics, many of which are known or suspected carcinogens and neurotoxins that can cause development problems, respiratory problems, and aggravate asthma (Clean Air Task Force 2002).

Of these air toxics, one of the most dangerous is mercury. Mercury from coal-fired power plants is released into the air through the exhaust system when coal is burned. The primary exposure for Americans occurs when this mercury falls to the earth and runs into our lakes, rivers, and streams and contaminates the fish. Humans can be contaminated when they eat these fish and shellfish (USEPA 2006). In 2004, 47 states and territories had fish consumption advisories for mercury for at least some of their waters (USEPA 2005).

Mercury is a developmental toxin, primarily affecting fetal development. In unborn children, it can cause brain damage, mental retardation, blindness, and many other problems (Agency for Toxic Substances and Disease Registry 1999). Infants are also exposed to these dangers through contaminated breast milk. While the dangers of mercury are most often associated with women and children, eating fish high in mercury has also been found to put middle-aged men at a greater risk for coronary heart disease (American Heart Association 2004).

Burning fossil fuels such as coal releases CO_2 pollution, making energy use the single largest source of greenhouse gases in the United States and the world. Currently there is 30 percent more CO_2 in the atmosphere than there was at the start of the Industrial Revolution, and we are well on the way to doubling CO_2 levels in the atmosphere during this century. Although the United States has only four percent of the world's population it emits about 25 percent of global warming pollution (Energy Information Administration 2004).

Power plants emit 40 percent of total U.S. carbon dioxide pollution, the primary global warming pollutant (USDOE and USEPA 2000). Although coal-fired power plants account for just over half of the electricity produced in the United States each year, they have been responsible for over 83 percent of the CO_2 pollution since 1990 (Environmental Information Administration 2006). Coal-fired power plants have the highest output rate of CO_2 per unit of electricity among all fossil fuels (USDOE and USEPA 2000).

The atmospheric concentrations of CO_2 and other greenhouse gases reached a new high in the 1990s, the hottest decade on record. Average global temperatures have risen already by one degree Fahrenheit, and projections indicate an increase of two to ten degrees within this century. The Intergovernmental Panel on Climate Change (IPCC) has reported that global warming threatens human populations and the world's ecosystems with worsening heat waves, floods, drought, extreme weather, and by spreading infectious diseases (IPCC 2001). Unfortunately, global warming problems continue to grow as more greenhouse gases are spewed into our atmosphere.

2.4.2 Anticipated Impacts

2.4.2.1 Construction

During the site preparation and construction phases of the Project, minor and temporary adverse impacts to air quality may result from the operation of construction equipment and vehicles. Impacts would occur due to emissions from engine exhaust and from the generation of fugitive dust during earth moving activities and travel on unpaved roads. The increased dust and emissions would not be of a magnitude or duration that would significantly impact local air quality. However, dust could cause localized annoyance and temporary property impacts (such as creating a coating of dust) at certain yards and residences that are adjacent to Project access roads.

2.4.2.2 Operation

The operation of the Project is anticipated to have a positive impact on air quality by producing 229,000 MWh per annum of emission-free electricity. This is the equivalent to powering approximately 25,500 New York homes. The power supplied by the Project will generally displace power provided by on-demand / peaking power plants. Such plants routinely come on and off line and adjust their output with changes in electricity demand or the sudden loss of supply (i.e., a power plant goes off-line) regardless of whether wind power is available. These plants are mainly fossil fuel thermal plants with relatively high air emissions. The NYSERDA has determined that the addition of 3,300 MW of wind power—potentially including the Project—would not require increased operation of on-demand/peaking generation. The amount of pollution displaced by the Project's output will vary by time of day and season and with the mix of fossil-fueled generation. Based on EPA's Emissions and Generation Resource Integrated Database (EPA eGRID), average output emission rates for the upstate New York power generators are approximately equal to the following: NOx at 0.995 lbs/MWh, SO_2 at 4.196 lbs/MWh, and CO_2 at 820 lbs/MWh (EPA eGRID). Using these figures and assuming a minimum size of 87.45 MW, and considering the expected capacity factor, the Project will displace roughly:

- 111 tons of NOx
- 466 tons of SO_2
- 91,085 tons of CO_2

In reducing these and other greenhouse gases, the Project would also have indirect positive impacts on many of the harmful environmental conditions brought forth by these greenhouse gases. In reducing levels of smog, mercury, and sulfur-dioxide that contaminate the rivers and streams when they come down during precipitation, the long-term benefits to fish and land creatures would be far-reaching. A reduction in these criteria emissions is an important environmental benefit because of their contribution to acid deposition (acid rain), ozone pollution (smog) and global warming and their resultant health and welfare affects on the public and the environment. Using these assumptions, the proposed Project would have a net positive impact leading to healthier air and reduce climate changing impacts associated with fossil-fuel-burning power plants.

Currently New York hosts some of the oldest and dirtiest coal plants, which remain in operation in part to meet statewide power shortfalls. The Project's clean renewable power will both help meet the upstate region's growing electricity demand and reduce its dependence on existing conventional power plants. This, in turn, would have positive impacts on the health of the region's environment and its inhabitants.

2.4.3 Mitigation Measures

2.4.3.1 Construction

Except for minor, temporary impacts from construction vehicles, the Project will have no permanent adverse impacts on air quality. A Dust Control Plan will be developed and implemented to minimize the amount of dust generated by construction activities. In accordance with this Plan, the extent of exposed/disturbed areas on the Project Site at any one time will be minimized and restored/stabilized as soon as possible. Construction traffic will observe a controlled speed to reduce creation of dusty conditions. The environmental inspector will identify dust problems and report them to the construction manager and the contractor. Water or other dust-suppression substances approved by local, state and federal regulators will be used to control dust along public roads as well as Project access roads as needed throughout the duration of construction activities. In addition to these mitigations, the Project will also employ the following measures:

- Vehicles used during construction will comply with applicable federal and state air quality regulation;
- Vehicles used during construction will be properly maintained;
- Defective exhaust pipes will be replaced immediately;
- Limiting engine idling time and shutting down equipment when not in use;
- Car-pooling among construction workers will be encouraged to minimize construction related traffic and associated emissions;
- Disturbed areas will be re-planted or graveled to reduce wind-blown dust; and
- Erosion control measures will limit deposition to silt on roadways.

2.4.3.2 Operation

Operation of the Project would have a long-term beneficial impact on air quality and the environment. This is one of the underlying drivers in the development of such projects and the mission of the Applicant. In essence, the operation of a utility-scale wind farm and its benefit on air quality can and should be viewed as mitigation for other environmental impacts that may be associated with the Project.

2.5 Aesthetic and Visual Resources

This section discusses the aesthetic and visual resources in the Project Area and documents an analysis of potential Project impacts on those resources. The information presented here is a summary of more detailed documentation provided in Appendix F. The Visual Impact Analysis (VIA) procedures used for this study are consistent with methodologies developed or prescribed by a variety of federal and state agencies, specifically including the NYSDEC, and in common use for environmental impact assessment within the industry.

2.5.1 Existing Conditions

Based on a published policy regarding visual assessment methodology developed by the NYSDEC, Program Policy Assessing and Mitigating Visual Impacts (NYSDEC 2000), the visual study area for the Project was initially defined as the area within a 5-mile radius around the exterior boundary of the Project Site. This 5-mile buffer is referred to as the standard visual study area. In response to specific scoping requests from representatives of the towns of Bellmont and Chateaugay, the area for mapping of sensitive sites and viewshed analysis was extended to a 7.5-mile radius around the Project Site. This area is referred to as the extended visual study area. The standard and extended visual study areas are both illustrated on Figure 2 in Appendix F. Existing visual and aesthetic resources within the 7.5-mile radius of the Project Site were assessed as part of a VIA. The VIA (see Appendix F for complete discussion) included a review of existing data and field reconnaissance to identify landscape similarity zones, viewer groups, and sensitive visual resources within the visual study area. These existing visual/aesthetic components of the study area are described below.

2.5.1.1 Landscape Similarity Zones

Land use in the extended visual study area is dominated by forest and agricultural uses, farms, and rural residences. Within this area, four distinct landscape similarity zones (LSZ) were defined. The approximate locations of these LSZs are illustrated in Figure 3 of Appendix F. Their general landscape character, patterns of use, and potential views to the proposed Project are described below.

2.5.1.1.1 Zone 1—Rural Residential/Agricultural Zone

This LSZ makes up approximately 34 percent of the study area, and primarily occurs in the northern portion of the study area. The zone is characterized by open agricultural land with widely dispersed farms and rural residences along a network of state, county, and local roads. Active agricultural fields (e.g., row crops) and pastures bordered by hedgerows and scattered deciduous trees dominate the landscape. The landform within this zone consists primarily of level to gently rolling plateaus and valleys. Views in the rural residential/agricultural zone are generally open, and at times expansive. Typical views include a patchwork of open fields and partially forested areas, punctuated by residences, barns, and silos. Livestock and working farm equipment are often seen in the fields. In places, forest vegetation frames or provides a backdrop to the view. Views in this LSZ occasionally include roadside commercial development. Examples of this landscape occur throughout the visual study area, especially outside of the hamlets. Due to the elevation differences in the study area and the abundance of open fields throughout much of the visual study area, foreground (less than 0.5 mile), middleground (0.5 to 3.5 miles), and background (greater than 3.5 miles) views of the proposed Project would be available from many areas within the rural residential/agricultural zone.

2.5.1.1.2 Zone 2—Forested Zone

This LSZ makes up approximately 65 percent of the study area, and primarily occurs in the southern portion of the study area. Forested upland is characterized by the dominance of native forest vegetation (deciduous, evergreen, and mixed-forest types) in various stages of regeneration/maturity. Mature trees are typically about 45 feet in height. This zone is mostly made up of private woodlots, especially in the area outside of Adirondack Park. Views in this LSZ are typically enclosed by the forest vegetation and the topography, which is hillier than in the rural/agricultural zone. View windows are often limited to areas where small clearings, wetlands, ponds, and road cuts provide breaks in the tree canopy. Where long distance views are available, they are typically of short duration, limited distance, and/or framed by trees. Prime examples of this zone include Adirondack Park lands in the towns of Bellmont and Ellenburg. Generally, views in this zone are hindered by trees in the immediate foreground.

2.5.1.1.3 Zone 3—Village/Hamlet Zone

This LSZ is comprised of a number of discrete, relatively small areas and makes up about 1 percent of the study area. The zone includes the villages of Burke and Chateaugay, as well as a portion of the Village of Malone. It also includes the hamlets of Bellmont Center, Burke Center, North Burke, Cooks Mill, Sun, Thayers Corner, Brainardsville, Brayton Hollow, Blairs Kiln, Earlville, Harrigan, Malone Junction, Teboville, and Whippleville. This zone is characterized by moderate- to high-density residential development within the villages and primarily low-density residential development within the hamlets, with limited commercial establishments (primarily retail and service facilities) along the main roads. Vegetation and landform may contribute to visual character in the villages and hamlets, but buildings (typically two to three stories tall) and other constructed features dominate the landscape. The buildings can be highly variable in their size, architectural style, and arrangement (e.g., buildings in the villages tend to be older, whereas hamlets may include older buildings mixed with some newer architecture). These buildings are typically organized along a grid pattern that tends to orient views along the streets, while the buildings block views of distant features from most locations. In some areas, street and yard trees further enclose and screen views. Within this zone, potential views of the proposed Project would likely be available only in outskirt areas, and would likely be blocked or at least partially screened by existing structures, mature street trees, and/or the rolling topography surrounding the villages.

2.5.1.1.4 Zone 4—Adirondack Park Zone

This zone technically could be considered a subset of the forested upland zone because it is included within the 65 percent of the study area that is predominantly forested. The study area lands within the Adirondack Park boundary are discussed separately, however, because of some landscape characteristics that differ from Zone 2. The Adirondack Park zone is distinguished by more continuous forest cover and more hilly terrain, resulting in extensive, heavily-wooded slopes. This area also has numerous lakes and other water features, including Upper and Lower Chateaugay Lakes. Finally, Zone 4 in general is also distinguished by its status as a significant recreational and scenic area, and the moderate to heavy use it receives from tourists and recreational users.

Upper and Lower Chateaugay Lakes include shoreline cottages and public access areas for water-based recreational activities, including boating, fishing, and swimming. Views from both lakes toward the proposed Project are at least partially obstructed in most locations, because of the terrain and forest cover. In addition, because there is extensive shoreline development along the lakes, shoreline homes can block views from the nearby highway or other homes. Any views from the Chateaugay Lakes to the Project would be at the background viewing distance, as the northern end of Lower Chateaugay Lake is at least 3 miles distant from the closest proposed turbine location. Because there is considerable residential development and recreational use at many waterbodies within Adirondack Park, the sensitivity to visual quality and visual changes in this zone is generally high.

2.5.1.2 Viewer/User Groups

Three viewer/user group categories were identified for the visual study area. These are described below.

2.5.1.2.1 Local Residents

Local residents include those who live and work within the visual study area. Generally, they view the landscape from their yards, homes, local roads, and places of employment while engaged in daily activities. Residents are concentrated in the villages and hamlets. They are located throughout the study area, but have a minimal presence in the forested southern portion. Except when involved in local travel, these viewers are likely to be stationary, and have frequent or prolonged views of the landscape. Local residents may view the landscape from ground level or from the upper floors of homes or other buildings. Residents' sensitivity to visual quality is variable, and may be tempered by the aesthetic character/setting of their neighborhoods or workplace. For example, residents with a view of existing commercial facilities may be less sensitive to landscape changes than those with a view of open farmland. It is assumed, however, that all local residents are familiar with the local landscape and may be very sensitive to changes in particular views that are important to them.

2.5.1.2.2 Commuters/Travelers

Commuters and travelers passing through the area view the landscape from motor vehicles on their way to work or other destinations. Commuters and through travelers are typically moving, have a relatively narrow field of view, and are destination oriented. They would be concentrated on the major roads that traverse the study area, including U.S. Highway 11, New York State Highway 374, and County Route 24. Generally, drivers would be focused on the road and traffic conditions, but do have the opportunity to observe roadside scenery. Passengers in moving vehicles would have greater opportunities for prolonged off-road views toward landscape features than would drivers and, accordingly, may have greater perception of changes in the visual environment.

2.5.1.2.3 Tourists/Recreational Users

This viewer group includes local and seasonal residents engaged in recreational activities, and tourists visiting the area. These users can be involved in outdoor recreational activities at parks and other developed recreational facilities or in undeveloped natural settings such as forests, fields, and waterbodies. Tourists and recreational users come to the area for the purpose of experiencing its cultural, scenic, or recreational resources. Some, such as weekend and seasonal homeowners, may spend extended time in the area. They may view the landscape while traveling to these destinations on local roads, or from the sites themselves. This group includes those involved in active recreation (e.g., bicyclists, hikers, joggers, snowmobilers, hunters, recreational boaters) and those involved in more passive recreational activities (e.g., picnicking, sightseeing, walking). For some of these viewers, scenery would be a very important part of their recreational experience, and recreational users would often have continuous views of landscape features over relatively long periods of time. Most recreational viewers would only view the surrounding landscape from ground-level or water-level vantage points. Tourists' and recreational users' sensitivity to visual quality and landscape character would be variable (depending on their reason for visiting the area), although this group is generally considered to have relatively high sensitivity to aesthetic quality and landscape character. Within the study area, this group would be concentrated at park and recreational facilities such as Adirondack Park, High Falls Park and Campground, Ponderosa Campground, and the Chateaugay Lake State Fish Hatchery. The forested character of most public and private recreation areas that are frequented by this viewer group generally limits long-distance visibility from these sites.

2.5.1.3 Viewer Group Exposure and Sensitivity

The three viewer/user groups are classes of viewers that differ in their expected visual response to the Project and its setting. Their responses to visual change are affected by their exposure and sensitivity to the change. Viewer exposure is primarily based on the number of people viewing the Project, but also considers the degree to which viewers are exposed to a view by their physical location and the duration of the view.

Viewer sensitivity is the degree to which viewers are likely to be receptive to the visual details, character, and quality of the surrounding landscape. Two principle factors affect viewer sensitivity: activity and awareness. Activity relates to whether the viewer's activity encourages him or her to look at the landscape or distracts the viewer from the landscape. Awareness relates to how a viewer's position, recent visual experience, or individual preconceptions and values affect his or her receptivity to visual character.

Appendix F describes in more detail viewer exposure and sensitivity scales that were used to characterize the respective viewer groups and their expected response to change for each viewpoint selected for the impact analysis. In this analysis, viewer sensitivity is based primarily on the viewer's activity. While viewer groups often vary in their sensitivity, that is, the degree to which a visual impact is felt, they rarely differ in their recognition of a positive or negative visual impact of a project.

2.5.1.4 Visually Sensitive Resources

As identified in the NYSDEC Visual Policy (NYSDEC 2000), the standard study area for impacts to scenic and aesthetic resources is the area within 5 miles of a project site or project area boundary. As stated previously, the VIA also evaluated the area within an additional 2.5-mile radius (7.5 miles total) from the Project Site boundary, as requested by the towns of Bellmont and Chateaugay. The VIA employed the same procedures for all aesthetic resources within the extended visual study area.

The NYSDEC (2000) Visual Policy identifies a number of types of features that are considered to be scenic resources of statewide significance. Section 3.5.1 of Appendix F describes the categories of resources identified by NYSDEC as sensitive, explains the specific applicability for each category, and indicates whether any features in each category are present within the study area. With respect to the NYSDEC list, the inventory identified five specific sensitive sites within the standard visual study area (within a 5-mile radius of the Project) *other than* sites listed on or eligible for the National or State Register of Historic Places (see additional discussion below). These sites include one designated scenic highway (i.e., Military Trail Scenic Byway/U.S. Highway 11), one potential Adirondack Park scenic pull-off on Clinton County Route 54 near Harrigan, two Adirondack Park scenic corridors (i.e., segments of New York State Highways 190 and 374), and one large waterbody (i.e., Lower Chateaugay Lake) in the Adirondack Park. No state parks; urban cultural parks; state forest preserves; national wildlife refuges, state game refuges, or state wildlife management areas; national natural landmarks; national park system, recreation areas, seashores, or forests; national or state wild, scenic, recreational rivers; scenic areas of statewide significance; designated national or state trails; state nature and historic preserve areas; or Bond Act properties are located within the standard or extended visual study area.

The extended visual study area (including the area between 5 and 7.5 miles from the Project Site) includes additional scenic resources of statewide significance. These include more sites listed on or eligible for the National or State Register of Historic Places (see discussion below) and one boat launch (i.e., Upper Chateaugay Lake Boat Launch).

In addition to these scenic resources of statewide significance per the NYSDEC Visual Policy, the standard visual study area includes numerous areas that are considered regionally or locally significant or sensitive, due to the type or intensity of land use they receive. These include one state forest (i.e., Franklin 10 State Forest), three parks and recreational areas (i.e., Chateaugay State Fish Hatchery, High Falls Park and Campground, and Ponderosa Campground), two villages (i.e., Burke and Chateaugay), ten hamlets (i.e., Bellmont Center, Burke Center, Cooks Mill, Sun, Thayers Corner, Brainardsville, Brayton Hollow, Blairs Kiln, Earlville, and Harrigan), and five transportation corridors (i.e., U.S. Highway 11, New York State Highways 190 and 374, and Franklin County Routes 24 and 54). The inventory identified 21 additional visually sensitive resources in this category; this list includes some overlap or duplication with the sites of statewide significance, with respect to the treatment of travel corridors.

The NYSDEC Visual Policy discusses inventory of cultural sites (sites listed on or eligible for the National or State Register of Historic Places) only within 5 miles of a project. Similarly, the New York State Historic Preservation Office (SHPO) guidelines prescribe the area of potential effects for historic architecture as the viewshed within 5 miles of a project boundary. Because the VIA included all categories of NYSDEC-defined visually sensitive sites within 7.5 miles of the Project Site, however, the VIA likewise included all cultural sites within the extended visual study area. Please refer to Section 2.6 of this DEIS for a more complete discussion of conditions relative to architectural historic resources.

As discussed in Section 2.6, at the time of this report the Applicant was still in the process of conducting archival research on potentially eligible architectural historic resources and mapping the locations of sites that have not been previously inventoried. The results of this work will be summarized in a separate report and will be addressed with respect to updated evaluation of visual impacts in the FEIS. Inventory work completed to date indicated there appeared to be 109 architectural historic resource sites listed on or eligible for the National or State Register of Historic Places within the extended visual study area for the Project. Mapping of these sites based on location data provided in the SHPO files indicated that 11 of these sites are actually beyond 7.5 miles of the Project Site, resulting in identification of 98 such sites that have been confirmed within the extended visual study area. Information currently available suggests that there are up to an additional 69 architectural historic resources that may be located within the extended visual study area. Because the location information provided in the SHPO database is not sufficient to confirm the specific location of these additional sites, they have not yet been mapped.

Figure 2.5-1 shows the location of the inventoried visually sensitive resources within the extended visual study area that have been mapped to date (and the 11 architectural historic resources just beyond the study area). Each site that has been mapped is noted with a site identification number; the map includes 136 total sites. Table 2.5-1 is a corresponding list of the resources shown on the map, providing the site number, name, and basic information on the resource location. As indicated in the table and noted previously, there is a minor degree of duplication or overlap among the listed sites. The Chateaugay State Fish Hatchery, for example, is listed as both a visually sensitive resource of regional or local significance (Site 8) and as a cultural site (Site 74). In addition, all of the villages and hamlets within the study area are listed as visually sensitive resource of regional or local significance, and many of the identified cultural sites are located within those villages and hamlets. Section 3.5 of Appendix F provides more complete information on each category of visually sensitive resource and the specific resources that are present within the study area.

2.5.1.5 Visual Impact Assessment Methodology

2.5.1.5.1 Viewshed Analysis

Topographic viewshed maps for the study area were prepared using USGS digital elevation model (DEM) data (7.5-minute series) for the study area as the base. Through the ESRI ArcGIS software with the Spatial Analyst extension, the location and elevation (based on a maximum blade tip height of 397 feet above existing grade) of all proposed turbines were added to the DEM base to create a three-dimensional surface with the wind turbines added to the landscape.

The process of identifying the areas from which the proposed Project's wind turbines might be visible is termed a Zone of Visual Influence (ZVI) analysis. The ArcGIS program defines the viewshed (using topography only) by reading every cell of the DEM data and assigning a value based upon straight, line-of-sight visibility from turbine locations throughout the study area. The ZVI data were overlaid on the map of scenic or sensitive visual resources identified within the study area. The resulting topographic viewshed map defines the areas from which any turbine within the completed Project could be seen during daytime hours, ignoring the screening effects of existing structures or vegetation. The viewshed analysis was run initially to illustrate Project visibility within a 5-mile radius of the Project Site. The viewshed analysis was also run using a 7.5-mile radius to evaluate potential Project visibility at sensitive sites outside the standard visual study area boundary.

Figure 2.5-1 Visually Sensitive Resources

Table 2.5-1. Visually Sensitive Resources within the Study Area

Site ID a/	Resource Name	Town	County	Location
Visually Sensitive Resources—Identified in NYSDEC Visual Policy				
1	Military Trail Scenic Byway	Burke,Chateaugay,Clinton	Franklin, Clinton	N, W, and E of Project
2	Adirondack Park Scenic Pull-Off, CR-54	Ellenburg	Clinton	Near Harrigan/Sites 22&42, specific location unidentified
3	(State Route) Highway 190	Bellmont	Franklin	SE of Project
4	(State Route) Highway 374	Bellmont	Franklin	SE of Project
5	Lake (lower Chateaugay Lake)	Bellmont	Franklin	S of Project
6	Boat Launch (upper Chateaugay Lake)	Ellenburg	Clinton	6+ mi. S of Project
Visually Sensitive Resources—Not Identified in NYSDEC Visual Policy				
7	Franklin 10 State Forest	Chateaugay	Franklin	E of Project
8	Chateaugay State Fish Hatchery	Chateaugay	Franklin	Off Rte 11 - 1.2 mile E of Chateaugay Village
9	High Falls Park and Campground	Chateaugay	Franklin	Off Rte 11 - 0.4 mile SW of Chateaugay Village
10	Ponderosa Campground	Chateaugay	Franklin	Ponderosa Road-On Bellmont/Chateaugay Town Line
11	Village of Burke	Burke	Franklin	
12	Village of Chateaugay	Chateaugay	Franklin	
13	Belmont Center Hamlet	Bellmont	Franklin	
14	Burke Center Hamlet	Burke	Franklin	
15	Cooks Mill Hamlet	Chateaugay	Franklin	
16	Sun Hamlet	Burke	Franklin	
17	Thayers Corner Hamlet	Burke	Franklin	
18	Brainardsville Hamlet	Bellmont	Franklin	
19	Brayton Hollow Hamlet	Chateaugay	Franklin	
20	Blairs Kiln Hamlet	Bellmont	Franklin	
21	Earlville Hamlet	Chateaugay	Franklin	
22	Harrigan Hamlet	Ellenburg	Clinton	
23	US Highway 11	Burke,Chateaugay,Clinton	Franklin, Clinton	N, W, and E of Project
24	NY State Highway 374	Bellmont, Chateaugay	Franklin	E, NE, and SE of Project
25	NY State Highway 190	Ellenburg, Bellmont	Franklin, Clinton	E of Project
26	County Route 54	Bellmont	Franklin, Clinton	S of Project / Junction w Route 374
27	County Route 24	Bellmont	Franklin	S of Project / Brainardsville Road
Visually Sensitive Resources: Listed on or Eligible for the National or State Register of Historic Places				
28	108 Campbell (Bohen) Road	Clinton	Clinton	
29	394 Looby Road	Clinton	Clinton	
30	241 Lost Nation Road	Clinton	Clinton	
31	604 Lost Nation Road	Clinton	Clinton	
32	911/929 Ryan Road	Clinton	Clinton	
33	7631 US Rte 11	Clinton	Clinton	

Table 2.5-1. Visually Sensitive Resources within the Study Area

Site ID a/	Resource Name	Town	County	Location
34	9 Broad Street	Clinton	Clinton	
35	26 Smith Street	Clinton	Clinton	
36	556 and 560 SR 189	Clinton	Clinton	
37	595 SR 189	Clinton	Clinton	
38	1343 SR 189	Clinton	Clinton	
39	68 Campbell (Bohen) Road	Ellenburg	Clinton	
40	94 Ryan Road	Ellenburg	Clinton	
41	197 Ryan Road	Ellenburg	Clinton	
42	West Hills Cemetery	Ellenburg	Clinton	SR 190, Between Tacey and Moore Roads
43	Star Road Cemetery	Ellenburg	Clinton	Star Road, between Tacey and Sancombe (Moore) Rds
44	Cassidy Road Cemetery	Bellmont	Franklin	Cassidy Road
45	Merrill Cemetery	Bellmont	Franklin	82 Cheyne Road
46	Bunker Hill Cemetery	Bellmont	Franklin	Cromp Road
47	540 Number 5 Road	Bellmont	Franklin	
48	Morningside Cemetery	Bellmont	Franklin	NY 374 W. side / South of Spear Rd / East of Spear Rd
49	5908 NY 374	Bellmont	Franklin	Lower Chateaugay Lake
50	5926 NY 374	Bellmont	Franklin	Lower Chateaugay Lake
51	5880 NY 374 Banner House Inn	Bellmont	Franklin	Lower Chateaugay Lake
52	Bellmont Center Cemetery	Bellmont	Franklin	CR 24 South side, West of Pinnacle Road
53	2 SR 190	Bellmont	Franklin	
54	Brainardsville Cemetery	Bellmont	Franklin	164 SR 190
55	6343 SR 374	Bellmont	Franklin	
56	6361 SR 374	Bellmont	Franklin	
57	Ridgeway Cemetery	Burke	Franklin	Cook Road North Side, East of CR36
58	Mitchell Cemetery	Burke	Franklin	Montgomery Rd, West Side, South of CR 33 (W Main St)
59	839 Depot Street	Burke	Franklin	
60	842 Depot Street	Burke	Franklin	
61	1046 East Main Street	Burke	Franklin	
62	1052 East Main Street	Burke	Franklin	
63	Colonial Revival House	Burke	Franklin	Mill Street, East Side, North of Main Street
64	15 East Road	Burke	Franklin	
65	5717 US Route 11 (Bova House)	Burke	Franklin	
66	Thayer Corners Cemetery	Burke	Franklin	US 11 N. Side, setback 950 feet, in pine stand on knoll
67	162 Cemetery Road	Chateuagay	Franklin	
68	165 Cemetery Road	Chateuagay	Franklin	
69	St Patrick Cemetery	Chateuagay	Franklin	294 Cemetery Road

Table 2.5-1. Visually Sensitive Resources within the Study Area

Site ID a/	Resource Name	Town	County	Location
70	1742 CR 23	Chateaugay	Franklin	
71	442 Douglas Road	Chateaugay	Franklin	
72	238 Earlville Road	Chateaugay	Franklin	
73	Cosgrove Adult Home	Chateaugay	Franklin	890 Farker (Farquhar) Road
74	Chateaugay Fish Hatchery	Chateaugay	Franklin	Fish Hatchery Road, North of Route 11 on Marble River
75	528 Hartnett Road	Chateaugay	Franklin	
76	Atwater Cemetery	Chateaugay	Franklin	Martin Road, South Side, on top of knoll in pine stand
77	Bigelow Cemetery	Chateaugay	Franklin	304 River Road
78	479 River Road	Chateaugay	Franklin	
79	Sandy Knoll Union Cemetery	Chateaugay	Franklin	Sandy Knoll Road, West Side, North of CR 35
80	389 Shee Woods Road	Chateaugay	Franklin	
81	Eastside Cemetery	Chateaugay	Franklin	7780 SR 11
82	Port of Entry US Customs	Chateaugay	Franklin	SR 374
83	748 SR 374	Chateaugay	Franklin	
84	760 SR 374	Chateaugay	Franklin	
85	Chateaugay United Methodist Church	Chateaugay	Franklin	5 Church Street
86	16 Church Street	Chateaugay	Franklin	
87	20 Church Street	Chateaugay	Franklin	
88	Chateaugay Hotel	Chateaugay	Franklin	2 Depot Street
89	23 Depot Street	Chateaugay	Franklin	
90	36 Depot Street	Chateaugay	Franklin	
91	Rutland Railroad Depot	Chateaugay	Franklin	45 Depot Street
92	160-162 East Main Street	Chateaugay	Franklin	Jackson Block
93	161 East Main Street	Chateaugay	Franklin	Beeman Block
94	163 East Main Street	Chateaugay	Franklin	
95	165 East Main Street	Chateaugay	Franklin	Coonley Block
96	167 East Main Street	Chateaugay	Franklin	Coonley Block
97	169 East Main Street	Chateaugay	Franklin	
98	171 East Main Street	Chateaugay	Franklin	
99	173-175 East Main Street	Chateaugay	Franklin	
100	181 East Main Street	Chateaugay	Franklin	
101	183 East Main Street	Chateaugay	Franklin	
102	Town Hall	Chateaugay	Franklin	191 East Main Street
103	Johnson Brother's Building	Chateaugay	Franklin	194 East Main Street
104	196 East Main Street	Chateaugay	Franklin	
105	First Presbyterian Church	Chateaugay	Franklin	214 East Main Street

Table 2.5-1. Visually Sensitive Resources within the Study Area

Site ID a/	Resource Name	Town	County	Location
106	Smith Green Cemetery (Evergreen Cemetery)	Chateaugay	Franklin	275 East Main Street
107	5 Franklin Street	Chateaugay	Franklin	
108	6 Franklin Street	Chateaugay	Franklin	
109	14 Lake Street	Chateaugay	Franklin	
110	McCoy Building	Chateaugay	Franklin	3 & 5 River Street
111	94 West Main Street	Chateaugay	Franklin	
112	100 West Main Street	Chateaugay	Franklin	
113	St Patrick's Church and Rectory	Chateaugay	Franklin	130 & 132 West Main Street
114	Key Bank	Chateaugay	Franklin	151 West Main Street
115	Boyton Hollow Cemetery	Chateaugay	Franklin	CR 35 W Side, Heavily Wooded Knoll, at Boyton Holl. Rd
116	Earlville Cemetery	Chateaugay	Franklin	Earlville Road, North of Farker (Farquhar) Road
117	Wills Cemetery	Chateaugay	Franklin	641 Earlville Road
118	703 Earlville Road	Chateaugay	Franklin	
119	Earlville Methodist Church	Chateaugay	Franklin	Farker (Farquhar) Road, South of Earlville Road
120	Forge Methodist (Seventh Advent) Church	Chateaugay	Franklin	Blow Road, East Side North of Forge Road.
121	Malone (Village) Historic District	Malone	Franklin	Core of Village
122	Franklin County House of History	Malone	Franklin	51 Milwaukee St
123	Macomb Hydro Facility	Malone	Franklin	SE Malone on Salmon River
124	Cargin Road Bridge	Malone	Franklin	Salmon River North of Malone Village
125	St Mark's Episcopal Church and Rectory	Malone	Franklin	34 Elm Street
126	Raymond Street School	Malone	Franklin	26 Raymond Street
127	Burke Town Hall	Burke	Franklin	842 Depot Street
128	Chateaugay Fish Hatchery	Chateaugay	Franklin	Fish Hatchery Road, North of Route 11 on Marble River
129	Anselm Lincoln House	Malone	Franklin	49 Duane Street
130	Horton Grist Mill	Malone	Franklin	
131	Almonzo Wilder Home	Burke	Franklin	0.5 miles east of Donahue Road on Stacy Road
132	First Union Protestant Church of Mountain View	Bellmont	Franklin	7 Church Rd, Owls Head
133	177 East Main Street/ non-contributing	Chateaugay	Franklin	
134	144 West Main Street / non-contributing	Chateaugay	Franklin	
135	Tt20A	Bellmont	Franklin	Adirondack Park National Historic Landmark
136	Tt20B	Bellmont	Franklin	Adirondack Park National Historic Landmark

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a/ See Figure 2.5-1 for map location

The visibility pattern resulting from the ZVI analysis described above is a conservative representation of actual Project visibility. First, in some areas where the model indicates visibility of Project facilities, the only visible parts of the facility might be the tips of the turbine blades, which would be hardly noticeable at some locations. In addition, the basic ZVI model is a line-of-sight model that extends from an approximate eye height of 4.9 feet and does not account for attenuating factors such as distance, haze, humidity, background landscape, or weather, any or all of which could make the proposed facility invisible or barely visible from certain locations under many atmospheric or weather conditions. The basic ZVI model also does not account for the screening effects of existing structures or vegetation. In most rural areas, the visual screening effects of structures would be highly localized, and the complex effort to incorporate three-dimensional structure data into the model would have little observable effect on a regional-scale viewshed map. In areas with extensive forest cover, however, the screening effects of tall vegetation can substantially reduce the area from which proposed facilities would be visible.

Therefore, the viewshed analysis was repeated with the inclusion of a vegetation layer to better illustrate the potential screening effect of forest vegetation. The with-vegetation Project viewshed analysis identified the extent of forest vegetation within the study area using a vegetation map layer created from USGS National Land Cover Data. Areas of forest cover indicated in this data set were assigned an assumed tree-canopy elevation of 45 feet above ground level. This layer was added to the DEM terrain layer to produce a modified base layer for the viewshed analysis, as described above (using the blade tip height as input data). The ArcGIS program again defined the viewshed by reading every cell of the combined DEM and vegetation data and assigned values based upon straight, line-of-sight visibility from turbine locations throughout the Project. The resulting viewshed map, which is discussed in Section 2.5.2.2, is a more accurate forecast of locations from which Project facilities would actually be visible. It is worth noting, however, that certain key characteristics that influence visibility (such as the color of the turbines, their narrow profile, and their distance from the viewer) are not taken into consideration in the viewshed analysis. In addition, the USGS vegetation layer applied in the analysis represents larger areas of predominantly forest cover, but it does not include many small patches of trees that can still have screening effects on views. Consequently, the existence of an unobstructed line of sight between a specific viewpoint and one or more turbine locations does not necessarily equate to actual Project visibility from that viewpoint.

2.5.1.5.2 Cross Section Analysis

The Applicant also performed selected cross section analyses to confirm the results of the viewshed mapping process. Three representative line-of-sight cross sections, each approximately 16 miles long, were cut through the study area (see Figure 7 in Appendix F). These cross section locations were chosen to include some of the visually sensitive areas occurring within the study area (e.g., Adirondack Park, villages/hamlets, historic sites) and to represent the various LSZs. The cross section graphics depict the elevation profile for all points along the section. The points on that profile are based on the underlying topography, as indicated on the 7.5-minute USGS quadrangle DEMs and digital aerial photographs, combined with the forest vegetation layer used in the visibility analysis. A uniform 45-foot tree height was again assumed for this analysis. The cross section profiles were generated within ArcPLOT, a module within the ArcGIS Analyst software. The results of the cross section analysis are discussed in Section 2.5.2.2.1.

2.5.1.5.3 Field Investigation

Field investigation within and near the visual study area provided input to the visibility analysis and the evaluation of impacts, and provided the basis for selecting key viewpoints and documenting the existing visual conditions for those viewpoints. Existing conditions in and near the proposed Project Area were investigated in the field November 16 through 18, 2006, following preparation of a preliminary viewshed map and map of scenic or visually sensitive resources. The field investigation was also based on an earlier iteration of the Project layout, which included more turbines and additional acreage to the west of the current proposed Project Site. During the site visit, Tetra Tech personnel drove public roads and visited numerous public vantage points within approximately 10 miles of the Project Area. The scenic areas that the ZVI data demonstrated to have no view of the proposed Project Area were, in general, not reviewed during the field investigation. In cases where the ZVI analysis was not definitive and the site was accessible by car, a site visit was made. Four turbine coordinates (located in the northwest corner, northeast corner, southeast corner, and middle of the Project Area) were input into a handheld global positioning system (GPS) unit. At each viewpoint, a compass was used to locate one to four of the turbine coordinates (depending on the viewpoint location), and photographs were taken. The site visit provided locational references to verify visibility of the proposed turbines, and photographs to document existing visual conditions and for subsequent use in the development of visual simulations.

From November 16 to 17, Tetra Tech personnel took 95 photographs from a wide variety of locations within the study area. After careful consideration, Tetra Tech personnel selected a subset of those locations considered to have the highest importance and utility to the study. On November 18, Tetra Tech personnel went back to about one-third of those locations with a professional photographer, who took photographs from 36 representative viewpoints within the study area. All professional photographs were obtained using a Canon (1D Mark 2) digital single-lens-reflex camera. The camera used a focal length of 60 millimeters. This focal length most closely approximates normal human eyesight relative to scale. Viewpoint locations were determined using a handheld GPS unit and field maps. The time and location of each photograph were documented on the handheld GPS unit, and noted on field maps and in the field notes. The locations of these photographs are indicated on Figure 5 in Appendix F.

2.5.1.5.4 Viewpoint Selection

As discussed above, Tetra Tech hired a professional landscape photographer to take pictures of existing visual conditions at 36 specific viewpoint locations during the field investigation. From this set of locations, nine locations were selected for use as key viewpoints for development of visual simulations. These viewpoints were selected based on objectives to (1) provide clear, unobstructed views of the Project; (2) illustrate Project visibility from sensitive sites/resources within the extended visual study area; (3) illustrate typical views from each LSZ where views of the Project would be available; (4) illustrate typical views of the proposed Project that would be available to representative viewer/user groups within the study area; and (5) illustrate typical views of different numbers of turbines, from a variety of viewer distances and directions, and under different lighting conditions, to illustrate the range of visual change that would occur during operation of the Project. Location details and the criteria for selection of each simulation viewpoint are summarized in Table 2.5-2. Appendix C in Appendix F is a list indicating the location, LSZ and directional orientation for all 36 viewpoints, including the nine locations selected as key viewpoints. Figure 5 in Appendix F shows the locations of the viewpoints.

2.5.1.5.5 Existing Visual Quality Rating

Visual quality measures the degree to which a view expresses the essence of the subject landscape, including landforms, native vegetation, and built features. Visual quality relates to the intrinsic qualities of a landscape, so analysis of existing visual quality is based on the inherent capacity of a landscape to evoke a perceptual response rather than on individual preferences.

The visual quality of a selected scene from a corresponding viewpoint can be described in terms of the overall vividness, intactness, and unity of the view (American Society of Landscape Architects 1979). Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns. Intactness is the visual integrity of the natural and man-built landscape and its freedom from encroaching elements. Unity is the visual coherence and compositional harmony of the landscape considered as a whole.

Because it is not feasible or necessary to evaluate all possible views of a project, selected views have been chosen that are considered to represent the range of visual resources in the Project study area. Representative views have been chosen to reflect both views that would be seen by the largest numbers of people (i.e., high exposure, and views of people who would be most impacted; and high sensitivity). Key views are distributed throughout the foreground, middleground, and background to reflect the range of viewing distances. There is an emphasis on views from publicly accessible places, because these have the potential to be viewed by the largest number of people.

Table 2.5-2. Viewpoints Selected for Simulations and Impact Evaluation

Viewpoint Number	Visually Sensitive Resource	LSZ Represented	Viewer Group Represented	Viewing Distance a/	View Orientation b/
Viewpoint 3 CR 24 near Bellmont Center	Cemetery	Village/Hamlet and Forested	Residents/Travelers	F and M	NE
Viewpoint 10 CR 24 near Harrigan	Adirondack Park	Adirondack Park	Residents/Travelers/ Tourists	M and B	NW
Viewpoint 14 Cassidy Road and Number 5 Road	Family Cemetery	Rural Residential/ Agricultural and Forested	Residents	M	W
Viewpoint 15 U.S. 11 east of Chateaugay	No	Rural Residential/ Agricultural	Residents/Travelers	M	SW
Viewpoint 19 Entrance to High Falls Park	High Falls Park and Campground	Forested	Residents/Tourists	F and M	S
Viewpoint 20 River Road and Chase Road	No	Rural Residential/ Agricultural and Forested	Residents	F and M	W-SW, NW
Viewpoint 26 South edge, Village of Burke	No	Village/Hamlet	Residents	B	E-SE
Viewpoint 31 Callahan Road near Gravel Pit	No	Rural Residential/ Agricultural	Residents	B	SE
Viewpoint 34 NY Highway 30 south of Malone	Adirondack Trail Scenic Byway	Rural Residential/ Agricultural	Residents/Travelers/ Tourists	B	NE

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a/ F = Foreground (0-0.5 mile), M = Middleground (0.5-3.5 miles), B = Background (>3.5 miles)
b/ N = North, S = South, E = East, W = West, NE = Northeast, etc.

To make this analysis relevant to this region, the vividness, intactness, and unity of the selected views are compared to other views within the Project study area, rather than to nationally significant landmarks such as the Grand Tetons. In the evaluation of each key view, most immediate foreground elements such as pavement and street signs have been disregarded because their impact depends primarily on the observer's position.

Vividness, intactness, and unity are evaluated and assigned a score of 3 (high), 2 (moderate), or 1 (low) for each key view. These scores are added together and divided by 3 to derive an overall visual quality rating for each selected view, as follows: high—3.0 or 2.67; moderate—2.33, 2.0, or 1.67; or low—1.33 or 1.0). These ratings are discussed in more detail in Section 4.2.2 and Table 6 of Appendix F.

2.5.1.5.6 Impact Evaluation Criteria

The impact ratings are based on a comparison of the visual quality ratings of the "before" and "after" versions of the selected views. The impact ratings include consideration of the viewer exposure and sensitivity of the primary viewer group for each selected view described above. These ratings are discussed in more detail in Section 4.2.3 and Table 7 of Appendix F.

2.5.1.5.7 Visual Simulations

To show anticipated visual changes associated with the proposed Project, high-resolution computer-enhanced image processing was used to create realistic photographic simulations of the completed turbines from each of the selected key viewpoint locations. This process involved using digital terrain data and GPS data collected in the field to create a three-dimensional map using ArcScene. This data assisted in the creation of a panoramic overlay that was imported into Adobe Photoshop as a guide for placing individual turbine images onto a high-resolution version of the same panoramic photograph background. The photographic simulations were developed in Adobe Photoshop based on turbine locations, turbine specifications, representative turbine photographs, and survey coordinates depicted in overlays. Photograph sequences of each viewpoint were manually combined and blended in Adobe Photoshop to create panoramic images of the horizon. For the purposes of this analysis, it was assumed that all new turbines would be Vestas V-82 machines.

Individual turbine renderings were created in Adobe Illustrator with rotors at various positions, adding color, highlights, and sun shadows. These data were superimposed over the high-resolution panoramic photograph backgrounds in Adobe Photoshop, where the turbines were then manually blended into the high-resolution panoramic site photograph. This process ensures that Project elements are shown in proportion, perspective, and proper relation to the existing landscape elements in the view. Consequently, the alignment, elevations, dimensions, and locations of the proposed turbines would be accurate and true in their relationship to other landscape elements in the photograph.

2.5.2 Anticipated Impacts

2.5.2.1 Construction

Visual impacts during construction would include the addition of construction material and working construction vehicles and equipment to the local roads and landscape. Construction activity would result in visible site disturbance, such as tree clearing, earth moving, soil stockpiling, road building, and erection of turbine equipment, all of which would alter the character of the landscape on a temporary basis. However, all of these activities would be relatively short-term (i.e., generally restricted to the construction season), and once construction activity ceases and site restoration activities are complete, construction-related visual impacts would no longer occur.

2.5.2.2 Operation

Impacts to visual resources resulting from Project operation were evaluated through application of the methods described in Section 2.5.1.5. Appendix F provides full documentation of the results of the VIA. Those results are summarized in the following discussion.

The VIA procedures used for this study are consistent with methodologies developed or prescribed by a variety of federal and state agencies, specifically including the NYSDEC visual policy, and in common use for environmental impact assessment within the industry. Fundamental aspects of this methodology include the use of computerized mapping to identify locations from which Project facilities would be visible and the evaluation of impacts to the visual quality of key views before and after the Project is built.

2.5.2.2.1 Visibility Analysis

The Applicant undertook an analysis of Project visibility to identify those locations within the extended visual study area where there is potential for the proposed wind turbines to be seen from ground-level vantage points. The wind turbines are not the only Project facilities that would be seen by viewers and not the only sources of potential visual impacts. Because of their height, the turbines are by far the dominant visual element of the Project, however, and are the focus of the visibility analysis. This analysis included identifying potentially visible areas on viewshed maps, preparing technical cross sections, and verifying visibility in the field. The procedures employed for each component of the visibility analysis and the results are described below.

Daytime Visibility

Based on line-of-sight analysis from all cells in the DEM model (including the vegetation layer) to all turbine-tip elevation points, the GIS software identified how many turbines would be visible from any given point within the study area. As discussed previously, the visibility analysis is considered to be a conservative representation of actual turbine visibility because the slender profile of the turbines, the effects of distance or atmospheric conditions on visibility, and screening from hedgerows, street trees, and structures are not accounted for in the viewshed analysis.

Figure 2.5-2 displays the results of the daytime visibility analysis described above. Review of the viewshed map indicates that topography and vegetation would block views of the Project turbines from most of the standard (5-mile radius) or extended (7.5-mile radius) visual study area, particularly with increasing distance from the Project. Table 2.5-3 summarizes the viewshed analysis on an acreage basis for the areas within 5 miles and 7.5 miles of the Project Site. Calculations derived from the line-of-sight visibility analysis indicate that one or more turbines would be visible from approximately 18 percent of the area that is within the standard visual study area, and 13 percent of the area within the extended visual study area. No turbines would be visible from the remaining 82 percent of the area within a 5-mile radius around the Project Site, and from 87 percent of the area within 7.5 miles of the Project Site.

Table 2.5-3. Summary of Viewshed Analysis

Type of Viewshed/ Turbines Visible	Standard Visual Study Area (5-mile Radius Viewshed)			Extended Visual Study Area (7.5-mile Radius Viewshed)		
	Total Acres	Visible Acres	Percent Visible	Total Acres	Visible Acres	Percent Visible
Daytime Topography with Vegetation Cover	**105,382**	**19,434**	**18.44%**	**175,047**	**23,099**	**13.20%**
0 Visible	105,382	85,948	81.56%	175,047	151,948	86.80%
1-10 Visible	105,382	9,076	8.61%	175,047	10,601	6.06%
11-20 Visible	105,382	4,113	3.90%	175,047	4,705	2.69%
21-30 Visible	105,382	2,455	2.33%	175,047	2,869	1.64%
31-40 Visible	105,382	1,762	1.67%	175,047	2,115	1.21%
41-53 Visible	105,382	2,028	1.92%	175,047	2,810	1.61%
Nighttime Topography with Vegetation Cover—1 or More Visible	**105,382**	**14,500**	**13.76%**	**175,047**	**16,511**	**9.43%**

As indicated in Figure 2.5-2, potential visibility of Project turbines tends to occur in relatively confined patches and does not extend over broad swaths of the visual study area. Nevertheless, there are a number of somewhat larger patches of Project visibility distributed to the west, northwest, north, northeast, and east of the Project Area. Many of the visually sensitive sites within the standard visual study area fall within the viewshed (i.e., the ZVI analysis determined that Project facilities could be visible from these locations). These features include some locations in the villages of Burke and Chateaugay; the hamlets of Bellmont Center, Burke Center, Cooks Mill, Sun, Thayers Corner, Brainardsville, Brayton Hollow, Blairs Kiln, Earlville, and Harrigan (note that the visibility analysis ignored the screening effects of existing structures for both villages and hamlets); multiple sites on or eligible for listing on the National and State Register of Historic Places; and several well-traveled roadways, including multiple areas along U.S. Highway 11 and New York Highways 374 and 190. Conversely, Project turbines would not be visible from the vast majority of the Adirondack Park lands (areas south of County Route 24) within the standard or extended visual study area. The visibility map includes a limited number of relatively small patches (most within 5 miles of the Project Site) from which Project facilities would be visible. Most of these locations are along the northern boundary of the Park, in scattered locations near the Chateaugay River or on Lower Chateaugay Lake, and in a few locations east of New York Highway 374.

Figure 2.5-2 Viewshed Analysis

In most areas where potential Project visibility is indicated, those expected views would include multiple turbines. Within the Project Site, most of the shaded patches on Figure 2.5-2 indicate that 21 to 30, 31 to 40, or 41 to 53 turbines would be visible. Similarly, there are a number of patches outside the Project Site, primarily to the east, from which 41 to 53 turbines could be visible. Among all locations outside the Project Site from which the Project could be visible, however, the most common condition is that the view would include from 1 to 10 turbines. This is particularly the case near U.S. Highway 11 and most other locations to the north of the Project Site.

Review of the outer reaches of the viewshed map indicates that potential Project visibility decreases significantly outside of the 5-mile radius of the Project Site. As indicated in Table 2.5-2, the proposed Project would be potentially visible from approximately 13 percent of the area within 7.5 miles of the Project Site. Patches of Project visibility are largely absent from the band of the study area that is between 5 miles and 7.5 miles of the Project Site, as extensive valley and hillside areas and some tree cover would block views toward the Project from most of this area. Notable exceptions include relatively large patches of Project visibility near County Road 122 several miles northwest of Burke, in Canada within about 1 mile of the international border, and between Gagnier Road and U.S. 11 east of the Project, in Clinton County. Most of the visually sensitive resources in the 5- to -7.5-mile area, including most areas within the Adirondack Park boundary; the Village of Malone; the hamlets of North Burke, Sun, Blairs Kiln, Earlville, Harrigan, and Teboville; and the majority of National and State Register-listed or eligible for listing historic sites in the area would be screened from views of the Project by topography and/or vegetation. Sensitive resources in this zone determined to be within the viewshed of the Project include the hamlets of Cooks Mill and Malone Junction, and a few small portions of the Adirondack Park.

Cross Section Analysis

The results of the cross section analyses are consistent with the visibility analysis, and illustrate how topography, vegetation, and/or structures would block potential Project visibility along selected lines of sight (see Figures 7 through 10 in Appendix F). This analysis confirms that potential views of the Project from most of the visually sensitive sites within the extended visual study area are likely to be at least partially screened. This analysis found that at least one Project turbine would potentially be visible along 32 percent of the points along Cross Section Profile 1, 26 percent of the points on Cross Section Profile 2, and 19 percent of the points on Cross Section Profile 3. Figure 10 in Appendix F (Section 3), for example, confirms a lack of visibility from most key areas within the Adirondack Park, such as along the Chateaugay River and New York Highway 374. All three cross sections indicate that woodlots and wooded ravines would effectively screen views to the Project along stream corridors and many sections of area roadways. Buildings would effectively screen ground-level views from within villages and hamlets, such as the Village of Burke (Figure 8, Cross Section Profile 1), and the Village of Chateaugay and Hamlet of Bellmont Center (Figure 9, Cross Section Profile 2). Because many historic sites are located within existing communities, most historic sites in the towns of Burke and Chateaugay are not likely to have views of Project turbines. The cross sections do suggest that views of Project turbines are likely to be available from many of the heavily-traveled roads in the study area, and possibly from the upper floors of some homes in the villages and hamlets.

Nighttime Visibility

The visibility analysis was repeated to identify locations within the standard and extended visual study areas from which Project turbines could be visible at night. The proposed lighting plan for the Project (included in Appendix F) indicates that 22 of the 53 proposed turbines would be equipped with medium-intensity, synchronous-flashing red lights mounted on the nacelles, to meet FAA aviation safety objectives. This analysis followed the same Geographic Information System (GIS) procedures that were used for the daytime visibility analysis, but in this instance the analysis was based on the turbine hub height (262 feet) and the locations of the 22 turbines to be lit. The results of the nighttime visibility analysis are shown in Figure 11 in Appendix F.

As shown in Table 2.5-3 above, calculations derived from the line-of-sight visibility analysis indicate that one or more turbines would be visible from approximately 14 percent of the standard visual study area, and less than 10 percent of the extended visual study area. Conversely, no lit turbines would be visible from the remaining 86 percent of the standard visual study area, and from 90 percent of the area within the extended visual study area.

2.5.2.2.2 Visual Quality Impacts at Key Viewpoints

Simulations of views toward the proposed Project from key viewpoints (provided in Appendix F) indicate that the visibility and visual impact of the wind turbines would be highly variable, based on landscape setting, extent of natural screening, presence of other manmade features in the view, viewer sensitivity, and distance of the viewer from the Project Site. Table 2.5-4 provides a summary of the existing and with-Project visual quality ratings for the key viewpoints, including the numerical difference between the two ratings and the resulting impact level. Section 4.2.2 and Table 6 of Appendix F describe how numerical visual quality ratings were applied to the existing and with-Project views. Section 4.2.3 and Table 7 of Appendix F describe how the differences in the before-and-after visual quality ratings were used to define the impact level. In general, a decrease of 1.0 or more in the visual quality rating was considered a high impact, a decrease of 0.67 was considered a moderate impact, and a decrease of 0.33 or less was considered a low impact. Section 5.2 of Appendix F provides a discussion of the existing and with-Project conditions and ratings for each viewpoint.

As shown in Table 2.5-4, the impact evaluation determined that the Project would have a low impact on visual quality at five of the selected viewpoints, a moderate impact at two viewpoints, and a high impact at two viewpoints. The five viewpoints (Viewpoints 10, 15, 26, 31, and 34) considered to have a low impact are located at middleground or background viewing distances of between 2.25 miles and 8 miles from the nearest turbine. Viewpoints 15 and 26 are located

2.25 miles and 3 miles from the Project Site (within the middleground viewing distance), respectively, but views of turbines at these locations would be considerably blocked by existing structures and vegetation within the line of sight. Viewpoints 31 and 34 are located at background viewing distances of 4 to 8 miles from the Project Site; at these distances, the visible turbines were considered subordinate visual elements that did not create significant contrast with the elements that dominate the landscape.

Table 2.5-4. Summary of Impacts at Key Viewpoints

Viewpoint Number	Existing Visual Quality Rating a/	With-Project Visual Quality Rating a/	Numerical Impact (Difference) b/	Impact Level b/
Viewpoint 3 CR 24 near Bellmont Center	2.33	1.67	0.67	Moderate
Viewpoint 10 CR 24 near Harrigan	2.33	2.0	0.33	Low
Viewpoint 14 Cassidy Road and Number 5 Road	2.33	1.33	1.0	High
Viewpoint 15 U.S. 11 east of Chateaugay	2.0	1.67	0.33	Low
Viewpoint 19 Entrance to High Falls Park	2.0	1.33	1.0	High
Viewpoint 20 River Road and Chase Road	2.0	1.33	0.67	Moderate
Viewpoint 26 South edge, Village of Burke	2.33	2.0	0.33	Low
Viewpoint 31 Callahan Road near Gravel Pit	2.33	2.33	0	Low
Viewpoint 34 NY 30 south of Malone	2.33	2.0	0.33	Low

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a/ See Table 6 in Appendix F for visual quality rating scale.
b/ See Table 7 in Appendix F for definition of impact levels.

The two viewpoints (Viewpoints 3 and 20) considered to experience moderate impacts to visual quality are located in the foreground between 0.25 mile and 0.5 mile from the nearest turbine in the Project. In the simulated views from these viewpoints, the turbines appear large and out of scale with the surrounding landscape. These viewpoints also included turbines in the distance; however, the turbines in the background are partially screened by surrounding trees and their colors blend well with the sky. While the closest visible turbines at Viewpoints 3 and 20 are within the foreground viewing distance, where the impact might normally be considered high, the intervening forest vegetation in the foreground obscures the lower part of the towers and softens the impact from the structures.

Visual impacts from the Project were considered to be high for Viewpoints 14 and 19, located 0.5 mile to 1 mile, respectively, from the nearest turbine in the Project. In both simulated views, multiple turbines are visible in the foreground and middleground, and they alter the horizon line. The turbines do not appear compatible with the park-like setting at Viewpoint 19 and their size and quantity overwhelm the existing features of the landscape.

2.5.2.2.3 Impacts of Other Project Facilities

The large scale (primarily the height) of the turbines would be the primary source of the long-term visual impact of the Project. With a maximum height of 397 feet to the tip of the turbine blades, the turbines would be taller than any existing structures in the study area. Besides the turbines, the proposed Project would include a number of other structures that would have limited visual impacts. These structures would include a system of gravel access roads, electrical collection and communication cable networks (which would be predominantly located underground and not visible), two short stretches of overhead electrical collection lines totaling approximately 3,200 feet, a 5,000- to 8,000-square-foot O&M building, an on-site Project step-up substation, and an interconnection substation. Additionally, four permanent meteorological towers are anticipated to be located within the Project Site These features, including the meteorological towers and the overhead collection lines, would be much smaller and have much less visual impact than the turbines. In comparison to the turbines, views of these structures would be localized, and their scale and impact potential would be more limited.

One of the alternate substation locations is adjacent to Willis Road near Taylor Road, in the west-central part of the Project Site in a relatively open, agricultural area. A substation at this location would be visible in the foreground from Willis, Taylor, and Toohill Roads and from nearby farms. The new substation structure would be viewed within the context of the existing Willis Substation and 230-kV electric transmission lines, however, and would be visually subordinate to the surrounding turbines. The other proposed substation location, in the southwest corner of the Project Site near Town Line Road approximately 1 mile north of Bellmont Center, is in an area of predominantly forest vegetation. A substation at this location would be visible within only a limited area, and would also be adjacent to an existing 115-kV transmission line. The meteorological towers would be approximately half the height of the turbines and would be much thinner in profile; therefore, they would be visible within a much smaller area than the turbines, and would be considerably less noticeable.

At night, the Project O&M building and substation would be minimally lit for purposes of operational safety and security. This would create minor new sources of light where there generally are limited existing exterior lights. The impacts associated with this low-level lighting would be minimal, especially if the lights were generally kept off and triggered on when necessary by motion sensors.

2.5.2.2.4 Impacts to Visually Sensitive Resources

The proposed Project would have a visual impact on some of the sensitive resources identified in the 5- and 7.5-mile Project study areas (see Table 2.5-1). Visually sensitive resources identified in the NYSDEC Visual Policy and found in the study area include many sites listed on or eligible for listing on the National Register of Historic Places (NRHP), the Military Trail Scenic Byway (U.S. Highway 11), as well as Adirondack Park and its associated viewing corridors, trails, and lakes.

As discussed in Section 2.6, at the time of this report, the Applicant was still in the process of conducting archival research on potentially eligible architectural historic resources and mapping the locations of sites that have not been previously inventoried. The results of this work will be summarized in a separate report and will be addressed with respect to updated evaluation of visual impacts in the FEIS. Current information on listed and potentially eligible historic sites is provided in Table 2.5-1 and Appendix F. The visibility analysis indicates that the Project generally would not be visible from many locations within the villages of Burke and Chateaugay (areas of higher population density) or various hamlets within the visual study area, and many of the structures listed or potentially eligible for listing on the National or State Register of Historic Places are concentrated in these villages or hamlets. Views of the Project from within these communities generally would be fully or partially screened by structures and trees. However, given the occurrence of potentially Register-eligible structures within 7.5 miles of the Project Site and outside of the villages and hamlets, views of turbines from some historic structures/sites are possible. The home of Almanzo Wilder, for example (Site 131 in Table 2.5-1), is a site that is currently listed on the Register and located in a rural area outside of a village or hamlet. The visibility analysis (see Figure 2.5-2) indicates there is an area to the east of the Wilder home from which much of the Project would be visible. Potential views of Project turbines at the Wilder site itself appear to be unlikely, however. There are trees located in the foreground in eastward views from this site, and the nearest turbine would be located in the background about 5 miles away. Based on the impact evaluation for views at similar distances, the visual impact at this location (if any) would likely be considered low.

Based on conclusions from the analysis of simulated with-Project conditions from representative key viewpoints, the potential for significant visual impacts on architectural historic resources (and other visually sensitive sites) would be most likely for sites within approximately 0.5 mile of one or more turbines (i.e., within the foreground viewing distance), and would be highly unlikely for sites beyond approximately 1 mile from Project turbines. The potential for significant impacts appears to be greatest for Site 75, which is located on Hartnett Road in the central part of the Project Site and within approximately 0.3 mile of the nearest turbine. The visibility analysis run with the vegetation layer indicates that 38 turbines would be visible from this location. Given the number of turbines visible and the proximity of some turbines, it is likely that the visual setting for this historic property would be significantly changed; whether the historic context of the property would be correspondingly diminished would require site-specific evaluation of viewer position and sensitivity, and the specific historic attributes of the property.

Sites 67 and 68 (on Cemetery Road) are not within the Project Site, but are both approximately 0.6 mile northeast from the nearest turbine, between the Project Site and the Village of Chateaugay. The visibility analysis indicates that 24 turbines would be visible at Site 67 and 22 turbines would be visible at Site 68. Views from these sites toward the Project could be similar to the simulated conditions presented for Viewpoint 19. Viewpoint 19 is approximately 0.5 mile or less to the southeast from Sites 67 and 68, is located approximately 0.5 mile from the closest Project turbines, and has a view that includes both open fields and forested areas. While turbines in views from Sites 67 and 68 would be at middleground viewing distances, the closeness of some turbines and the number of turbines visible could result in significant impacts to the visual setting for the historic property; the effect of any visual changes on the historic context of the property would depend on the presence of other modern intrusions and their effect on the historic context.

The visibility analysis results indicate that the potential for significant indirect impacts on other identified architectural historic resources is quite limited. For example, while sites 52, 77, and 78 are located within or very close to the Project Site and no more than approximately 0.7 mile from the nearest turbine, the visibility analysis indicates that no turbines would likely be visible from these locations. Sites 57 and 58 likely would have views of 20 and 14 turbines, respectively, but the turbines would be seen at distances of 1.5 mile or more; based on the evaluation of simulations for viewpoints at similar viewing distances, the influence of the turbines would not likely create a significant change to the visual setting of the sites.

Military Trail Scenic Byway (U.S. Highway 11) travelers would be exposed to intermittent views of the proposed Project, primarily in the area from approximately the Hamlet of Malone Junction through the Village of Chateaugay (a distance of about 12 miles). In most of the highway locations from which the Project would be visible, from 1 to 10 turbines could be seen at middleground and/or background viewing distances, with the closest turbines 1.5 miles or more from the highway. Viewpoint 15 is located along this highway about 1 mile east of the Village of Chateaugay. It provides a representative example of typical views of the Project from this scenic byway, with approximately 10 turbines in view at distances of 2 to 3 miles (see Figure 15B in Appendix F). The impact evaluation of the simulation for this viewpoint (see Section 5.2.4 in Appendix F) concluded the turbines would not be prominent in this location and the Project would have a low impact on local residents and travelers. The viewer exposure for scenic byway travelers would vary from low to moderate and, based on their viewing conditions (engaged in travel on a relatively high-speed road), their sensitivity would be low.

Specific resources within the Adirondack Park boundary that could be exposed to views of the Project include a pull-off along County Route 54 near Harrigan, segments of two state routes (New York State Highways 190 and 374) identified as designated scenic corridors, and a small portion of Lower Chateaugay Lake. The Upper Chateaugay Lake boat launch would not have views of the Project because there are trees blocking any potential views. Typical views toward the Project from within the Park boundary are illustrated by Viewpoint 10, which is along County Route 54 about 4 miles southeast of the Project. The impact evaluation for this viewpoint concluded the turbines would be barely visible (see Figure 13B in Appendix F) and the impact on visual quality would be considered low. While Park visitors can be expected to have a high sensitivity to visual change, the Project would have low to no visual impact within the Park because of the extremely limited view exposure and long viewing distances.

The proposed Project could be visible from some additional sensitive resources within the visual study area that are not identified in the NYSDEC Visual Policy (2000). Such resources include the Franklin 10 State Forest, Chateaugay State Fish Hatchery, High Falls Park and Campground, Ponderosa Campground, two villages, ten hamlets, and five transportation corridors. The visibility analysis indicates the Project would not affect views from the Chateaugay State Fish Hatchery and would have at most minor impacts on views from the southern portion of Franklin 10 State Forest.

High Falls Park and Campground (Site 9) is located near the proposed Project Site and would likely have views of Project turbines. A view from the High Falls Park entrance is illustrated by Viewpoint 19 (see Figure 16B in Appendix F). Based on the impact evaluation for Viewpoint 19 and the comparatively high viewer exposure and sensitivity attributes, the visual impact of the Project on this resource could be considered moderate to high. The visibility analysis indicates that views toward nearby turbines at the Ponderosa Campground (Site 10) would be screened by intervening terrain and/or vegetation.

Some locations within the villages of Burke and Chateaugay, as well as the hamlets of Bellmont Center, Burke Center, Cooks Mill, Sun, Thayers Corner, Brainardsville, Brayton Hollow, Blairs Kiln, Earlville, and Harrigan could have views of the proposed Project. Viewpoint 26, which is located on the outskirts of the Village of Burke, represents a typical view from village and hamlet locations with visibility of the Project (see Figure 18B in Appendix F). In general, views to the Project from the outer portions of the villages and hamlets within the study area would be at middleground or background viewing distances, and the distance and vegetation patterns would combine to result in a relatively low level of change to the existing visual quality. Viewpoint 3, located in the Hamlet of Bellmont Center (Site 13), provides an alternative condition for village/hamlet visual resources. In this instance, turbines would appear within foreground viewing distance and the visual quality impact level would be moderate (see Section 5.2.1 in Appendix F). Based on the range of viewing conditions at the edges of villages and hamlets in the study area, the visual impact at these locations would likely range from low to moderate. In limited cases, it is possible that consideration of site-specific viewer exposure and sensitivity characteristics would result in somewhat higher impacts. Other than on the outskirts of villages and hamlets, however, structures would block views of the turbines and most village and hamlet residents would not be exposed to those views.

Five transportation corridors would be within viewing distance of the proposed Project. Three of these corridors (U.S. Highway 11, New York State Highway 190, and New York State Highway 374) are designated scenic byways or scenic corridors in certain locations. Project visibility and potential impacts along U.S. Highway 11 are discussed above. The portions of State Highways 190 and 374 that are within the Adirondack Park boundary are designated as Adirondack Park travel corridors. The visibility analysis indicates that the Project would not be visible from the segments of these highways within the Park. County Routes 24 and 54 are the other two travel corridors within the visual study area. Viewpoint 3, which is located on County Route 24 adjacent to the Adirondack Park boundary, provides an example of visual conditions along this travel corridor (see Figure 12B in Appendix F). The impact evaluation for Viewpoint 3, which is approximately 0.5 mile from the closest turbine, concluded that the visual impact at this location along County Route 24 would be considered moderate. The visibility analysis indicated that the Project would not be visible from most locations along County Route 24, however, and that other locations from which turbines would be visible were generally at somewhat greater distances. The visibility analysis also indicated that very few, if any, locations along County Route 54 would have views of the Project. Viewpoint 10 is the only viewpoint along this route; the impact evaluation concluded that the visual impact in this location would be low.

The Project would not be visible along most of the route of New York State Highway 374 within the study area. Some segments of this highway along or near the eastern edge of the Project Area would be exposed to views of the turbines, however, and at viewing distances of less than 1 mile in certain locations. While the nine key viewpoints used in the simulation-based impact analysis do not include a location along Highway 374, Viewpoint 14 is located a slight distance to the east of the highway and may be representative of Project views from this travel corridor. Viewpoint 14 is within the rural residential/agricultural LSZ, is located approximately 1 mile from the nearest turbine, and offers views to the west and southwest that include the Project Site (see Figure 14B in Appendix F). The visual impact at this location was rated as high, based on the degree of visual quality change and the viewer exposure and sensitivity attributes for residents (see Section 5.2.3 in Appendix F). Viewer sensitivity for Highway 374 travelers would be relatively low, although viewer exposure would be high based on a larger number of viewers and the availability of foreground views of the Project in selected segments of the route; visual impacts of the Project in these segments would be at least moderate, and could be high.

2.5.2.3 Impact Summary

Viewshed mapping, cross section analysis, and field verification indicate that the Project turbines would be visible from relatively limited proportion of the standard and extended visual study areas, because of the influence of topography and vegetation. As noted in Table 2.5-3, one or more Project turbines would be visible within approximately 18 percent of the standard visual study area (within 5 miles of the Project Site), and only 6 percent of this area would have views of 20 or more turbines. The locations with views of the Project would primarily be in open agricultural areas within and close to the Project Site and in other, more distant locations to the northwest, north and east of the Project Site where the terrain permits views to the Project. Areas that would generally be screened by vegetation, structures, and/or topography include virtually all of Adirondack Park, valleys, stream corridors, and the interior portions of hamlets and villages. Rolling landform and wide separation of the proposed turbines would limit opportunities to observe the Project in its entirety. Under favorable conditions, views of the wind turbines would be available from certain viewpoints well over 7.5 miles from the Project Site. However, visual impact at these distances is typically minimal.

Visual quality at several visually sensitive resources and areas of intensive land use within the standard visual study area could be diminished by the Project. These include the outer limits of hamlets and villages, specific local parks and recreation areas, and several well-traveled roads that traverse the study area. Other visually sensitive resources, such as sites within Adirondack Park, generally would not have views of the Project because of the screening effects of terrain, vegetation and/or structures.

To generalize from the results of the impact evaluation, locations with foreground (less than 0.5 mile) views of Project turbines would likely experience moderate to high impacts to visual quality, depending upon site-specific circumstances. Even with some tree cover in the immediate foreground, turbines would likely be visible and would create strong contrast with the existing landscape. Project impacts would be higher at locations where the existing visual quality is high and the viewer exposure/sensitivity is high, and would tend to be moderate elsewhere. Viewer locations within foreground viewing distance of Project turbines are limited, however, in large part because the Applicant employed a voluntary setback of 1,200 feet from residences and key travel routes (such as New York Highway 374) in selecting turbine locations. Impacts at locations with middleground (0.5 to 3.5 miles) views of Project facilities would typically range from low to moderate, depending on the degree of screening or view blockage and the existing level of visual quality. The Project would have low to negligible impact on visual quality in areas with background (greater than 3.5 miles) views of Project facilities, because at such distances the turbines would typically blend in with the skyline and/or background landscape and would not be prominent features.

A final consideration for the visual impact analysis is the overall context and character of the study area landscape. The proposed Project is situated in an area with a mix of farms and areas of forest vegetation, mostly in relatively small woodlots. Agriculture is actively practiced on many farms, as indicated by fields currently in row crops, although many fields in the area are fallow and appear to no longer be in use. Non-farm rural residences are scattered throughout the study area at low density, and there are a number of towns and smaller communities distributed at intervals. The predominant visual character of the area is that of a working agricultural landscape. While there are localized exceptions, the proposed Project in general appears to be visually compatible with this type of a visual setting.

2.5.2.4 Assessment of Shadow Flicker

A wind turbine's moving blades can cast a moving shadow on locations surrounding a wind farm. These moving shadows are called shadow flicker, and can be an annoyance to people at nearby residences. The impact area depends on the time of year and day (which determines the sun's azimuth and altitude angles) and the wind turbine's physical characteristics (height, size, and orientation of the rotor blades). Shadow flicker generally occurs during low angle sunlight conditions (typical during sunrise and sunset times of the day). However, when the sun angle gets very low (less than 3 degrees), the light has to pass through more atmosphere and becomes too diffuse to form a coherent shadow. Shadow flicker will not occur when the sun is obscured by clouds/fog (or obviously, night), or when the turbine is not operating. Shadow flicker intensity is defined as the difference in brightness at a given location in the presence and absence of a shadow. Shadow flicker intensity diminishes with greater receptor-to-turbine separation distance. Shadow flicker for receptor-to-turbine distances beyond 1,500 meters is very low intensity and generally considered imperceptible. Shadow flicker for receptor-to-turbine distances between 1,000 and 1,500 meters is also of low intensity and considered barely noticeable. At this distance shadow flicker would only be noticed under conditions that would enhance the intensity difference, such as observing from a dark room with a single window directly facing the turbine casting the shadow. At distances less than 1,000 meters, shadow flicker may be more noticeable. However, since the Project has a minimum turbine siting setback requirement (to any residence) of 1,000 feet (304.8 meters), this ensures that shadow flicker impacts are minimized, by limiting potential impact conditions to periods when long shadows are cast.

The wind turbine being considered for the Project, and evaluated for potential shadow flicker impacts, has the following characteristics:

- **Vestas V-82**—3-blade 82-meter diameter rotor, with a hub height of 80 meters. The V-82 has a nominal rotor speed of 16.7 RPM which translates to a blade pass frequency of 0.84 Hz (less than 1 alternation per second).

Shadow flicker frequency is related to the wind turbine's rotor blade speed and the number of blades on the rotor. From a health standpoint, such low frequencies are harmless. For comparison, strobe lights used in discotheques have frequencies which range from about 3 Hz to 10 Hz. According to the British Epilepsy Foundation, approximately 5 percent of individuals with epilepsy have sensitivity to light. Most people with photosensitive epilepsy are sensitive to flickering around 16 Hz to 25 Hz (1 Hz = 1 flash per second), although some people may be sensitive to rates as low as 3 Hz and as high as 60 Hz. Since the proposed Project's wind turbine blade pass frequency is approximately 0.84 Hz (less than 1 alternation per second), no negative health effects to individuals with photosensitive epilepsy are anticipated. As a result, public concerns that flickering light from wind turbines can have negative health effects, such as triggering seizures in people with epilepsy, are unfounded.

An analysis of potential shadow flicker impacts from the Project was conducted using the WindPro software package. The WindPro analysis was conducted to determine shadow flicker impacts under realistic impact conditions (actual expected shadow). This analysis calculated the total amount of time (hours and minutes per year) that shadow flicker could occur at receptors out to 1,500 meters. The impact condition scenario is based on the following assumptions:

- The elevation and position geometries of the wind turbines and surrounding receptors (houses);
- The position of the sun and the incident sunlight angle relative to the wind turbine and receptors on a minute by minute basis over the course of a year;
- Historical sunshine hours availability (percent of total available);
- Estimated wind turbine operations and orientation (based on two years [2005 to 2006] of on-site measured wind data [wind speed / wind direction frequency distribution]);
- Receptor viewpoint (i.e., house windows) always directly facing turbine to sun line of sight (greenhouse mode); and
- Tree line obstructions considered for some receptors.

WindPro incorporates terrain elevation contour information and the analysis accounts for terrain elevation differences. The sun's path with respect to each turbine location is calculated by the software to determine the cast shadow paths every minute over a full year. Sun angles less than 3 degrees above horizon were excluded.

A total of 359 sensitive receptor locations were considered. These locations correspond to structures (primarily houses) in the Project Area. A receptor in the model is defined as a 1-square-meter area (approximate size of a typical window), 1.5 meters aboveground level (approximate eye level).

A detailed WindPro shadow flicker analysis results summary, for each potential wind turbine option, is provided in the Shadow Flicker Impact Analysis report provided in Appendix G. The maximum predicted shadow flicker impact at any receptor, for the range of potential wind turbine options, is 46 hours, 9 minutes per year, which is only approximately 1.0 percent of the potential available daylight hours. Only 10 of the 359 receptors modeled had shadow flicker impact predicted more than 30 hours per year. The shadow flicker impact prediction statistics are as summarized in Table 2.5-5. The analysis of potential shadow flicker impacts from the proposed wind farm turbines on nearby houses (receptors) shows that shadow flicker impacts are expected to be minor. The analysis conducted is conservative and actual shadow flicker impacts are likely to be less than those presented here. The analysis assumes that the house windows always face in the direction of the incoming shadow flicker sunlight (WindPro's greenhouse mode). In reality, the windows of many houses will not face the sun directly for the key shadow flicker impact times. For these reasons, shadow flicker impacts are expected to be less than estimated with the conservative analysis, and shadow flicker is not expected to be a significant environmental impact.

Table 2.5-5. Statistical Summary of WindPro Predicted Shadow Flicker Impacts at Modeled Sensitive Receptor Locations

Cumulative Shadow Flicker Time (Expected)	Number of Receptors
= 0 Hours	98
> 0 Hours	188
> 10 Hours	41
> 20 Hours	22
> 30 Hours	6
> 40 Hours	4
Total	**359**

2.5.3 Mitigation Measures

Mitigation options for the expected visual impacts are limited, given the nature of the Project and its siting criteria (tall structures typically located in open fields). In accordance with NYSDEC Program Policy (NYSDEC 2000), however, various mitigation measures were considered. A variety of possible mitigation measures related to visual impacts of the Project are included below, although most of these are generic (rather than site-specific) measures identified in published reviews of the aesthetic impacts of wind energy development.

Screening. Due to the height of individual turbines and the geographic extent of the proposed Project Site, screening with earthen berms, fences, or planted vegetation generally would not be effective in reducing Project visibility or visual impact. Planting could be effective in screening views from some cemeteries and other areas lacking trees in the area, however. Existing roads should be used as much as possible to access turbines and minimize new road building.

Relocation. Due to the area of the Project Site, the number of individual turbines, the requirement that a turbine be on the highest ground possible to efficiently harness the wind and the variety of viewpoints from which the Project can be seen, turbine relocation generally would not significantly alter the visual impact. Where the Project would be visible from aesthetic resources of statewide significance within the study area (e.g., scenic highways/byways and a portion of the Lower Chateaugay Lake), numerous turbines may be visible and relocation of individual machines would have little effect on the overall visual impact. Elsewhere within the study area, views of the Project would be highly variable and include different turbines at different vantage points. Therefore, turbine relocation would generally not be effective in mitigating visual impacts.

Camouflage. The white or off-white color of wind turbines, which is preferred for consistency with FAA aviation safety guidelines, generally minimizes contrast with the sky under most conditions. This is demonstrated by simulations prepared under several sky conditions. Consequently, it is recommended that this color be used on the proposed Project. The size and movement of the turbines prevents more extensive camouflage from being a viable mitigation alternative (i.e., they cannot be made to look like anything else). Neilson (1996) notes that efforts to camouflage or hide wind farms generally fail, while Stanton (1996) feels that such efforts are inappropriate. Stanton believes that wind turbine siting "is about honestly portraying a form in direct relation to its function and our culture; by compromising this relationship, a negative image of attempted camouflage can occur" (Stanton 1996).

Low Profile. A significant reduction in turbine height is not possible without significantly decreasing power generation. For example, by limiting the tower height to 80 meters and the tip height to less than 400 feet in accordance with local laws, the Applicant is foregoing an additional 13 percent of energy that would be available for turbines set on 100-meter towers. To offset a further decrease beneath an 80-meter tower, additional turbines would be necessary to achieve the same energy output. There is not adequate land under lease to the Applicant to accommodate a significant number of additional turbines, and a higher number of shorter turbines would not necessarily decrease Project visual impact. In fact, several studies have concluded that people tend to prefer fewer larger turbines to a greater number of smaller ones (Thayer and Freeman 1987; van de Wardt and Staats 1988). The visual impact of the electrical collection system would be minimized by placing most of the lines underground rather than on overhead poles, as is proposed. Any poles utilized for overhead electrical lines would be as short as required to meet safety requirements and likely would not exceed the height of adjacent trees.

Downsizing. The Project has been downsized from its originally proposed size of 101 MW by removing some turbines. With these revisions, visual impact on this area will be somewhat reduced. While further reduction in the number of turbines could potentially reduce the visual impact from other viewpoints, the visual impact of the Project would change only marginally unless these reductions were drastic.

Alternate Technologies. The Applicant is in the business of developing, constructing and operating wind farms and does not have expertise or capabilities in other renewable or non-renewable generation technologies. Alternative utility-scale wind power technologies that would significantly reduce visual impacts do not currently exist.

Nonspecular Materials. Use of low-reflectivity, neutral-color finishes for turbines, equipment boxes, substation equipment, and the operations and management building would generally minimize the visual contrast created by these structures. An earth-tone finish would generally blend in best with the surrounding landscape, although use of earth-tone colors on the turbines would not be consistent with standard industry practice or aviation safety objectives. Non-reflective paints and finishes should be used on the wind turbines to minimize reflected glare. Nonspecular conductor would be used on the aboveground sections of the electrical collection system. Research indicates that public reaction to wind farms has been more adverse when advertising, cell antennas, or other sources of visual clutter have been placed on the turbines.

Lighting. Turbine lighting (aviation warning lighting) should be kept to the minimum allowable by the FAA. New FAA guidelines (FAA 2007) do not require daytime lighting, and allow nighttime lighting of perimeter turbines only, at a maximum spacing of 0.5 mile. Synchronized, medium–intensity, pulsing red strobe lights should be used at night, rather than white strobes or steady burning red lights. Upwardly directed lighting fixtures should be used to minimize nighttime visual impacts on nearby residents. Lighting at the substation should be kept to a minimum, and should be turned on only as needed, either by switch or motion detector.

Maintenance. The turbines and turbine sites would be maintained to ensure that they are clean, attractive, and operating efficiently. Research and anecdotal reports indicate that viewers find wind turbines more appealing when the rotors are turning (Stanton 1996). In addition, the Applicant has established a decommissioning plan and fund to ensure that if the Project goes out of service and is not repowered/redeveloped, all visual aboveground components would be removed.

Offsets. Correction of an existing aesthetic problem within the viewshed is a viable mitigation strategy for wind power projects that result in significant adverse visual impact. Historic structure restoration/maintenance or promotion activities could be undertaken to mitigate potential impacts on cultural resources (see Section 2.6.3 for additional discussion). Based on the VIA work conducted to date, however, the results have not identified widespread significant impacts or significant adverse impacts to historic resources, and therefore do not suggest that such mitigation measures are warranted for the Project.

Complaint Resolution Procedure. The Applicant has prepared a Complaint Resolution Procedure (Appendix N) to address any potential concerns from nearby residents with respect to issues arising during construction and/or operation of the Project. This process can be utilized to address any potential visual concerns in a timely manner.

In addition to the mitigation measures described above, other measures that would reduce or mitigate visual impact could be incorporated into the Project design during and after construction. These include the following:

- Keep construction time to a minimum.
- Remove construction debris.

- Seed or cover temporarily stockpiled materials and disturbed sites to reduce dust and prevent erosion.
- Comply with all required setbacks from roads and residences.
- All turbines would have uniform design, speed, color, height, and rotor diameter.
- Towers would not include exterior ladders or catwalks.

2.6 Historical, Cultural, and Archeological Resources

The Applicant performed cultural resources investigations to determine if the proposed Project might result in effects to archeological and architectural cultural resources that may meet criteria for listing in the National Register of Historic Places (NRHP). Studies were conducted in compliance with the National Environmental Policy Act (NEPA), the New York SEQRA, Section 106 of the National Historic Preservation Act (NHPA 1966, as amended), the New York State Historic Preservation Act (1980), the *New York State Historic Preservation Office (SHPO) Guidelines for Wind Farm Development Cultural Resources Survey Work* (SHPO Guidelines) (SHPO 2006) and the *New York SHPO Phase I Archaeological Report Format Requirements* (SHPO 2005).

Cultural resources surveys have focused on the Project's area of potential effects (APE). For archeology, the APE consists of all areas where ground-disturbing activities may occur during construction and operation of the Project. The Study Area for this Phase IA investigation consists of the 6,988 acres included within a boundary line enclosing all 92 parcels of land participating in the Project, plus non-participating in-holdings. For architecture, the APE is defined as the area within 5 miles of the Project Site that is within its viewshed. A Phase IA archeology study has been completed and a report prepared for review by the SHPO. Additional follow-up studies, including a Phase IB archeology study and a 5-mile-Ring historic architecture survey will be performed in spring 2008. Reports of these studies will be provided to the Towns and the SHPO for comment. The reports and comment letters will be included as part of the Project FEIS.

2.6.1 Existing Conditions

2.6.1.1 Archeological Resources

Records kept by the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) indicate that no prehistoric Native American archeological sites and three nineteenth-century Euro-American archeological sites (sites OPRHP A033-03-0001, OPRHP A033-08-0003, and OPRHP A033-08-0005) have been documented within 1 mile of the Project Site. No archeological sites or architectural properties located within 1 mile of the Project Site are listed in the NRHP. A confidential report describing archeological sensitivity of the Project APE has been submitted to the SHPO.

The Applicant conducted an initial study to identify the presence of archeological resources. The study consisted of a background review of pertinent environmental information, local history, and regional archeological study and field reconnaissance of the Study Area. Reconnaissance sought to identify types of terrain that are potentially sensitive for archeological resources and to make observations on remnant traces of historic settlement patterns, modern land use, major ground disturbances, and patterns of vegetation, slope, soils, and drainage. Reconnaissance of the Study Area was conducted from November 28 and December 1, 2006, during which time the ground was free of snow.

Background research and field reconnaissance indicate that most of the Project Area was cleared in the nineteenth century to create cropland, hay meadow, and pastures. Woodlots and reforested abandoned agricultural land today cover substantial portions of the Study Area, but these are intermixed with active agricultural land, which is used chiefly in dairy farming. Numerous small to medium-size wetlands are scattered across the Study Area. Steep slopes (greater than 15 percent) are present along the side slopes of deeply incised relict and modern stream channels and on some hillslopes. Scattered ground disturbances of up to a few acres extent occur where sand and gravel pits or small sandstone quarries are located. SHPO guidelines usually do not require archeological testing of project effects on archeological resources in areas with steep slopes, permanent wetlands with well-developed hydric soils, or documented ground disturbances (SHPO 2005:2-3).

Based on field inspections and analysis of environmental and archeological data, the Study Area covers one major environmental zone, the upland section of the St. Lawrence Lowland Physiographic Province. To investigate prehistoric Native American settlement patterns, this zone can be divided into three major habitat areas, which are listed in decreasing order of extent:

- Till Plains (undulating terrain covered by glacial till derived primarily from sandstone bedrock);
- Channelways (relict glacial-epoch drainage features and modern streams, which are both moderately to deeply incised into – and often across the grain of – the till plains); and
- Stratified Drift Terrain (scattered glacial outwash features, such as deltas, kames, and relict glaciolacustrine strandlines composed primarily of sand and gravel).

These habitats reflect patterns of terrain, soil, drainage, and vegetation in the Study Area and would have played a role in determining where prehistoric Native American hunting and gathering parties might have established temporary camps and task stations.

Based on what is currently known about prehistoric Native American subsistence and settlement patterns in northern New York and adjoining areas, the Study Area's location and setting suggest an overall low potential for prehistoric archeological sites. Any sites present are likely to be small in area and have a low abundance and diversity of artifacts. Artifacts would likely consist primarily of chips and flakes left from the manufacture and maintenance of stone tools. Finished and discarded broken tools are expected to be rare. Features, such as hearths or storage pits, are likely to be rare or absent. The sites could contain one to several distinct clusters of artifacts, or loci, but if several clusters are present, they are apt to be separated one from another by substantial zones with few or no artifacts. Any sites present are most likely to represent short-term camps, hunting stands and blinds, processing stations, or locations of the loss of individual tools (isolated findspots). Local terrain, drainage, and bedrock give no reason to anticipate the presence of village, cemetery, rock shelter, or quarry sites, nor are major fishing stations likely. Sites of any time period might be present in the Study Area; information about the overall abundance of sites in the general St. Lawrence Lowlands region suggests sites of the Late Archaic (ca. 3000-1000 BC) or Late Woodland (ca. AD 1000-1600) periods would be most likely to occur. Even so, given the anticipated nature of the archeological record in the Study Area, it is unlikely that any prehistoric Native American site in it will contain sufficient evidence to date it firmly.

The historic period settlement pattern of the region was shaped primarily by the local network of roads, along which most farmers established their farmsteads in the early to mid-nineteenth century. The network of roads, in turn, was closely aligned to the layout of 1-square mile lots created when the State of New York began to open the region for agricultural development at the end of the eighteenth century. Comparisons of the present network of roads with that depicted on maps dating to the 1850s and 1870s indicate that the modern roadways in the Study Area largely follow the historic pattern. In northern New York, farmsteads were typically located close to roads, and, as is also evident on historic maps of the area, so too were the occasional store, shop, cheese or butter factory, and schoolhouse. Only small-scale waterpowered industries, such as sawmills, were consistently located off the road net, and these were found at locations along streams known as “mill seats,” which were places favorable for the construction of small dams. These factors indicate that general indicators of sensitivity for historic period sites include proximity to any road extant in the middle decades of the nineteenth century or proximity to potential mill seats. More precise delineation of historic archeological sensitivity can be achieved through comparisons of historic and modern maps to establish specific locations historical, map-documented structures (MDSs); however, the continuity of the nineteenth-century road network on the modern landscape, combined with the setbacks employed for the design of the Project suggest that most MDSs will be located outside the archeology-APE.

In accordance with SEQRA and historic preservation regulations, the Applicant has prepared a Phase IA archeological study that discusses the Project’s potential effects on archeological sites. The Applicant has submitted this report to the SHPO, for review and comment. The report recommends Phase IB archeological survey for most of the Project’s archeology-APE, with the exclusion of those few areas possessing steep slopes (more than 15 percent) or that have been altered by sand and gravel operations, stone quarrying, or other significant ground disturbances. Although most of the Project's archeology-APE has been plowed, SHPO Guidelines do not consider historic plowing sufficient disturbance to destroy archeological sites (SHPO 2005:2-3). The Applicant will develop a Phase IB sampling design in consultation with the SHPO, and will implement the survey in compliance with SHPO Guidelines. The report will be completed prior to the FEIS.

If archeological sites are discovered as a result of Phase IB survey, some identified sites may be evaluated as potentially eligible for inclusion in the NRHP. At such sites, further investigations in the form of a Phase II evaluation study may be required to provide information sufficient to assess NRHP eligibility. The results of all archeological studies will be provided to the Towns and the SHPO for review and comment.

2.6.1.2 Architectural Resources

As directed by the SHPO Guidelines, the area of potential effects for architecture (architecture-APE) has been defined as the Project viewshed within 5 miles of the Project Site based on a topography-only model (the 5-mile Ring). The methods used to determine the viewshed are described in the visual assessment report (Appendix F). The architectural site files maintained online by the SHPO indicated that there are currently 71 NRHP-listed or NRHP-eligible properties within the Project's architecture-APE, including the Adirondack Forest Preserve National Historic Landmark and the NRHP-eligible Chateaugay Main Street Historic District.

The Applicant met with the staff of the SHPO on September 27, 2007 to establish a strategy for architectural survey within the architecture-APE (Appendix A contains meeting notes). At this meeting, it was agreed that the applicant would not be required to perform a 1-mile Ring Survey of the area. It was further agreed that the data for adjacent wind projects would be used where it fell within the visual APE for the Project. Finally, it was agreed that fieldwork would be performed to identify potential NRHP-eligible properties within those areas of the APE not previously surveyed. The area that remains to be surveyed is approximately 55 square miles out of the 163.8 square mile 5-mile Ring. This survey has been performed. The resulting information will be described in a report and summarized within the FEIS for this Project.

The Applicant has performed archival research for this Project. The starting point for this work was an investigation of those properties already listed on the NRHP. Preliminary research indicates that only one NRHP-listed property falls within the APE, the Adirondack Forest Preserve National Historic Landmark. As there are several wind farms currently being planned for the vicinity of the Project, the results of the architectural surveys for these projects were also taken into account. Specifically, the architectural survey conducted for the Noble Chateaugay Windpark (which included results from research undertaken for the Noble Clinton and Ellenburg Windparks) was consulted (Ecology and Environment 2007). Locational data reported by Noble were compared with the Project architecture-APE to determine which buildings reported by

Noble may be potentially affected by the Project. This yielded 72 additional buildings that had previously been determined NRHP-eligible and were within the Project APE. Of these properties, there are 2 in Clinton, 13 in Bellmont, 10 in Burke, and 45 in Chateaugay. In addition, the Adirondack Forest Preserve National Historic Landmark includes properties in Bellmont.

Approximately two-thirds of the Project architecture-APE overlaps with areas previously surveyed and reported by Noble in 2007. The Applicant has undertaken fieldwork in the unsurveyed portion of the Project APE to identify those buildings, structures, and districts that are potentially eligible for the NRHP. For a building or structure to be considered eligible for listing in the NRHP, it must be evaluated within its historic context and shown to be significant for one or more of the four Criteria of Evaluation (36 CFR 60) as outlined in the National Park Service Publication, Guidelines for Completing National Register of Historic Places Forms (U.S. Department of the Interior 1997). These criteria will be used as a reference when assessing all of the structures to be examined in the field as part of this investigation.

Based on the archival research and field surveys, the Applicant will assess the potential visual impacts of the Project on architectural resources within the architecture-APE that are listed in, nominated to, or recommended potentially eligible for the NRHP. The Applicant will then submit a report summarizing the architectural historical survey methods, results, and visual impact assessment to the SHPO and the Towns for review and comment. This report will be summarized in the FEIS and appended in its entirety to that document.

2.6.2 Anticipated Impacts

2.6.2.1 Archeological Resources

Construction of the Project could affect archeological resources that are potentially eligible for the NRHP. Construction-related impacts are most likely to be direct impacts as a result of construction of the proposed turbines, gravel access roads, underground and overhead collection lines, temporary construction areas, and other Project facilities.

Historic maps indicate that the vast majority of historic structures were located near roads and that the modern road network closely mirrors that of the historic period. Project designs have minimized construction impacts on potential historic archeological sites, since most turbines are located a minimum of 500 to 600 feet from modern roads and a minimum of 1,200 feet from extant dwellings. Additional analysis is necessary to determine the extent to which other Project elements, such as interconnect lines, will avoid areas of historic archeological sensitivity or specific MDSs.

The Applicant is committed to avoid impact to archaeological resources to the greatest extent possible as discussed in Section 2.6.3.1. Prior to the FEIS, Phase 1B investigation will be performed during spring 2008 and a report will be prepared for review and comment by SHPO and the Towns. All subsequent investigations requested as a result of consultations will be completed prior to construction of the Project.

If archeological sites are present in the vicinity of Project elements, impacts due to Project operation would primarily be indirect. Indirect impacts could result from improved access (e.g., Project-related access roads) to previously inaccessible sites. The Project is also likely to draw curiosity seekers to the area and potentially increase visitation of archeological sites. Increased accessibility could result in vandalism or increased wear and tear in an area where pedestrian or vehicular traffic is increased. Such an increase in traffic could potentially diminish the integrity of sites or alter settings associated with historic properties.

2.6.2.2 Architectural Resources

There will be no direct, construction-related impacts to NRHP-eligible, -nominated, or -listed architectural resources within the Project architectural-APE. Indirect impacts may result from construction and operation of the Project. Construction and operation of the Project could result in changes to the setting of architectural resources potentially eligible to, nominated to, or listed in the NRHP by introducing changes in viewshed or background noise. Studies are being performed to determine whether the Project might be visible or audible from structures listed in, eligible for, or recommended as potentially eligible to the NRHP (historic properties). Preliminary results based on topographic viewshed models indicate that the Project may be visible from a small portion of the Adirondack Forest Preserve National Historic Landmark, the Chateaugay Main Street Historic District (which includes 18 properties), and 52 additional individual properties that have been determined eligible for the NRHP. The newly surveyed portion of the architecture-APE resulted in the identification of 18 structures that are recommended as potentially eligible to the NRHP and one structure that has been previously determined by SHPO to be NRHP-eligible. Analyses are underway to assess potential impacts of the Project on these structures. If assessments indicate that the Project may result in adverse effects to potentially significant structures located within the architectural-APE, then the Applicant will attempt to mitigate such impacts to the greatest extent possible through Project modification or other means as appropriate and as discussed in Section 2.6.3.2.

2.6.3 Mitigation Measures

2.6.3.1 Archeological Resources

The proposed Project layout would be modified to the extent practicable if it is necessary to avoid impacts to NRHP-eligible archeological sites. The Applicant will perform a Phase-IB (identification) field survey, focused on areas characterized as sensitive for the presence of prehistoric period archeological sites and in the vicinity of historic period MDSs. If necessary, subsequent Phase-II archeological (evaluation) investigations will also be performed within the Project archeological-APE. If NRHP-eligible sites are identified, and if the Project design cannot be adjusted so that the sites may be avoided, it may be necessary to develop a Memorandum of

Agreement (MOA) that would outline steps to be taken to mitigate adverse Project effects. For archeological effects, mitigation would most likely involve Phase III investigation (data recovery) at NRHP-eligible sites that would be directly affected by the Project.

Prior to construction, the Applicant will develop an Unanticipated Discovery Plan that will include procedures that will be followed in the event that cultural resources, including human remains, are discovered during construction. Prior to construction, the Plan will be provided to SHPO for comment and approval. If human remains are discovered during construction, the Applicant will stop all construction in the vicinity of the find. Legal protocols for unanticipated discovery of human remains involve notification of the New York State Police and coroner to assure that a crime has not been committed. Once human remains have been determined to be historic, rather than recent, the SHPO and interested Native American tribal representatives will be contacted to determine treatment measures. If potentially significant Native American ceremonial artifacts are encountered, construction will cease at the find spot and SHPO and interested Native American tribal representatives will be contacted to determine treatment measures.

2.6.3.2 Architectural Resources

Permanent, direct impacts to historic structures will not occur because the Project construction will not result in the demolition or alteration of any structures listed in, nominated to, or eligible for the NRHP. The Applicant will continue its evaluation of the results of the historic architecture inventory studies within the newly inventoried unstudied areas of the architecture-APE. If the studies indicate that the Project would result in adverse visual effects to structures that qualify as historic properties, the Applicant would consider whether some redesign of the Project layout might be feasible to avoid the adverse effects. If avoidance of effects is not possible, the Applicant would work with the towns of Bellmont and Chateaugay, SHPO, the USACE, and interested parties to develop mitigation measures that would be stipulated within an MOA and implemented (see also discussion of mitigation measures for visual impacts in Section 2.5 of the DEIS). Such measure might include, but are not limited to, the following:

- Monetary contributions to a community-administered historic preservation or restoration fund
- A Heritage Tourism Plan
- A Preservation Plan
- Education activities
- Historical activities

2.7 Sound

The existing acoustic environment and predicted future noise impacts associated with the proposed Project were investigated in an environmental noise assessment. Ambient noise levels were determined by conducting a baseline noise monitoring survey. Project operational noise was modeled using engineering noise prediction software adhering to well established international standards for the calculation of outdoor noise propagation. Worst case operational sound levels of the Project were evaluated in comparison to all applicable noise limits and criteria for the purpose of assessing regulatory compliance. The full environmental noise assessment report is located in Appendix I of this DEIS.

This section describes the existing acoustic environment in Section 2.7.1, the anticipated impacts on the acoustic environment in Section 2.7.2, and the proposed mitigation of any significant impacts in Section 2.7.3.

2.7.1 Existing Conditions

A targeted 3-week period was selected to conduct baseline noise monitoring to document existing sound levels within the acoustic study area. This 3-week period was selected as it represented worst case defoliate seasonality; in other words, leaves were no longer on the trees, which during elevated wind events produces rustling noise that contributes to the overall ambient sound levels. The purpose of these baseline measurements were (1) to document existing conditions under worst case defoliate seasonality; (2) for direct comparison of existing ambient sound levels to future operational sound levels; and (3) for use is assessing compliance with the NYSDEC noise guidelines.

2.7.1.1 Measurement Locations

Land use within the acoustic study area, defined as the areas considered in the noise impact assessment (NIA) that may be affected by increased sound levels as a result of the Project action, is predominantly agricultural use with farms and single-family rural residences generally occurring along roadway frontage. There is also an active quarry in the southeast quadrant of the site. A total of 264 residential dwellings were identified as potential noise-sensitive areas (single family homes, multifamily buildings, hospitals, nursing homes, parks, schools, etc.). To accurately characterize the noise environment across the entire acoustic study area, sound pressure levels were measured and data logged at four discrete noise sensitive areas as shown in Figure 2.7-1. These residential receptor locations were selected to document the macro-ambient conditions and were sited evenly across the entire acoustic study area. Measurement sites were also purposely chosen to be in locations in close proximity to future wind turbine placements.

Figure 2.7-1 Baseline Noise Monitoring Locations

Four long-term sound level monitoring stations were deployed from November 13, 2007 through to December 4, 2007 in order to document the existing ambient sound levels during defoliate conditions when ambient noise conditions generally are the quietest. The monitoring stations were deployed within 20 to 30 meters of existing residential structures, but away from any vertical reflecting surfaces as specified under ANSI Standard S12.18-1994. The monitoring stations were positioned in locations in the general direction of the proposed WTG towers relative to the home site.

2.7.1.2 Instrumentation

All measurements were taken with four Larson Davis 831 real-time sound level analyzers equipped with PCB model 377B02 ½-inch precision condenser microphones, which have an operating range of 5 decibel (dB) to 140 dB, and an overall frequency range of 16 to 20,000 Hz. These analyzers meet or exceed all requirements set forth in the ANSI Standards for Type 1 for quality and accuracy (precision). The sound analyzers were programmed to measure and data log broadband A-weighted sound pressure levels in ten-minute intervals. Data collected also included 1/1 and 1/3 octave band data spanning the frequencies of 16 Hz to 20 kHz.

2.7.1.3 Sound Survey Results

The Project Site is rural and largely in an agriculturally based land use region. The principal source of manmade noise at locations 1 through 4 were intermittent traffic on the nearby roadways, aircraft flyovers, use of off-road all-terrain vehicles and snowmobiles, and human activity. Meteorological weather conditions during the noise monitoring period were obtained from the National Climate Data Centre. Overall, the study area was determined to be relatively homogenous acoustically, with residences exposed to both similar noise sources and ambient L_{eq} sound levels. Variation in sound levels was determined to be primarily dependent on distance to area roadways and areas of frequent human activity.

Sound data were collected for a sufficient period of time to encompass the entire range of future WTG operational wind speeds, from cut-in to the maximum rotational speed of WTGs. Average wind speeds as measured at the on-site meteorological tower ranged from calm to 15.9 m/s over the entire measurement survey period. The resultant wind speed data was scaled from the met station height to the reference 80-meter hub height wind speed, using a site-specific roughness length coefficient and plotted against the corresponding baseline L_{eq} sound measurement data at the concurrent time periods. The use of the L_{eq} level is the metric for establishing baseline, as recommended under the NYSDEC guideline document in Section V B (1) a (7):

> “Expression of Overall Sound – Part of the overall assessment of sound is the equivalent sound level (L_{eq}) which assigns a single value of sound level for a period of time in which varying levels are experienced over that time period. The L_{eq} value

provides an indication of the effects of sound on people. It is also useful in establishing the ambient sound levels at a potential noise source."

The results of the baseline noise regression analysis reveal that during Project operation, ambient L_{eq} sound levels will range from a minimum of 36.1 dBA at 3.5 m/s, representative of the approximate WTG cut-in wind speed, and increase to 42.7 dBA at 10 m/s, representative of WTG full rotational speed. At wind speeds higher than 10 m/s, ambient sound levels continue to increase, but the WTG sound emissions will remain relatively constant (or decrease slightly) until the WTG reaches cut-out wind speeds. A summary of ambient sound levels at reference wind speeds is shown in Table 2.7-1. Due to the large amount of measurement data collected, it can be stated with reasonable assurance that the sound level at any location within the acoustic study area would have a value similar to that at the discrete measurement points. These measured L_{eq} data will provide the basis for determining the net increase in ambient sound levels during WTG operation over the entire range of the WTG rotation speeds.

Table 2.7-1. Measured L_{eq} Ambient Sound Levels at Reference Hub Height Wind Speed

	L_{eq} Baseline Level at WTG Load Level							
80-meter Wind Speed	3.5 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s
Measured (L_{eq}) dBA	36.1	36.2	36.6	37.2	38.1	39.4	40.9	42.7

2.7.1.4 Regulatory Standards and Guidelines

There are currently no federal noise regulations that are directly applicable to the proposed Project. The towns of Chateaugay and Bellmont have established local noise laws regulating Wind Energy Conversion (WEC) project systems. These local laws include numerical noise limits that restrict maximum received decibel levels as a result of project operations. The NYSDEC has issued a noise guidance criteria document under the SEQRA that includes guidelines for incremental increases in noise criteria relative to existing conditions. This guideline was utilized by Jericho Rise to further assess the potential for the occurrence of adverse impacts within the acoustic study area. The NYSDEC criteria are only a guideline and are not considered a regulatory requirement. The towns of Chateaugay and Bellmont's noise ordinances are local standards, which are considered controlling laws for the proposed Project.

2.7.1.4.1 Chateaugay and Bellmont Noise Bylaws

Town laws in both Chateaugay (Local Law No. 7 of 2006) and Bellmont (Local Law No. 2 of 2006) regulate noise generated by wind projects to a maximum absolute limit of 50 dBA at the nearest residence located off the Project Site (i.e., at any non-participating residence). Both Town laws use the L_{10} statistical level as the measure of sound level impacts. The 50 dBA limit is only effective if the ambient sound level, measured in terms of the existing L_{10} sound pressure level, is equal to or less than 50 dBA. If the existing sound pressure level without the WTGs operating is determined to be higher than 50 dBA limit, then Project noise may further exceed the existing level by up to an additional 5 dBA. Both town laws also address tonal noise.

2.7.1.4.2 NYSDEC Noise Guidelines

In 2001, NYSDEC published a Program Policy titled *Assessing and Mitigating Noise Impacts* (NYSDEC Noise Policy), which describes a methodology for the evaluation of potential community impacts from any new noise sources. The NYSDEC method is based on the perceptibility of environmental noise. In comparison to the Chateaugay and Bellmont regulations, which are absolute limits, the NYSDEC Policy suggests guidelines for evaluating when noise impacts above the existing ambient L_{eq} sound level at the nearest residences, or other potentially sensitive receptors (i.e., schools, churches, etc.), may be considered significant. The NYSDEC Policy has been applied as a basis of assessment for several recent wind energy development projects in the state of New York in localities with no noise ordinances or bylaws. From the NYSDEC guideline document in Section V B (1) a (7): (Section V B (7) c):

> “The goal for any permitted operation should be to minimize increases in sound pressure level above ambient levels at the chosen point of sound reception. Increases ranging from 0 to 3 dB should have no appreciable effect on receptors. Increases from 3 to 6 dB may have potential for adverse noise impact only in cases where the most sensitive receptors are present. Sound pressure increases of more than 6 dB may require closer analysis of impact potential depending on existing sound pressure levels (SPLs) and the character of surrounding land use and receptors.”

Based on the NYSDEC Policy, an incremental increase of 6 dBA over the existing L_{eq}, when considered cumulatively with the existing ambient, is considered the minimum threshold at which adverse noise impacts may begin to occur. Receptors below the 6 dBA L_{eq} cumulative increase limit are considered as having a low probability of disturbance. If exceedances of the 6 dBA criteria are identified, the program policy outlines an approach referred to as the *Second Level Noise Impact Evaluation*, for further evaluation of the potential exceedance condition.

The NYSDEC Policy document further states that a typical ambient sound level of 45 dBA can be assumed in a rural environment. Due to the fact that actual ambient L_{eq} sound levels can vary significantly, the Project has chosen to take the proactive step of documenting actual ambient sound levels in the acoustic study area to ensure future compliance with the stringent NYSDEC Policy limit. The NYSDEC criteria are guidelines and not regulations and should be used for planning purposes only. In areas that are not sensitive to noise or undeveloped areas, the application of the NYSDEC criteria is clearly not appropriate.

2.7.1.4.3 New York State Department of Transportation Construction Noise Guidelines

In response to a directive put forth by the Federal Highway Administration (FHWA) asking state transportation departments to adopt a written statewide noise policy, the New York State Department of Transportation (NYSDOT) issued the New York State Noise Analysis Policy. The

New York State Noise Analysis Policy provides specific policies and procedures for noise studies and noise abatement recommendations pursuant to 23 CFR 772, the FHWA's *Procedures For Abatement of Highway Traffic and Construction Noise*. Under this policy, major urban projects require more extensive analysis, particularly sensitive receptors should be identified and construction noise impacts should be determined. In Chapter 3.1D, Part VI of the NYSDOT Environmental Procedures Manual, the policy states the following with regard to construction noise:

> "Major urban projects usually require more extensive analysis. Particularly sensitive receptors should be identified and construction noise impacts determined. A construction noise impact will not normally occur at levels under L_{eq} = 80 dBA or L_{eq} = 85 dBA in New York City. Abatement measures should be thoroughly discussed and, where appropriate, incorporated into the project's contract plans and specifications."

2.7.2 Anticipated Impacts

Noise associated with Project construction was assessed in a qualitative manner (Section 2.7.2.1) as it is temporary in nature and there are no applicable regulations controlling construction noise. The operational NIA was performed using the Project design layout as indicated in Appendix B and wind turbine coordinates as of December 1, 2007, employing the CadnaA noise prediction model. Operational noise impacts at WTG maximum rotational speed and at worst case design wind speed were modeled. Net change to existing ambient conditions during operation of the WTGs was also investigated, as required under the NYSDEC Policy.

2.7.2.1 Construction Noise Impacts

Construction periods will be of short duration and will be limited to daytime hours when ambient noise levels are typically highest. Construction of wind projects generally consists of 1) site clearing; 2) excavation; 3) foundation work; and 4) materials delivery, tower erection, and installation. Work on these activities will likely overlap. The level of noise will vary according to the type of construction activity being conducted and the number of pieces of equipment in operation at any given time. Construction activities, especially from heavy equipment, may create short-term noise increases near the Project Site, which could potentially impact nearby residential receptors. Typical noise emissions generated by construction equipment are shown in Table 2.7-2.

The noise emissions associated with construction equipment will attenuate at a rate of 6 dBA per doubling distance; therefore, a bulldozer generating 85 dBA at the 50-foot reference distance would decrease to 79 dBA at 100 feet, 73 dBA at 200 feet, 67 dBA at 400 feet, and so on. The distance between construction activities and the nearest residences will vary throughout the Project such that this full range of levels could be expected, particularly during preparation of access roads and placement of the underground collection lines. The noisiest period will be when scrapers and dozers will be involved in moving quantities of earth and rough grades are established for proposed turbine locations. Construction noise impacts on receptors near Project activity will peak with early civil work and then diminish as activity shifts to turbine foundations and installation. With setback distances between residences and proposed turbine locations of greater than 1,000 feet, it is unlikely that sound levels at residential receptors will exceed the NYSDOT’s 80 dBA construction guideline criterion except possibly during post construction roadway repair and repaving activities. Receptors close to access roads or public roads acting as transportation routes will also experience increased traffic noise until all turbines in a given part of the Project Area have been installed.

Table 2.7-2. Typical Noise Emission Levels of Construction Equipment

Construction Equipment	Typical Sound Level at 50 feet (dBA)
Earth Moving	
Loader	85
Bulldozer	85
Backhoe	80
Scraper	89
Grader	85
Material Handling	
Crane (Mobile)	83
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Stationary Equipment	
Air Compressor	81
Generator	81
Impact Equipment	
Jack Hammer	88
Pile Driver	101

Source: U.S. Department of Transportation (2006)
To convert feet to meters, multiply by 0.3048.

2.7.2.2 Operational Noise Impacts

The Project has reviewed several wind turbine model options and has selected the Vestas V-82; however, the GE 1.5 sle was also evaluated as an option, given the possibility that market conditions might require the selection of an alternate WTG model. Similar to the Vestas V-82, the GE 1.5 sle is considered to be among one of the quietest turbines commercially available and is in the same output class as the Vestas V-82. Detailed noise impact analyses were performed for both WTG models (Appendix I). For the purposes of this DEIS, only the potential noise impacts of the preferred Vestas V-82 WTG model were presented. WTG source sound power level data was obtained from the manufacturer and noise modeling was conducted.

2.7.2.2.1 Turbine Source Data

The wind turbine sound source data used in the analysis are the guaranteed maximum generated sound levels per the International Electromechanical Commission 614100-11 acoustic measurement standards. This internationally accepted standard was specifically developed to ensure consistent and comparable sound emission data of utility-scale wind turbines between manufacturers and models. Maximum manufacturer sound power octave band data for both turbines is given in Section 5.1 of Appendix I. The manufacturers' sound power source data were scaled to the proposed 80-meter hub height accounting for site-specific roughness conditions. A summary of sound power data correlated by wind speed at 80 meters are presented in Table 2.7-3.

Table 2.7-3. Turbine Manufacturer Sound Power Levels (dBA) Correlated with Wind Speed

	WTG L_{max} Sound Power Level (L_W) at Reference Wind Speed							
80-meter Wind Speed	3.5 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s
Vestas V-82	101.1	101.4	101.7	102.5	103.2	103.3	103.3	103.3

2.7.2.2.2 Defining WTG Worst Case Operational Acoustic Condition

The WTG operational condition that will result in the worst case incremental increase in measured ambient sound levels was determined by comparing the net change in ambient L_{eq} sound levels by reference wind speed for the Vestas V-82. The worst case operation conditions for the Vestas V-82 WTG occurs at a reference wind speed of 6 m/s as shown in Table 2.7-4. Acoustical modeling was conducted for the Project under worst case operation conditions, where the sound power octave band data will be corrected to the 6 m/s reference wind speed. The results from modeling these scenarios will be used to determine the maximum number of receptors that would receive sound levels above NYSDEC incremental increase guidance under any potential operating scenario.

Table 2.7-4. Vestas V-82 Worst Case WTG Operational Condition

Comparison of WTG L_{max} Sound Power Data to L_{eq} Ambient SPLs								
80-meter Wind Speed	3.5 m/s	4 m/s	5 m/s	**6 m/s**	7 m/s	8 m/s	9 m/s	10 m/s
Vestas V-82 L_W	101.1	101.4	101.7	**102.5**	103.2	103.3	103.3	103.3
L_P at 100 meters	47.5	47.8	48.1	**48.9**	49.6	49.7	49.7	49.7
Ambient L_{eq}	36.2	36.2	36.6	**37.2**	38.1	39.4	40.9	42.7
Net Change (dBA)	11.3	11.6	11.5	**11.7**	11.5	10.3	8.8	7.0

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* **Bold** type indicates worst case design wind speed.

2.7.2.3 Acoustic Modeling Methodology

Noise modeling was accomplished employing the up–to-date version of Datakustic GmbH’s CadnaA, the computer-aided noise abatement program (v 3.7). CadnaA is a comprehensive 3-dimensional acoustic software model. It conforms to the International Standard Organization’s (ISO) standard ISO9613.2 “Attenuation of Sound During Propagation Outdoors,” which has been developed to ensure the highly accurate calculation of environmental noise attenuation over long distances in an outdoor environment.

The CadnaA acoustic modeling software has been shown to be a highly accurate and effective acoustic modeling tool for wind energy projects sited in both Europe and the United States when appropriate WTG modeling techniques and site-specific conditions are properly incorporated. For the Project environmental noise assessment, adjustments were made to account for actual site ground conditions and topography using the official USGS digital elevation data set. Ground attenuation rates for the turbine laydown areas were separately defined as hard reflective ground, even though, following construction, natural vegetation will likely fill in right up to the turbine foundations. The ground attenuation rate beyond the turbine lay down areas was defined as predominantly soft ground, which is defined in ISO 9613-2 as ground covered by grass, trees or other vegetation, and all other ground surfaces suitable for the growth of vegetation such as farming land. Sound attenuation through foliage and diffraction around and over existing structures were conservatively ignored under all modeling scenarios.

Source emission heights were modeled at the design hub height of 80 meters above grade. Received sound level calculations were completed at a height of 1.52 meters above grade, the approximate height of the ears of a standing person. This receiver height was selected because it is considered a worst case outdoor receiver location even though elevated receptor locations, i.e., a second story window in a residential structure will slightly higher noise exposure. However, even assuming a “windows open,” the outdoor-to-indoor reduction of a typical residential structure is approximately 10 dB meaning worst case sound levels would always be at exterior locations. The acoustic model assumes all WTGs operating continuously and concurrently at their highest manufacturer rated sound level at both maximum rotational and worst case design wind speed. Sound power octave band data were input into CadnaA for the purposes of modeling maximum rotational rotor speeds when WTG generate maximum noise and the worst case operational condition, which occurs at a wind speed of 6 m/s. The ISO9613.2 standard calculates received sound pressure levels for meteorological conditions favorable to propagation, i.e., downwind sound propagation, which might occur typically during a moderate atmospheric ground level inversion. Though a physical impracticality, the model assumes that wind is blowing in all directions simultaneously resulting in the maximum possible sound level at all receptor locations. For receptors located between discrete WTG locations, the model will actually over-predict received sound levels.

2.7.2.4 Noise Impact Analysis Results

Acoustic modeling was completed for three different scenarios to accurately quantify worst case sound levels on both an absolute and incremental increase basis to provide a compliance determination with all applicable regulatory criteria. Detailed noise impact analysis results for the selected Vestas V-82 WTG model and alternate GE 1.5 sle WTG are provided in Appendix I.

Scenario 1 modeled the Vestas V-82 at maximum rotational speed. These results are used to assess compliance with the 50 dBA absolute noise limit of the towns of Chateaugay and Bellmont. The levels presented are L_{max}, which by definition are higher than the L_{10} metric used by these towns and therefore the worst case scenario evaluation with respect to compliance with the Town noise limits. Scenario 2 predicted operational sound levels for the Vestas V-82 at its worst case operation design wind speed. The results of this scenario were used to determine worst case incremental increases in received sound levels discussed further in Scenario 3. Scenario 3 predicted the net change in existing ambient conditions during operation of the Vestas V-82 relative to the existing L_{eq} sound level for the given wind speed. According to the NYSDEC Policy, operations resulting in incremental increases of 6 dBA and greater call for further consideration through a NYSDEC Second Level Noise Impact Evaluation.

Noise modeling results demonstrate that both the selected Vestas V-82 WTG models, and the possible alternate GE 1.5 sle model, will fully comply with the Chateaugay/Bellmont broadband noise limit of 50 dBA at all modeled residential receptors, including Project participants. Figure 2.7-2 shows the noise contour plot generated by the Vestas V-82 operating at maximum operational sound levels.

Scenario 2 predicted operational sound levels for the Vestas V-82 at its worst case operation design wind speed. Figure 2.7-3 shows a noise contour plot for this scenario, which is independent of the existing acoustic environment (i.e., are Project generated sound levels only).

Figure 2.7-4 shows the net change in existing ambient conditions during operation of the Vestas V-82 relative to the existing L_{eq} sound level for the given wind speed. Evaluation of the Project's performance with regard to the 6 dBA NYSDEC incremental increase guideline showed exceedances were only identified for the possible GE 1.5 sle WTG model. Noise modeling results for the Vestas V-82 WTG model showed no exceedances of the 6 dBA NYSDEC Policy guideline.

Figure 2.7-2 Vestas V-82 at Maximum Operational Sound Levels

Figure 2.7-3 Vestas V-82 at Design Wind Speed of 6 m/s

Figure 2.7-4 Vestas V-82 Worst Case Incremental Increase

A summary of results of the maximum Project-related incremental increases in ambient sound levels are presented in Table 2.7-5. Increases greater than 6 dBA are identified as potential noise impacts requiring further analysis.

Table 2.7-5. Comparison Acoustic Modeling Results to NYSDEC Guideline Criteria

Incremental Increase in L_{eq} Ambient (dBA)	Vestas V-82 WTG No. of Receptors	Expected Effect on Receptors
0 - 3	170	No appreciable effect.
3 - 6	73	Potential for adverse noise impact limited to cases where only the most sensitive receptors are present.
> 6	**0**	Potential noise impact. Requires a closer analysis of impact potential depending on existing SPLs and the character of sound emissions, land use, and receptors.

Since the Vestas V-82 WTG did not show any predicted exceedances of the 6 dBA incremental increase, a secondary assessment of the potential for adverse impacts is not necessary according to NYSDEC Policy. The GE 1.5 sle WTG model showed exceedances of the NYSDEC incremental noise criteria at three residential receptors; therefore, a secondary assessment was required. This secondary assessment, using the modified Composite Noise Rating (CNR) method is provided in Appendix I.

Noise generated from modern WTGs contains energy spread across the audible frequency range and, like most sounds in the environment, includes sound energy in the low frequency and the infrasonic range. Some concern has been expressed in the past due to infrasound generated from wind turbine projects. The frequency range of infrasound is normally taken to be below 20 Hz. However, infrasound from wind turbines have been shown to be significantly below recognized thresholds of both human perceptibility and standard health thresholds. Low frequency noise emissions from wind turbines (i.e., emissions at frequencies in the range of 10 Hz to 200 Hz) have been associated with several features of wind turbine designs, mainly whether the blades are positioned upwind or downwind of the tower. Sound in the low frequency part of the sound spectrum is generated when the rotating blade encounters localized flow deficiencies resulting from flow around a tower (downwind rotor design). Modern turbines, such as the Vestas V-82 (and the GE 1.5 sle), which have rotors upwind of the tower structure, have been designed to minimize low frequency noise emissions. Operation of either the Vestas or GE wind turbines will not result in a steady state pure tone or impulsive noise conditions at any noise sensitive area location as per the International Electromechanical Commission definitions. Compliance with the local criteria and the Chateaugay and Bellmont tonal provisions are expected.

2.7.3 Mitigation

2.7.3.1 Project Construction

Construction noise will occur during site leveling and grading, pile driving, excavation, concrete pouring, and component erection. Noise emitted during the construction phase of the Project is exempted from numerical decibel limits of the towns of Chateaugay or Bellmont; however, reasonable measures will be undertaken to reduce the impact of construction noise at nearby residences. The following mitigation measures will be applied to Project construction, as necessary and practicable:

- Construction activity will be limited to daytime hours to reduce the potential impact of construction noise, whenever possible.
- Nearby residents will be advised of significant noise-causing activities and efforts will be made to schedule such activities to create the least disruption to receptors.
- All construction equipment will be maintained in good working condition in order to reduce general noise emissions.
- When practical, heavy equipment will be shut down when not active, to minimize idling noise.
- All internal combustion engines will be fitted with appropriate muffler systems.
- Stationary equipment will be located and oriented so that natural noise screening/dampening features such as cut slopes are used to prevent noise from traveling directly to nearby noise sensitive areas.
- When practicable, temporary noise barriers (e.g., rock/dirt piles) will be utilized to obstruct the direct sound pathway between source and receptor.

If construction activities are scheduled during nighttime hours (20:00 – 07:00) they will be limited to “quiet” operations whenever possible. Specific nighttime operations deemed “acceptable” to nearby residents may be modified as construction operations proceed.

2.7.3.2 Project Operation

The Project has been purposely designed to minimize environmental noise by siting wind turbines as far away from existing residential receptor locations as feasible practicable, while keeping the Project economically viable. The Project will operate in full compliance with the applicable noise standards. Despite these findings, the Applicant understands that the control of environmental noise has become increasingly important in the siting and operation of wind energy projects.

Site configuration modifications, including reducing the number of turbines or changing the location of turbines, is not expected as a result of the results of the modified CNR analysis showing no receptors will have a final rating lower than “C.” Noise assessment analysis results show that mitigative measures will not likely be needed for the Project over and above conducting regular operation maintenance visits to ensure the WTGs are functioning properly; however, as a further mitigative measure, Jericho Rise will include the following, if required:

- Encouraging affected residences to become Project participants by signing these receptors to easements;
- Selection of proven low noise wind turbines with no tonality or tonality within acceptable limits;
- Post-construction sound monitoring at residences to confirm compliance of the operational wind farm with the 50 dBA noise limit. The sound survey should be conducted using L_{10} measurements, being consistent with the sound metric used in both local Town laws;
- Implementing the complaint resolution program set forth in (Appendix N) whereby neighboring residents (or others) can contact the Applicant Jericho Rise with their concerns. Such complaints will be logged and investigated in order to resolve the identified issue promptly; and
- Public advisory meetings will be scheduled in advance of construction start-up in order to educate local residents of the proposed wind farm development and to explain Jericho Rise Wind Farm LLC’s, commitment to minimize impact to the public.

2.8 Traffic and Transportation

A roadway Transportation Study was conducted by Fisher Associates to inventory and evaluate roads, bridges, culverts, overhead utilities etc. located along the transportation routes. The Transportation Study evaluated roadway width and geometry, roadway surface and condition, drainage structures, and overhead wires along state, county and local roads that may be utilized during Project construction. Existing conditions, potential impacts during construction and operation and potential mitigation measures are summarized in this section. The transportation study is included in Appendix J.

2.8.1 Existing Conditions

An existing network of state, county, and local highways serves the Project Area. The Project Area is bounded by US Route 11 and CR 23 to the North, State Route 374 to the East, US Route 11B to the West and CR 24 to the South. The network of roads within the vicinity of the Project Area consists of Sancomb Road, Cassidy Road, State Route 374, County Route (CR 23), County Route (CR 33), Jerdon Road, Toohill Road, Hartnett Road, Mary Carey Road, Legacy Road, Ponderosa Road, County Route 24 (CR 24), Mahoney-Jericho Road, Titus Road, Healey Road, and Chase Road. These roads are two-lanes with either paved or gravel shoulders. The Transportation Study reviewed two alternate transportation routes for bringing WTG components to the Project Site. “Route No. 1” began at the intersection of Route 9N (Exit 34 off I-87) and State Route 22 and proceeded to take SR 22 to Military Turnpike to SR 190 west to the Franklin/Clinton County Line. “Route No. 2” began at Exit 42 off I-87 and proceeded to take US Route 11 to the County Line. Based on the Transportation Study performed by Fisher Associates the preferred route to transport the WTG components is Route 2. US Route 11, has an average annual daily traffic volume of about 3,020 to 8,850 vehicles per day (NYSDOT 2006).

The turn-by-turn delivery route from I-87 to the Project Site will be as follows:

- I-87 North Exit 42
- Turn left on US 11 South to Mooers Center, drive about 6.5 miles, then
- Right on US 11 South to Ellenburg Corners (JCT SR 190 West), drive 14.3 miles, then
- Straight on US 11 South to CR 23, drive 13.7 miles, then
- Left on to CR 33
- CR 33 intersects with Jerdon Road, Hartnett/Toohill Road, Mary Carey Road, legacy/Ponderosa Road which runs east west within the Project Area
- These roads intersect with Healey Road /Chase Road and Mahoney-Jericho Road, which connect to the access roads leading to the Turbine sites

Access to WTGs located east of Chateaugay River.

- Left on US 11 to Cassidy Road
- Right on to Sancomb Road
- Left on to SR 374

Table 2.8-1 lists the roads proposed to be used during construction and lying within the Project Area, the towns in which they occur, and the ownership/jurisdiction of each road.

In general, US Route 11 is a viable route into and out of the Project Area that will accommodate the long, wide, and tall delivery vehicles. Using this delivery route will require special hauling permits from the NYSDOT, which will be obtained prior to construction. Upon selection of a construction contractor and turbine delivery company for the Project, the access routes will be revisited to minimize the impact to the community.

Table 2.8-1. Project Vicinity Road System

Roadway	Location	Ownership/ Jurisdiction
CR 23 (Malone-Chateaugay Road)	Towns of Chateaugay	County
Jerdon Road	Town of Chateaugay	Town
Toohill Road	Towns of Burke and Chateaugay	Town
Hartnett Road	Town of Chateaugay	Town
Taylor Road	Town of Chateaugay	Town
Mary Carey Road	Towns of Chateaugay	Towns
Legacy Road	Towns of Bellmont and Chateaugay	Towns
Ponderosa Road	Towns of Bellmont and Chateaugay	Towns
CR 24 (Brainardsville Road)	Town of Bellmont	County
Chase Hollow Road	Town of Chateaugay	Town
Chase Road	Town of Bellmont	Town
Healey Road	Town of Chateaugay	Town
Mahoney-Jericho Road	Town of Chateaugay	Town
Titus Road	Town of Bellmont	Town
CR 33 (Willis Road)	Towns of Chateaugay and Bellmont	County
NYS Route 374	Town of Chateaugay	State
Sancomb Road	Town of Chateaugay	Town
Cassidy Road	Town of Chateaugay	Town

Once on-site, construction and delivery vehicles are anticipated to concentrate operations on select public roadways, as well as new, private access roadways specifically constructed to access turbine locations and to carry construction and delivery related traffic. A preliminary construction routing plan has been developed and is included in Appendix J. According to this preliminary plan, after arriving at the Project Area from US Route 11, the delivery vehicles will use local on-site roads to access the WTG locations. The Project will be constructed in one continuous phase currently anticipated to commence no earlier than spring 2009 and to finish by the end of 2009, with some preliminary clearing potentially occurring in the fall of 2008. It is possible, however, that construction will not commence until 2010 or later.

The most recent five-year accident summary was obtained from the NYSDOT Safety Information Management System (SIMS) database. The latest five-year history on file was January 1, 1999 to December 31, 2003. In this period, 59 accidents were reported along Project Area roadways with 16.9 percent (11 accidents) of the accidents containing an injury. Based on the results of the Transportation Study no definable accident clusters or patterns within the main Project Area that warrant avoidance or safety mitigations were identified.

Transportation Study results indicate that the State routes in the Project Area are all operating well below vehicle capacity. Field observation of the transportation network in the fall of 2006 did not reveal any locations where traffic flow and/or capacity appeared to create undue delay for the traveling public.

The physical characteristics assessment completed as part of the study included a review of the roadway widths, drainage structures, bridges, intersection geometry, and roadway alignments. All of the roads investigated within the Project Area are paved. The state road (NYS Route 374) has pavement widths of 24 feet with 6 to 10 feet wide asphalt shoulders. The county roads (CR 23, 24, and 33) have pavement widths between 20 to 24 feet with 1 to 6 feet wide asphalt/gravel shoulders. The drainage structure inventory identified 48 culverts and 8 bridges along roadways within the Project Area (Appendix J).

Offsite routes have been evaluated based upon the following criteria:

- Intersection Turning Radii
- Horizontal Curvature
- Roadway Width
- Height Restrictions
- Load Restrictions of existing bridges and large culverts (same)

Table 2.8-2 provides a summary of the existing road conditions in the study area.

Table 2.8-2. Summary of Road Conditions in Project Area

Accidents (January 1, 1999 through December 31, 2003)	59 accidents, 44 injury accidents for the roadways in the Project Area.
Roadway Capacity	No existing traffic capacity or congestion problems.
Roadway Widths	All roads are paved with generally 20 to 24 feet widths excluding shoulders.
Drainage Structures	48 culverts in Project Area (suitability to be determined as part of the implementation of the Road Use Agreement prior to construction).
Bridges	8 bridge structures in Project Area. (The suitability and ability of all bridges will be confirmed by a licensed New York PE Civil Engineer, in consultation with the affected Town/County and NYSDOT, prior to construction.)

2.8.2 Anticipated Impacts

Potential traffic impacts may occur as a result of short-term construction activities (temporary impacts) and as a result of long-term operation and maintenance of the Project (permanent impacts).

2.8.2.1 Construction

Although roads within and adjacent to the Project Area are operating well under capacity, some temporary impacts to transportation in and around the Project Area will result from the slow moving vehicles involved in Project construction. The exact turbine component delivery vehicles have not yet been determined and therefore estimates of the truck dimensions and weights are provided:

- Gravel trucks with capacity of approximately 10 cubic yards per truck and an estimated gross weight of 75,000 pounds (lbs), for access road construction (assuming each access road is 1500 feet long and 32 feet wide with gravel 15-inches deep; total of approximately 11,000 to 12,000 trips).

- Concrete trucks for construction of turbine foundations and transformer pads with capacity of approximately 10 cubic yards per truck and an estimated gross weight of 96,000 lbs (total of approximately 40 trips per foundation depending on final design).

- Specialized flatbed trucks (up to 14 axle configurations) for transporting turbine and substation components (tower sections, blades, nacelles, hubs – approximately 10 trucks per turbine); these trucks may have gross weights up to 200,000 pounds, with lengths (from front of cabin to end of trailer) up to 160 feet, widths to 16 feet, and heights to 16 feet.

- A variety of conventional semi-trailers for delivery of reinforcing steel (two per turbine foundation) and small substation components and interconnection facility material (approximately 30 to 50 trucks).

- Pickup trucks for equipment and tools.

- Trucks and cars for transporting construction workers.

The turbine component delivery vehicles are larger and heavier than typical tractor-trailers. In order for the component delivery vehicles to turn corners at the Project intersections, it is assumed all turning radii will need to accommodate a 150-foot horizontal radius. It is assumed that a minimum 24-foot roadway and shoulder-combined width will be necessary to accommodate construction of the Project. Based on the existing road conditions, the delivery and construction of the turbines should not require any general roadway widening. Exhibit 8 of Appendix J contains a preliminary identification of the roadways and intersections that will require modifications.

Movement of Project construction and delivery vehicles on the onsite roads has the potential to result in damage to the road surface and periodic traffic delays. An internal network of private access roads has been configured to connect to onsite network of roads, where possible, to minimize construction and delivery vehicles on the local highway network.

Oversize construction and delivery vehicles could cause minor delays on Project Area roadways, but these are unlikely to be significant given the relatively low traffic volume through the area. Most of the impacts will be to transportation infrastructure due to the existing road system's likely inability to accommodate construction vehicles. Improvements to public roads will be included among the initial stages of Project construction.

The following construction activities will likely be required at the locations of road width and turning radii improvements and will have temporary impacts:

- Clearing and grubbing of existing vegetation;
- Relocation of traffic signs, fences, and utility poles;
- Grading of the terrain to accommodate the improvement;
- Extension of existing drainage pipes and/or culverts;
- Maintenance of roadside ditches (extension, scouring, etc.);
- Installation of erosion protection measures;
- Re-establishment of ditch line (if necessary); and
- Construction of a suitable roadway surface to carry the construction traffic (based on the existing geotechnical conditions).

As mentioned previously, a pipe, culvert, and bridge inventory was also completed to locate and document the structures crossing underneath the existing roadways. The inventory documented approximately 56 structures throughout the Project Area. Typical improvements may include and will have temporary impacts:

- Placement of additional cover over structures;
- Replacement of structure prior to construction;
- Replacement of structure during or after construction if damaged by construction activities;
- Temporary lane closure on bridge to allow individual overweight trucks to cross without additional traffic; and
- Re-route construction traffic to avoid structures.

At locations where sight distance appears limited, slow moving construction vehicles could increase the potential for accidents.

The required improvements will be coordinated with state, county, and local highway departments (at no expense to these departments) prior to the arrival of oversize/overweight (OS/OW) vehicles on-site. In addition, these improvements may create additional Project related impacts (e.g., wetlands, drainage, and grading) that will be addressed in detail during the final Project design, and reviewed/approved during all Project permitting subsequent to this DEIS (i.e., SPDES General Permit, USACE/NYSDEC wetland permits, highway work permits). Additionally, although much of construction is likely to occur when school is not in session, transportation planning for construction will take into account school bus routes and schedules. No component deliveries shall be conducted during school bus pick-up and drop-off times.

2.8.2.2 Operation

Once the Project is commissioned and construction activities are officially concluded, permanent impacts will likely be concentrated around the O&M building. The Project will employ up to approximately 10 to 15 full-time individuals, all of whom may drive separately to the O&M building. Some of these personnel will need to visit each turbine location and return to the O&M building. In the first few months of operation turbines will require “tuning” that will likely increase the number of visits required to each turbine. After that, each turbine typically requires routine maintenance visits once every three months, but certain turbines or other Project improvements may require periods of more frequent service visits should a problem arise. Such service visits typically involve one to two pick-up trucks. In addition, monthly visual inspections of each turbine will likely be required by the SPCC Plan that will be prepared for the facility.

Project personnel (or NYPA personnel) may also need to service the Project substation. Such servicing would likely be carried out on a similar quarterly basis (unless a problem arose) and would involve a similar number of maintenance vehicles. In addition to maintenance activity, the operation of a wind power project typically increases tourist traffic, which can negatively impact certain roadways within the project area, although any increased traffic due to tourism or operations will be relatively minor and inconsequential.

The Applicant will be responsible for the maintenance of all access roads on private properties leading to the turbine sites, and does not anticipate plowing these roads during winter months. Therefore, it may be necessary to use snowmobiles or some other small track driven vehicles to service turbines in winter months. All access road entrances will be designed to provide safe access of emergency vehicles. The Applicant will ensure emergency vehicles will be able to access turbine sites while technicians are working. The Applicant will consult with the local emergency providers to ensure such design meets their needs.

2.8.3 Mitigation Measures

2.8.3.1 Construction

Prior to construction, the Applicant will obtain all necessary permits from the town, county, and state highway departments for activities including new access points to public roads, improving existing roadways, crossing roads/highways with buried collection lines, and operating oversize vehicles on the highways (see Appendix J). The final transportation routing documentation will be provided to the towns of Chateaugay, and Bellmont, Franklin County, and the NYSDOT, and will specify the local, county, and state roads to be used as haul routes (both within and outside of the Project Area) by construction/transportation vehicles. The required improvements will be coordinated in consultation with the Towns, the Town highway superintendents, and the Town representatives, along with state and county highway departments (at no expense to these departments) prior to the arrival of OS/OW vehicles on-site.

All public road upgrades that may be required to accommodate construction vehicles will be identified, including shoring up bridge abutments, adding steel plates or gravel to road surfaces, widening roadways, reconfiguring intersection geometry to accommodate the turning radius of large construction vehicles, and identifying the bridges, pipes, and culverts that will not accommodate the construction related traffic. Other improvements such as construction warning signs, flaggers or a temporary signal at the intersections of CR 33 and Toohill Road, Healey and Ponderosa Roads, and US Route 11 and Cassidy Road will give motorists advanced warning of the slow moving construction equipment. These are junctions known to have limited sight distance at the designated speed of 55 miles per hour. These improvements will be made at the Applicant’s expense prior to the arrival of OS/OW vehicles. Prior to construction the Applicant will at its expense obtain any easements from adjacent property owners necessary to access and work on private property.

The following outlines the proposed protocol for responding to traffic/transportation issues that arise during Project construction:

- Prior to construction the Applicant will identify one or more construction managers as the primary traffic contact(s) for traffic/transportation concerns that may arise during the construction of the Project.
- The town, county, and state highway departments will be notified of the primary traffic contact(s).
- The Applicant will consult with all town, county, and state highway departments prior to construction to identify potential traffic congestion areas and to develop potential detours.
- If construction-related congestion occurs, the primary traffic contact will call the appropriate town, county or state highway department immediately and discuss the implementation of pre-determined detour routes.
- All construction personnel will be instructed to watch for traffic/transportation concerns and to contact the primary traffic contact immediately following identification of a traffic/transportation issue.
- The primary traffic contact will call the appropriate town, county or state highway department immediately following identification of a congestion problem.

Final transportation routing will be designed to avoid/minimize safety issues associated with the use of the approved haul routes, which will confine the heavy truck travel to a few select roads. The Applicant will repair damage done to roads affected by construction within the approved haul route, at no expense to the towns, county, or state. Prior to construction the specific terms of road use and reconstruction will be negotiated and memorialized in a Road Agreement(s) between the Applicant and road owner(s).

Delivery/haul routes may change during the design and construction preparation process; however, the municipalities will be notified of the changes throughout the continued development of the Project. Additionally, design plans will be completed for all public road improvements, and will be made available for the affected local towns (and to the owner/operator of the respective road) to review prior to construction activities.

Prior to construction, the Applicant will video-document the existing roadways to verify the pre-construction roadway conditions. Upon completion of the construction activities, the Applicant will, at a minimum, return all roadways to their pre-construction conditions (and video-document).

Traffic Flow and Capacity

Impact – During construction activities local traffic may experience minor delays due to slow moving vehicles.

Mitigation – No areas appear to warrant immediate installation of measures to mitigate the minor delays that will be experienced by local traffic. School bus pick-up and drop-off routes and times shall be avoided. The applicant, in conjunction with the NYSDOT and local highway departments, will establish a traffic/transportation notification protocol to respond to any locations that experience significant traffic flow or capacity issues. Appendix J provides the listed protocol that could be used for the Project. Electronic Vehicle Message Systems (VMS) may also assist in notifying drivers of the construction activities. All road improvements will be designed and submitted for approval to the appropriate highway authorities.

Safety

Impact – Sight distance appears limited in several locations where slow moving construction vehicles could increase the potential for accidents.

Mitigation – The Special Hauling/Superload Permits obtained for OS/OW vehicles specifically prohibits operating early in the morning, late at night, and in poor weather conditions. The one exception is a waiver for peak-hour restriction, which may allow OS/OW transports between 7:00 A.M. to 9:00 A.M. and 4:00 P.M. to 6:00 P.M. which NYSDOT considers as "curfew hours." The NYSDOT Special Hauling/Superload permits require several full-time vehicle escorts, several police escorts, speed limit restrictions and hours of operation limited to daytime-only, preferably in the summer. The conditions of the Special Hauling/Superload Permits provide mitigation for the sight distance concerns for OS/OW vehicles.

Construction signage will be places at the areas of limited sight distance as an additional measure to warn drivers of general construction traffic.

Roadway Type

Impact – The existing surface conditions appear adequate to accommodate construction vehicles. The amount, type, and weight of both general construction traffic (e.g., gravel/concrete trucks and semi-trailers) and OS/OW vehicles, however will likely damage the surface condition of the roadways in the Project Area.

Mitigation – Prior to, during, and following construction, road improvements will be made according to the Road Agreement(s). Post construction, the civil construction contractor will restore roads to the conditions negotiated in the Road Agreement(s). The Town will inspect and approve the restored roads and any bond or security will be released.

Roadway Width

Impact – The existing roadway width is adequate to accommodate the construction activities. No general roadway widening will be required for the Project.

Mitigation – None required.

Intersections

Impact – All intersections used by OS/OW vehicles will need radius improvements to accommodate construction activities (Appendix J, Exhibit 6). The intersection impacts include:

- Clearing and grubbing of existing vegetation
- Relocating traffic signs, fences, and utility poles
- Grading of the terrain to accommodate the improvement
- Extension of existing drainage pipes and/or culverts
- Re-establishment of ditch line (if necessary)
- Construction of a suitable roadway surface to carry the construction traffic (based on the existing geotechnical conditions)

Mitigation – Each public roadway intersection will require a detailed engineering plan to quantify and provide a solution for the impacts listed above. The intersection radii will generally need to be improved to 150-feet. This study provided a preliminary engineering solution that can be completed, based on observed field conditions, to accommodate the OS/OW vehicles. Preliminary recommendations are presented Section III.A.3 of the Transportation Study, which is included in Appendix J. After construction of the Project, the Applicant will coordinate with the NYSDOT and local highway departments, and the adjacent landowners to determine if the radii improvements will need to be returned to pre-construction conditions or left for future use by the towns.

Weight

No bridges or roads were posted with weight limits within the Project Area. Therefore no mitigation is necessary.

Vertical Curvature

Impact – There are existing vertical curves along Project Area roadways that OX/OW trucks may not be able to traverse without modifications as indicated in Exhibit 11 in Appendix J.

Mitigation – Each vertical curve will be analyzed during final design of the roadway improvements (using topographic survey information) to determine if OS/OW vehicles will be able to traverse the existing roadways. If the vehicles cannot traverse the vertical curves in question, the following mitigation measures may be used to accommodate construction traffic:

- Re-route OS/OW vehicles to roadway that can accommodate construction traffic;
- Modification of access road locations to avoid vertical curves; and
- Reconstruct vertical curves to accommodate OS/OW vehicles, which may involve additional grading, and drainage improvements to reestablish the roadside features.

Height

Impact – Overhead wires that do not meet OS/OW vehicle clearances as indicated in Exhibit 11 in Appendix J will need to be raised to accommodate OX/OW vehicles.

Mitigation – The Applicant will be required to coordinate with NYPA, NYSERDA, telephone and cable companies, and NYSDOT to obtain the necessary permits to raise wires and the traffic signal. The utility companies and the NYSDOT will assist in the final solution at each location once final engineering plans and permit applications have been submitted. Solutions include permanently raising wires/signal, temporarily raising wires/signal for the duration of construction, or temporarily raising each wires/signal as a vehicle passes under.

Upon completion of the Construction, the following additional mitigation steps will be taken.

- Removal of temporary road widening to support the Project construction. In other words to bring back to the existing conditions prior to construction, hence reducing the impact to a minimum.
- Removal of road widening at roadway intersections where improvement was made to the intersections to accommodate the wide turning radius.
- If required by the landowner, town, county or NYSDOT to leave the culverts extensions as is, or else bring back to original lengths.

2.8.3.2 Operation

The Project facility will employ 10 to 15 employees for the operations and maintenance of the facility. These employees will use regular trucks for their routine visits to the turbine sites hence the impacts will be minimal.

Generally the visitors to the wind farm come in tour buses which would minimize impact to the local community.

2.9 Socioeconomics

This section addresses the potential socioeconomic impacts of the Project. Existing socioeconomic conditions are addressed in Section 2.9.1. The anticipated socioeconomic impacts of the Project are addressed in Section 2.9.2, and the proposed mitigation for significant impacts is addressed in Section 2.9.3.

2.9.1 Existing Conditions

2.9.1.1 Population and Housing

The estimated population of Franklin County in 2006 was 50,968. Between 1990 and 2000, the County's population increased by 8.9 percent, but between 2000 and 2006 it decreased by 0.3 percent (New York State Data Center 2006; U.S. Census Bureau 2006).

In 2000, the Towns of Bellmont and Chateaugay, including the Village of Chateaugay had populations of 1,444 and 2,036, respectively, with a combined population of 3,459. According to U.S. Census Bureau (2006) data, between 1990 and 2000 the Towns experienced population increases of 14.2 percent and 22.7 percent, respectively, and the Village of Chateaugay experienced a slight population decrease of 5.6 percent. Analysis of more recent data shows that, between 2000 and 2005, both Towns of Bellmont and Chateaugay, and the Village experienced a population decline of 0.77 percent, 2.4 percent, and 1.5 percent, respectively (New York State Data Center 2006; U.S. Census Bureau 2006).

Housing units in Franklin County and each municipality for 2000 are presented in Table 2.9-1. In 2000, of the municipalities listed in Table 2.9-1 the Town of Bellmont had the highest number of housing units and the highest vacancy rate, with 1,261 total units, of which 573 units (45.4 percent) were occupied and 688 units (54.6 percent) were vacant. The Town and Village of Chateaugay had similar occupancy rates, ranging from 82.5 percent to 86.7 percent, respectively.

Table 2.9-1. County and Municipality Housing Units, 2000

County and Town/Village	Occupied Housing		Vacant Housing		Total Available Housing Units
	Number	Percentage	Number	Percentage	Number
Franklin County	17,931	74.9%	6,005	25.1%	23,936
Town of Bellmont	573	45.4%	688	54.6%	1,261
Town of Chateaugay	714	82.5%	151	17.5%	865
Village of Chateaugay	338	86.7%	52	13.3%	390

Source: U.S. Census Bureau 2006

Of the 6,005 vacant housing units countywide, 4,302 seasonal, recreational, and occasional use housing units were available in 2000 (U.S. Census Bureau 2006). Other temporary housing in Malone (10 miles from the proposed wind farm) and in nearby towns includes hotels and motels, campgrounds, and recreational vehicle (RV) parks. One campground, the Ponderosa Campground, is located within the Project Area.

2.9.1.2 Property Values

Median housing values for the state, county, and each municipality within the Project Area for 2000 are presented in Table 2.9-2. In 2000, the median value of owner-occupied units in the Town of Bellmont ($61,300) was comparable to the median values in Franklin County ($62,600). Median housing values for the Town of Chateaugay ($46,900) and the Village of Chateaugay ($44,200) were below ($15,700 and $18,400, respectively) Franklin County's median value. These median values are considerably lower than the median value for the State of New York as a whole, which was $148, 700 in 2000.

Table 2.9-2. State, County, and Municipality Median Housing Values, 2000

State, County, and Town/Village	Median Housing Value
State of New York	$148,700
Franklin County	$62,600
Town of Bellmont	$61,300
Town of Chateaugay	$46,900
Village of Chateaugay	$44,200

Source: U.S. Census Bureau, 2006

2.9.1.3 Economy and Employment

According to the U.S. Census Bureau (2006), the largest industry in Franklin County in 2000 was educational, health, and social services, with 28.8 percent of all workers employed in this sector. The second largest industry was public administration (12.5 percent), and the third was retail trade (11.2 percent). The educational, health, and social services and public administration sectors were among the top two industries in both Towns within the Project Area and in the Village of Chateaugay. However, different industries occupied the third spot for the Towns and the Village. The third largest industry in the Town of Chateaugay (10.6 percent) was agriculture, forestry, fishing and hunting, and mining. The third largest industry in the Town of Bellmont was arts, entertainment, recreation, accommodations, and food services, with 8.8 percent of all workers employed in this sector. The third largest industry in the Village of Chateaugay was manufacturing (8.3 percent). Due to confidentiality concerns of major employers in Franklin County, the New York State Department of Labor no longer releases employer information. The 2005 unemployment rate for Franklin County was 6.0 percent.

With respect to the agricultural industry in Franklin County, in 2004 there were a total of 515 farms (137,100 acres) and the agricultural industry represented approximately 4.4 percent of total employment in the county. In 2005, there were 510 farms in agricultural use in Franklin County, with an assessed market value of $99,771,000. The number of farms in 2005 represents an 8.4 percent decrease since 1987, when the county had 557 working farms (157,189 acres). In 1987, the agricultural industry accounted for a higher percentage of the total employment in the county.

2.9.1.4 Municipal Budgets and Taxes

Municipalities (i.e., towns, villages, counties) are responsible for providing certain services to those who live and work within their boundaries. In order to fund these services, municipalities collect revenues by levying taxes. Tax revenues in the Project Area accrue from both sales taxes and real property taxes. The local taxing jurisdictions in the Project Area include Franklin County, the Towns of Bellmont and Chateaugay, the Village of Chateaugay, and the Chateaugay Central School District.

The total 2005 property tax levy for Franklin County was $14,794,604. Of this amount, the property tax levy for the Towns of Bellmont and Chateaugay were $474,818 and $466,250, respectively. The property tax levy for the Village of Chateaugay was $120,536 and the tax levy for the Chateaugay Central School District was $2,183,881 (New York State Office of Real Property Services 2006). This real property tax information is summarized in Table 2.9-3.

Table 2.9-3. Real Property Tax Levy per Taxing Jurisdiction, 2005

Taxing Jurisdiction	Real Property Tax Levy
Franklin County	$14,794,604
Town of Bellmont	$474,818
Town of Chateaugay	$466,250
Village of Chateaugay	$120,536
Chateaugay Central School District	$2,183,881

Source: New York State Office of Real Property Services, 2006

For those items not included in the Franklin County Sales and Use Tax Exemption (e.g., clothing, footwear, and items used to make or repair exempt clothing costing less than $110 per item or pair). The current sales tax rate for Franklin County is 8 percent, which includes a 4 percent state share and 4 percent local share (New York State Department of Taxation and Finance 2006). The total sales tax revenue for Franklin County in 2004 was $12,487,404, whereas the towns and villages did not receive sales tax revenue (New York State Office of the State Comptroller 2006). Table 2.9-3 summarizes the total 2005 property tax levy for each taxing jurisdiction.

The County, Towns, Village, and Chateaugay Central School District face the yearly challenge of bearing the costs associated with the services that they provide through the collection of sales and/or real property taxes, as well as other sources of revenue such as state, aid, etc. As with most taxing jurisdictions in upstate New York, loss or lack of commercial and industrial tax base, in combination with rising labor and material costs, make it increasingly difficult for municipalities to meet their budgets without significantly raising taxes. Table 2.9-4 summarizes budgets for 2004 at the Town, Village, and County levels within the Project Area, including Chateaugay Central School District.

Table 2.9-4. County and Municipal Budgets, 2004

Taxing Jurisdiction	Total Revenue	Total Expenditure	Total Indebtedness
Franklin County	$75,623,269	$79,849,219	$6,502,517
Town of Bellmont	$922,368	$1,098,135	$227,517
Town of Chateaugay	$738,627	$921,298	$0
Village of Chateaugay	$678,547	$623,902	$1,478,669
Chateaugay Central School District	$8,738,768	$8,286,999	$9,095,000

Source: New York State Office of the State Comptroller 2006

2.9.2 Anticipated Impacts

The Project would have both direct and indirect positive economic effects on individual landowners participating in the Project, and on the municipal entities within the Project Area. These effects would commence during construction and continue throughout the operating life of the Project. Short-term benefits would include additional employment and expenditures associated with construction of the Project. Long-term benefits from operating the Project would include significant additional revenue through a host community fee to host communities, a payment in lieu of taxes (PILOT) agreement, purchases of goods and services, and lease payments to participating landowners.

The Project would provide 10 to 15 full-time operational jobs, and likely result in some increased visitation to the Project Area by tourists interested in wind power. All of these results would have a beneficial effect on local businesses. The overall socioeconomic impact of Project construction and operation is discussed in detail below.

2.9.2.1 Construction

2.9.2.1.1 Population and Housing

As mentioned above, Franklin County and the towns and village located in the Project Area experienced a moderate population growth rate between 1990 and 2000 followed by a slight decline between 2000 and 2005. This trend would likely continue regardless of whether or not the proposed Project is built. The Project would not generate construction employment at a level that would significantly increase population in either the towns or the county. Even though employment during the construction period would be significant (approximately 125 to 200 full-time construction jobs), this employment is relatively short-term, and is not expected to result in construction workers permanently relocating to the area. For the duration of construction (approximately nine months), there could be a temporary increase in local population and demand for temporary housing by out-of-town workers. However, this demand would be relatively modest, and could easily be accommodated by available housing in the affected towns and surrounding communities. Beyond this relatively minor (and positive) short-term impact, Project construction would not have significant impact on population and housing.

2.9.2.1.2 Property Values

Property values would not be affected during construction of the proposed Project, although owners of available vacant housing would be expected to be able to rent out their property for six to nine months to generate additional income.

2.9.2.1.3 Economy and Employment

Based on construction employment figures at other wind power projects in New York, it is anticipated that a total construction workforce of approximately 125 to 200 workers would be needed to construct the Project. It is anticipated that about two-thirds of this anticipated workforce would be from the North Country New York labor market. In light of the size of the labor force and the number of unemployed, the North Country should be able to supply this component of the required workforce. Local employment would primarily benefit those in the construction trades, including equipment operators, truck drivers, laborers, road construction workers and electricians. Project construction would also require workers with specialized skills, such as crane operators, turbine assemblers, specialized excavators, and high voltage electrical workers. It is anticipated that the majority of these workers would come from outside of the Project Area and would remain only for the duration of construction.

In addition to the direct jobs created during construction, this Project is expected to have an indirect impact on the local economy through the purchases of goods and services, which would support local businesses and perhaps result in the creation of some additional new jobs.

2.9.2.1.4 Municipal Budgets and Taxes

During construction, the Project would not adversely impact municipal budgets and taxes. Temporary construction workers would not create significant demand for municipal or school district services or facilities. These workers would not generate significant revenue through payment of property taxes. Although, as discussed in Section 2.8, the Project could result in impacts to the local road system, such impacts will not affect municipal highway budgets because the Applicant will pay for the cost of construction-related road repairs and/or improvements.

During construction, the 125 to 200 Project personnel would patronize local gas stations, hotels, restaurants, grocery stores, and other establishments, boosting the local economy and creating more sales and service related tax revenue for the local municipalities.

2.9.2.2 Operation

2.9.2.2.1 Population and Housing

Approximately 10 to 15 full-time jobs would be created once the Project is fully operational. These employees would be expected to reside locally, which could translate into purchase of a few homes and addition of a few families to the surrounding communities. Based on vacancy rates in both towns, there would be an adequate number of housing units available for purchase or rent. Although this represents a positive economic impact, long-term employment associated with the Project is not large enough to have a significant impact on local population or housing characteristics.

2.9.2.2.2 Property Values

Because large wind farms are relatively recent developments, local residents often express concern over the potential for local property values to depreciate because of operating wind power projects. This issue has come up during the siting and review of other wind power projects in New York and throughout the United States. Several variables are involved in determining property values, ranging from market conditions to land and structure conditions. Hence, it is difficult to isolate the potential impact of a single variable such as the presence of a local wind farm.

To objectively assess this concern, the Renewable Energy Policy Project (REPP) conducted a quantitative study in 2003. REPP assembled a database of real estate transactions adjacent to every wind power project (10 MW or greater) in the nation that became operational between 1998 and 2001, for a total of ten projects, which included two projects in Madison County, New York, and one in southern Vermont. For this study, data was gathered within five miles of the wind projects, as this was determined to be the potential area of visual impact (viewshed). For each of the ten projects, similar data was gathered for a comparable community that was located outside of the project viewshed (comparable communities were based on interviews with local assessors and analysis of U.S. Census Bureau demographic data). The goal of the data collection was to obtain real estate transaction records for a time period covering roughly six years (three years pre-construction and three years post-construction). The data was then analyzed in three different ways: Case 1 examined the price changes in the viewshed and the comparable community for the entire period of the study; Case 2 examined how property values changed in the viewshed before and after the project became operational; and Case 3 examined how property values changed in the viewshed and the comparable community after the project became operational (Sterzinger et al. 2003).

The results of these analyses showed no negative impact on property value from existing wind farms. Of the ten projects examined in the Case 1 analysis, property value actually increased faster in the project viewshed in eight of the ten projects. The Case 2 analysis revealed that the property values increased faster after the wind facilities became operational in nine of the ten projects examined. In the Case 3 analysis, property values increased faster in the wind power project viewshed than in the comparable community in nine of the ten projects. More specifically, these positive results applied to the two wind power projects in Madison County, New York. The results from these two projects revealed a generally positive affect on property value. In five of the six case studies (Case 1, 2, and 3 analyses for both projects), the monthly average sales price grew faster or declined slower in the viewshed communities than in the comparable communities outside the project viewshed. The REPP study concluded that there is no evidence that the presence of the two wind farms in Madison County had a significant negative effect on residential property values (Sterzinger et al. 2003).

To obtain a clearer understanding of the actual effects of existing wind farms on property values, a Master of Science thesis was prepared by Ben Hoen (2006). The purpose of this study was to analyze whether the transaction value of homes within five miles of the existing Fenner Wind Farm in Madison County was significantly affected by views of the wind farm. “View” is defined using a continuous variable from 0 (no view) to 60 (a full view of all 20 turbines). The study additionally investigated how this effect varies with distance (spatially), time (temporally), and house value. Lastly, the effect and degree of the PILOT payment to Fenner Township was investigated. The study utilized the hedonic pricing model, which, given enough data, is sensitive enough to allow sales to be grouped temporally (by year), spatially (by distance), and economically (by the value of the home).

The data concerning transaction values and assessor information was collected from the Madison County Real Property Tax Office. From January 1, 1996 through June 1, 2005, 452 sales took place that were coded "arms-length" transactions by county assessors, and were within five miles of Fenner Wind Farm. Of these, 167 were removed as land-only sales (i.e., sale of parcel that did not contain a house), and five were removed as non arms-length sales, resulting in a total of 280 sales. Of these, 140 occurred after construction began at the Fenner Wind Farm in 2001. A field analysis was conducted on October 30 and 31, 2005 to ensure complete accuracy of the "view" variables used in the model. Visits were made to those homes sold after January 1, 2001 (138 homes visited) to assess the degree to which the home could see the wind farm. By standing at or near the house, a rating of 1 to 60 was established for each home. This rating was based on the degree to which viewers could see each of the 20 windmills in the Fenner Wind Farm. A total of three points per turbine was possible (one point if only the blade above the nacelle was visible, two points if the nacelle was also visible, and three points if the tower below the rotor swept area was also visible), for a cumulative maximum of 60 points (Hoen 2006).

The analysis of 280 home sales within five miles of the Fenner Wind Farm did not reveal a statistically significant relationship between either proximity to or visibility of the wind farm and the sale price of homes. Additionally, the analysis failed to uncover a relationship even when concentrating on homes within one mile of the wind farm that sold immediately following the announcement and construction of the project. This study therefore concluded that in Fenner, a view of the wind farm does not produce either a universal or localized effect, adverse or not. To the degree that other communities resemble the Fenner rural farming community, similar conclusions are anticipated (Hoen 2006).

Given the results of Sterzinger (2003) and Hoen (2006), and the similarity of the Madison County sites to the Project, it is reasonable to conclude that the proposed Project should not have an adverse impact on local property value.

Additionally, a study was conducted by Cushman and Wakefield (2007; Appendix K) on the number of sales and average sale prices for various categories uniformly accounted for by the Project Area town and county assessors. These values were tracked for seven years, from 2000 through 2006 and percentages were calculated for each year. The report concluded that the county has a very stable real estate market and that the average price of single-family residences in the towns of Bellmont and Chateaugay, compared to the county, generally show a positive trend where the average price of single-family residences is gradually increasing. The study also states that the two towns' single-family residences lag behind the county in terms of average sale price.

The report looked at U.S. Census data, as well as Claritas data, which provides enhanced U.S. Census data. These county assessor observations support the Claritas-U.S. Census projections relating to average home prices in the Bellmont/Chateauguay area, versus the county as a whole. These statistics also show that Franklin County has a very stable real estate market for farmland, where average prices of farmland properties that have sold vary within a wide range, but cannot be said to be consistently appreciating. Home values may or may not be going up, but the average home prices in the two towns seem well below county and statewide averages. A complete copy of Cushman and Wakefield's report is contained in Appendix K. The major conclusions of the report were:

- Given the relatively low median incomes, slow growth and limited base economy near the Towns of Bellmont/Chateauguay, the proposed Project may yield net economic benefits, which could in turn, spur demand for housing and increase property values over time.
- Having reviewed the inventory of affected parcels, the report found that a mix of rural residential tracts interspersed with commercial dairies and small farming operations is included. The most sensitive of these properties will be the rural home sites.

- The report finds that dairy farms, hay fields, and vacant land are unlikely to be negatively affected since value of such lies in the relative productivity of the soil and the age and functional utility of farm and dairy related structures. Residences are incidental to the business not located in the viewshed.

- Based upon a review of the age, quality, and values of housing stock in the area, and an extensive survey of property sale records going back to 2000, the report found that property values in the Project Area are as low as anywhere in New York State. This is due to slow growth, depressed economies in northern New York and a cyclical dairy industry. The report did not find any new development and little executive type housing near the revised Project Area, where view considerations would be more significant.

- The general characteristics of the area around the proposed Project Area suggest that adverse property value impacts may be negligible, if measurable at all. This observation is based on other studies of property values at Maple Ridge near Lowville and the Hoen study at Fenner in Madison County (discussed above). In fact, there is yet to be demonstrable evidence that wind power projects result in any adverse impact on property values. Further, there is anecdotal evidence that the presence of a wind farm may even have improved values of some types of recreation or seasonal properties.

The Cushman and Wakefield (2007) study concluded that the Project should not have an impact on property values for undeveloped properties or existing wind farms. There appear to be no premium-priced, executive or second homes located in the Project Area or viewshed, which would derive such a premium from their views. The value of the existing stock of rural residential housing is fundamentally based on its use in terms of access to employment and services, and the quality of such. The data shows that the existing stock of rural residential housing in the study area does not trade at a premium versus other comparable communities in Franklin County and is significantly lower valued when compared with otherwise comparable communities in northern New York.

In addition to the Cushman and Wakefield report discussed above, Noble Environmental Power and the County of Franklin Industrial Development Agency (FIDA) conducted a cost benefit analysis of the proposed Noble Chateaugay and Bellmont Wind Parks Project, which are proposed to be located near the Project Area (FIDA 2007). This report, the *Costs and Benefits of Noble Chateaugay and Bellmont Windparks: Issues for County of Franklin IDA's Consideration*, found that “the wind farm presents a significant economic opportunity for the County.” The report discusses several studies to date of potential wind farm impacts on property values throughout the nation and provides a brief analysis of each.

Overall, the report found that there is no reliable evidence that wind farms affect real property market values; at the same time, evidence supporting the absence of an impact is weak. These studies are discussed in greater detail in this section (above) of this DEIS. The report then discusses the effects of wind farms on follow-on investment, incentives, fiscal impact, economic impact, and PILOT programs. In the cost and benefit analysis report performed by FIDA (2007) for the Noble Project as discussed above, the evidence gathered from other wind energy reports suggests that an impact on property values in Franklin County would be small or negligible. Additionally, the Noble Project located adjacent to the proposed Project appears to be a significant opportunity for the county.

2.9.2.2.3 Economy and Employment

Total wages for the Project's 10 to 15 full-time employees are estimated to be approximately $575,000 annually. It is anticipated that these jobs would result in multiple indirect impacts on the local economy. For example, it is reasonable to anticipate local expenditures for goods and services associated with Project operation and maintenance. Additionally, expected annual lease payments collectively total approximately $400,000 annually to local landowners participating in the Project. This direct financial benefit to all landowners participating in the Project would enhance the ability of those in the agricultural industry to continue farming. Local lease payments would also enhance the ability of participating landowners to purchase additional goods and services. To the extent that these purchases are made locally, they would have a broader positive affect on the local economy.

With respect to tourism in the region, it is worth noting that other wind power projects in New York and New England have resulted in a significant increase in visitation from tourists interested in the projects. This has certainly resulted in increased local expenditures for goods and services, but these have not been quantified, and are probably fairly modest. It should be acknowledged that this effect is likely to diminish as wind power projects become more common in the state and their novelty decreases.

Since this farm is adjacent to the Adirondack Park, several reports were researched to see if wind turbines have a negative impact on tourism. There is no evidence to indicate that the presence of wind turbines would have a negative impact on tourism. A 2002 study conducted in the Argyll Region of Scotland, involving interviews with 307 tourists, found that 91 percent said the presence of wind farms in the area would not influence their decision about whether to return to the area. Almost half (48 percent) of the tourists interviewed were visiting the area because of the “beautiful scenery and views.” Of those who had actually seen wind farms, 55 percent indicated that their effect was "generally or completely positive," 32 percent were ambivalent, and 8 percent felt that the wind farms had a negative effect (MORI Scotland 2002). Similar positive effects have been reported from various wind farm locations in Australia. According to the Australian Wind Energy Association, initial concerns that wind turbines would negatively impact tourism in that country, have proven to be unfounded (Australian Wind Energy Association 2003).

Generally, wind energy is considered to be a promising renewable energy technology for farmers. Much of the land proposed for wind energy development in this Project is agricultural.

As illustrated by the operational Fenner, Madison and Maple Ridge wind farms in central New York, wind turbines have been integrated into the New York agricultural setting with little or no disruption to ongoing activities. Wind turbines provide an important revenue stream for farmers. In 2004, the U.S. Department of Energy reported that if wind power comprised just 5 percent of U.S. electricity market, about $60 billion in capital investment would be made in rural communities. The Department of Energy study said that includes $1.2 billion in new income for farmers and landowners and the creation of 80,000 rural jobs. The Project would provide a part of that economic gain, while increasing the long-term prospects of keeping agricultural land in viable production.

2.9.2.2.4 Municipal Budgets and Taxes

Given that the Project's current configuration would require negotiating with four taxing jurisdictions, the Applicant intends to pursue a PILOT agreement with FIDA.

The Project will not require, or create a demand for, significant municipal or school district services. Therefore, the Project should not negatively affect the municipal budgets of the jurisdictions within the Project Area.

The Project would, however, have a beneficial impact on municipal budgets since the taxing jurisdictions would receive additional revenue from the Project in the form of PILOT revenues and, in the case of the Towns, in the form of host/mitigation payments. The proposed details of the PILOT agreement are explained in Section 2.9.3.2.5 below.

2.9.3 Mitigation Measures

Since the Applicant has carefully planned and sited the Project facilities, and has minimized or avoided impacts to the extent practicable, there is little need for additional mitigation.

2.9.3.1 Construction

2.9.3.1.1 Population and Housing

As described in Section 2.9.2, construction of the proposed Project would not have a significant impact on local population and housing. Consequently, no mitigation is necessary to address these impacts.

2.9.3.1.2 Property Values

As described in Section 2.9.2, construction of the proposed Project would not have a significant adverse impact on property values. Consequently, no mitigation is necessary to address these impacts.

2.9.3.1.3 Economy and Employment

The Project would have both a short-term and long-term beneficial impact on the local economy and employment. Consequently, no mitigation is necessary.

2.9.3.1.4 Municipal Budgets and Taxes

The only potential adverse impact to municipal budgets and taxes would be the impact of Project construction on local roads, and the need to repair or upgrade these roads to accommodate construction vehicles and increased activity. To mitigate this impact, construction-related damage or improvements to county, or town roads would be the responsibility of the Applicant, and would be undertaken at no expense to either the affected towns or county.

2.9.3.2 Operation

2.9.3.2.1 Population and Housing

As previously discussed, the operating Project is not anticipated to adversely affect population or housing availability in the local towns or surrounding area. Nor is it expected to have a depressing effect on local property values. Consequently, mitigation measures to address population and housing impacts are not necessary.

2.9.3.2.2 Property Values

Since there are no anticipated negative impacts to property values, no additional mitigation is required.

2.9.3.2.3 Economy and Employment

As described previously, the operating Project's potential impacts on the local economy and employment would be positive, in that additional jobs would be created and additional local expenditures would be made (e.g., lease payments to participating landowners, local purchase of goods and services). The number of permanent jobs created would not be large enough to create a financial burden on the towns, county, or school district by requiring the provision of additional services and/or facilities. Thus, mitigation measures to address either loss of jobs or increased demand for municipal services would not be necessary.

2.9.3.2.4 Municipal Budgets and Taxes

Because operation of the proposed Project would not create a significant demand for municipal or school district services and facilities, it would not have adverse impact on municipal or school budgets. The Project Sponsor proposes to negotiate a PILOT agreement with the Franklin County IDA through which affected taxing jurisdictions would receive revenues. The exact terms of the PILOT agreement have not been finalized, but other wind projects in the northeastern United States have previously agreed to pay up to $5,000 per MW in annual PILOT payments. If one were to include host community/mitigation/licensing payments to the Towns, the Project would be expected to pay of the order of $8,000 per MW. PILOT payments have typically lasted for 10 to 20 years for wind and other energy generation facilities, while the host/mitigation payments generally last for the life of the Project.

After the PILOT expires, the facilities would be taxed at their assessed values. These payments would more than offset any minor increases in community service costs that may be associated with long-term operation and maintenance of the Project (e.g., slightly increased road maintenance costs). Because the wind facility would generate a predictable source of additional revenue for all of the affected municipalities and school districts over the next 20 plus years, the Project would positively impact municipal and school district revenues. This would enhance the type and level of services these jurisdictions are able to provide to local residents for the duration of the Project's operational life.

2.10 Public Safety

This section addresses concerns regarding public safety at the proposed Project Site. Section 2.10.1 contains background information on public health and safety issues associated with the Project Area and more generally with the construction and operation of wind energy projects, Section 2.10.2 discusses the proposed Project’s anticipated public health and safety impacts. Section 2.10.3 details measures to mitigate or avoid anticipated impacts discussed in Section 2.10.2.

2.10.1 Existing Conditions and General Information

The scope of existing public health and safety conditions considered in this section is limited to those associated with identifiable mechanical and electromechanical hazards associated with everyday living, working, and traveling in a rural area. Certain weather related phenomenon common to the Project Area, such as heavy snowfalls or blowing or drifting snow, tend to exacerbate these risks and potentially complicate provision of emergency services. With limited exceptions (icing and lightning) such weather related phenomenon interacting with wind energy facilities do not introduce new risks. These exceptions are discussed in Section 2.10.2.2. Climate and other extreme weather related risks such as flooding and tornados represent low probability risks to public health and safety in the Project Area and are not discussed further in this section.

2.10.1.1 Transportation

As discussed in Section 2.8, Traffic and Transportation, U.S. Route 11 and NY190 are the main east-west roadways located near the Project Area. State route 374, oriented in a north-south direction, provides a link between the previously mentioned main highways. The Project Area is networked with many lower traffic local roads. Approximately 133 dwellings are located within the Project Area. Large and potentially slow-moving farm equipment often share Project Area roads with non-farm motorists, particularly during non-winter months. Winter months often bring about increased off-road recreational vehicle traffic in the form of snowmobiles. As described in Appendix J – Transportation Study, 240 accidents were reported along study area roadways with the highest total along Route 11 along the Ketcham County Line.

2.10.1.2 Electrical

There are several existing high voltage power lines running throughout the Project Area. A 115-kV line runs north-south along the Burke/Chateaugay town line and splits in and east-west direction upon entering the Town of Bellmont. The Town of Chateaugay is also transected by a 230-kV electric transmission lines that conveys power from the in the west in Malone, east to Willis Substation, located within the Project Area. From Willis, the line continues east to Plattsburg. Existing electrical transmission lines create the potential for electrical safety hazards in the immediate vicinity of the lines and the potential for personal injury, property damage, or fire in the event of transmission line failure or tower/pole collapse. The high-voltage electrical current running through these existing power lines results in the propagation of electromagnetic fields (EMFs). As discussed in Section 2.10.3, data do not support a cause and effect relationship between exposure to environmental levels of EMF and elevated risk of disease.

2.10.1.3 General Wind Energy Facility Concerns

Regarding wind power projects, public safety concerns associated with construction are fairly standard construction-related concerns. These include the potential for injuries from 1) the movement of construction vehicles, equipment and materials; 2) falling overhead objects; 3) falls from atop equipment or into open excavations; 4) electrocution; 5) contamination or fires resulting from improper handling of hazardous or combustible materials. These types of incidents are well understood, and do not require extensive background information. These risks are largely limited to construction personnel but can not be entirely shielded from the general public. Specifically, landowners and their workers or guests may likely need to access the construction area, motorists or pedestrians share public roadways, and contaminants or fires could spread from the construction area. The decentralized nature of a wind energy facility also raises concerns about how to prevent curiosity seekers from attempting to observe construction activity at close range.

The operation of wind energy facilities in many ways is safer to the public than other forms of energy or electricity production. There is no environmental pollution resulting from the extraction or transportation of a primary fuel source. Since combustible fuel usage and storage is limited to facility maintenance associated emissions, leaks, and spills that could potentially contaminant the surrounding environment are avoided. Wind facility decentralization coupled with limited use of combustibles significantly reduces threats of fires, explosions, or complete plant meltdowns. In addition, use and/or generation of toxic or hazardous materials is minor when compared to other types of power generating facilities.

Nevertheless, operation of wind energy facilities is not totally without risk of fire, explosion, or contamination as will be discussed in the following section. Additionally, decentralized wind energy facilities afford the general public opportunities to access operating wind turbines. This greater accessibility carries with it certain risks to public health and safety. Examples of such safety concerns include ice shedding, tower collapse, blade throw, stray voltage, fire in the nacelle, and lighting strikes. A wind energy facilities high visibility and public exposure may also raise public safety concerns regarding attacks of terrorism, sabotage, or vandalism.

There are no records of bystanders or people passing by being killed as a direct result of either wind energy facility construction or operation. One incident did happen when a parachutist in Germany was killed when she drifted into the blades of a turbine, although unfortunate, this is an atypical scenario and would be better categorized as negligence or unsafe practice by the person (Gipe 2004). One additional fatality occurred as a result of wind energy development, when a crop dusting plane crashed after clipping a guy wire extending from a newly installed wind monitoring tower (Gipe 2006). Gipe reported in 2006 that since the mid-90s when turbine size and wind energy generation expanded there have been 18 accidental fatalities in the United States (including the previously mentioned two) at commercial wind energy facilities. Annual worldwide mortality rates as a function of generation output have declined from 0.40 deaths/TWh in 1995 to 0.05 deaths/TWh in 2006. The current rate is roughly one third of that associated with mining, processing, and burning coal for electrical generation (excluding impacts of air pollution) (Gipe 2006). Since that report, a recent death at a wind farm in Oregon was reported in August 2007 due to the collapse of a tower. The victim was a technician employed by the turbine manufacturer and was inside the turbine when it collapsed (Woodall 2007).

Additional public health concerns focus on audible noise, low frequency noise/vibrations, and rotating shadows (shadow flicker) produced by operating wind turbines as the cause of various neurological conditions including vertigo, non-specific dizziness, migraine headaches, or epileptic seizures. As discussed in Section 2.10.2.2.8, a thorough review of existing medical and scientific peer-review literature failed to find any basis that visual or acoustic emissions from wind turbines trigger such symptoms. However, this literature review could not rule out the possibility that the simple detection of wind turbine emissions could induce sufficient mental stress to trigger migraine headaches and associated symptoms in individuals predisposed to such ailments.

2.10.2 Anticipated Impacts

2.10.2.1 Construction

2.10.2.1.1 General Construction Activity

The anticipated impacts during Project construction include the potential for injuries to workers and the general public from 1) the movement of construction vehicles, equipment and materials; 2) falling overhead objects; 3) falls from atop equipment or into open excavations; 4) electrocution; and 5) contamination or fires resulting from improper handling of hazardous or combustible materials. Injuries have included minor injuries to more serious injuries and even fatalities. Of the 18 accidental fatalities in the United States previously mentioned, 12 people have been killed during the construction of wind energy (Gipe 2006). These data indicate a relatively constant annual mortality level. Considering annual increases in the number and size of wind energy facility installations, the data suggests that improved safety measures and safety devices are addressing risks in wind energy facility construction.

2.10.2.1.2 Release or Potential Release of Hazardous Materials

Construction of the proposed Project would require the use of diesel and gasoline fuels for operating construction equipment and vehicles. The contractor would utilize fuel trucks for refueling cranes and large earth- moving equipment and fuel storage tanks. The fuel trucks would drive to the equipment and tank (1,000-gallon capacity) locations and would incorporate automatic shutoff devices to limit accidental spills. Some construction vehicles could refuel at nearby gas stations.

Lubricating oils and cooling fluids would be present in construction vehicles and equipment. Small quantities of lubricating oils may also be stored at construction staging areas. Large power transformers located at the proposed Project substation and small pad-mounted transformers located the base of each turbine or inside the nacelle contain mineral oil to dissipate heat during operation. The large substation transformers would be filled with mineral oil via a truck after delivery and installation on the site. The pad-mounted transformers at the base of the towers or located would be filled at the factory.

Spills of fuels, lubricating oils, and mineral oil could occur as a result of vehicle accidents, equipment malfunction, human error, terrorism, sabotage, vandalism, or aircraft impact. The Applicant will prepare a SPCC Plan that addresses such risks. The SPCC Plan will be submitted to local emergency response organizations and the representatives of the Towns for review and approval prior to the start of construction. Spills, should they occur, would likely be confined to the Project Site.

2.10.2.1.3 Transportation

The general public could also be exposed to construction-related hazards due to the passage of large construction equipment on area roads. In addition, should members of the public gain unauthorized access to the work site (on foot, by motor vehicle, ATV, or snowmobile) the potential for construction related accidents increases. The latter could result in collision with construction equipment or stockpiled materials (e.g., soil, rebar, turbine/tower components), falls into open excavations, or even electrocution.

2.10.2.2 Operation

Routine operation and maintenance of the proposed Project poses health and safety risks primarily to workers performing their duties. The previous section on general risk of wind energy facilities covers these risks. The following sections detail the risks to public health and safety posed by the operation of the proposed Project.

2.10.2.2.1 Ice Shedding

Icing in the Project Area would generally result from freezing rain events forming a “glaze” ice (as opposed to “rime” icing that occurs at higher elevations). Ice shedding, also known as ice throw, refers to the phenomena that can occur when ice accumulates on rotor blades and subsequently breaks free falling to the ground. Field observations and studies of ice shedding indicate that most ice shedding occurs as air temperatures rise causing ice on the rotor blades to thaw. Therefore, the tendency is for ice fragments to drop off the rotors and land near the base of the turbine (Morgan et al. 1998). Ice can potentially be “thrown” when ice begins to melt and stationary turbine blades begin to rotate again (although usually turbines cannot restart until most of the ice has melted). Several observational studies and mathematical models examining this phenomenon have calculated how far ice can potentially be thrown from a moving rotor blade before hitting the ground (Morgan and Bossanyi 1996). The distance traveled by a piece of ice depends on a number of factors, including: the position of the blade when the ice breaks off, the location of the ice on the blade when it breaks off, the rotational speed of the blade, the shape of the ice that is shed (e.g., spherical, flat, smooth), and the prevailing wind speed. Data gathered at existing wind farms have documented ice fragments on the ground at a distance of 50 to 328 feet from the base of the tower. These fragments were in the range of 0.2 to 2.2 pounds in mass (Morgan et al. 1998). The risk of ice landing at a specific location is found to drop dramatically as the distance from the turbine increases. European studies have identified a safety threshold of 200 to 250 meters (660 to 820 feet) from any turbine, beyond which there is no significant risk from falling ice fragments (Morgan and Bossanyi 1996). Because of the turbine setback distances to structures and public roads risks of ice throw are considered minimal in the Project Area. Ice throw in the proposed Project Area presents more of a concern with respect to snowmobile traffic that may depart from authorized trails.

Although a potential safety concern, it is important to note that while more than 55,000 wind turbines have been installed worldwide, there has been no reported injury caused by ice being thrown from a turbine (NYSERDA 2006). However, occasional ice shedding does occur, and remains a potential safety concern.

2.10.2.2.2 Tower Collapse/Blade Failure

Another potential public safety concern is the possibility of a rotor blade dropping or being thrown from the nacelle or a wind turbine tower collapsing. Blade or blade fragment throw would most likely be the result of lightning strike, equipment failure, improper assembly, or an act of sabotage. The hazard zone for such blade failure should be approximately that for ice throw. Blade failure after a lightning strike occurred at the Searsburg, VT wind farm most recently in February 2006 and at the Fenner Wind Farm, Madison County, NY in early 2007. In both blade failure cases, the blade fell directly to the ground, very close to the base of the tower. In the Applicant’s analysis the worst-case blade throw distance is equivalent to one turbine tip height. Because of the significant distances from the proposed tower locations to existing residences and public roads, and restricted site access, the proposed Project should not result in any risk to the public due to blade failure.

Wind turbine tower collapses are even more rare occurrences, but such incidents have occurred. A tower collapse at the Weatherford Wind Power Project in Oklahoma occurred in May, 2005 and more recently a collapse occurred at the Klondike III wind farm in Oregon in August 2007 as described above. Although these incidents are rare, they are potentially dangerous for project personnel and the general public. The reasons for the turbine collapses on record vary depending on conditions and tower type. Past occurrences of these incidents have generally been the result of design defects during manufacturing, poor maintenance, wind gusts that exceed the maximum design load of the engineered turbine structure, or lightning strikes (AWEA 2006).

The majority of instances of blade failure and turbine collapse were reported during the early years of the wind industry. Technological improvements and mandatory safety standards during turbine design, manufacturing, and installation as well as more frequent maintenance have largely eliminated such occurrences. Modern utility-scale turbines are certified according to international engineering standards. These include ratings for withstanding different levels of hurricane-strength winds and other criteria (AWEA 2006). The engineering standards of the wind turbines proposed for this Project are of the highest level and meet all federal, state, and local codes. In the design phase, state and local laws require that licensed professional engineers review and approve the structural elements of the turbines. Improved braking systems, pitch controls, sensors, and speed controls on wind turbines have greatly reduced the risk of tower collapse and blade throw. The wind turbines proposed for the Project automatically shut down at wind speeds over approximately 45 mph. They also cease operation if significant vibrations or rotor blade stress is sensed by the turbines' blade monitoring system. For all of these reasons, the risk of catastrophic tower collapse or blade failure is minimal. However, if an unforeseen event causes a tower collapse or blade failure (such as a fire or lightening strike), setbacks from structures and roads would mitigate the risk of damage to adjacent property or public roads.

2.10.2.2.3 Stray Voltage and Electrical Shock

Stray voltage can be defined as a “low level of neutral-to-earth electrical current that occurs between two points on a grounded electrical system” (Wisconsin Rural Energy Management Council 2000). Most cases of stray voltage arise from amateur installations or repairs to electrical lines in or around barns and areas where livestock habituate. Livestock possess greater sensitivity to stray voltage than humans and will often provide the first indications of a stray voltage situation.

The proposed Project’s collection system, like other electrical facilities, has the potential to create stray voltage to varying degrees based on factors such as operating voltage, geometry, shielding, rock/soil electrical resistively, and proximity. Stray voltage from such facilities usually only occurs if two circumstances are simultaneously present: the system is poorly grounded; and it located in close proximity to ungrounded or poorly grounded metal objects (fences, pipelines, buildings, etc.). Such defects in the installation of the Project's collection system could result in low voltage/nuisance shocks detectable by humans within close range of the alternate/stray voltage pathway. Voltage drops in the collector system sufficient to harm human health would be sufficient to trip circuit breakers.

2.10.2.2.4 Fire

Wind turbines, due to their height, physical dimensions, and complexity, have the potential to present response difficulties to local emergency service providers and fire departments should a fire occur in the tower or nacelle. Although the turbines contain relatively few flammable components, the presence of electrical generating equipment and electrical cables, along with various oils (lubricating, cooling, and hydraulic) creates the potential for fire or medical emergency within the tower or the nacelle. This, in combination with the elevated location of the nacelle and the enclosed space of the tower interior, makes response to a fire or other emergency difficult, and beyond the capabilities of most local fire departments and emergency service providers.

Other Project components create the potential for a fire or medical emergency due to the storage and use of diesel fuels, lubricating oils, and hydraulic fluids. Storage and use of these substances may occur at the substation, in electrical transmission structures, staging area(s), and the O&M building. The presence of potentially hazardous materials as well as high voltage electrical equipment presents unique safety risks to local responders. However, due to the accessibility of these areas (as opposed to the tall wind turbines), local and emergency personnel would respond to such an emergency in accordance with their hazardous materials and electrical fire training.

2.10.2.2.5 Lightning Strikes

Due to their height and metal/carbon components, wind turbine blades are highly susceptible to lightning strikes. Likewise, lightning can also strike a wind turbine nacelle or tower. It is reasonable to assume that the addition of a tall structure such as a wind turbine will increase the possibility of a lightning strike occurring at the turbine location. However, there is no evidence suggesting that wind turbines increase the frequency of lightning in a broader area, nor is there evidence suggesting the increased probability of lightning striking structures, utilities, or unoccupied areas immediately adjacent to a wind turbine. If anything, due to its height and conductivity, a grounded wind turbine would channel lightning strikes that otherwise would be drawn to trees, silos, and other potentially ungrounded structures, thereby reducing the probability of local lightning strikes and associated property damage and fires.

Statistics on lightning strikes to wind turbines are not readily available for most areas, but several European databases have calculated that lightning is responsible for four to eight damage events (faults) per 100 turbine-years in northern Europe, and up to 14 faults per 100 turbine-years in southern Germany (Korsgaard and Mortensen 2006). Other wind operating systems owned and operated by Horizon Wind Energy routinely experience lightening events during storms. Most of the lightning strikes hit the rotor, and the effects are highly variable, ranging from no damage and minor surface damage to complete blade failure. All modern wind turbines include extensive lighting protection systems which are designed to prevent damage or catastrophic blade failure.

2.10.2.2.6 Electromagnetic Fields

Electric power transmission lines create EMFs because they carry electric currents at high voltages. For an electric transmission line, the highest EMF level is next to the transmission lines (typically near the center of the transmission line right-of-way) and decrease as the distance from the transmission corridor increases.

Humans are exposed to a wide variety of natural and man-made EMF both in the outdoor environment and in homes, schools, and businesses. Most people in the United States are exposed to EMF that average less than 2 milligauss, although individual exposures vary. The EMF produced by electric transmission lines are well within the range of EMF exposures from such other sources. The Project electrical collection system will operate at 34.5 kV, which is a relatively low voltage and will be stepped up to 115 kV at the substation near the point of interconnection with an existing 115 kV transmission line. No significant impacts from EMF are expected as a result of the Project.

2.10.2.2.7 Vibration

According to turbine manufacturers, turbine vibration is minimal and if vibration occurs, the SCADA system detects the abnormality and the turbine is shut down. No vibration related health effects have been documented at operating wind power facilities and no related health effects are anticipated as a result of this automated detection and shut down process.

Additionally, the current Building Code of New York State, namely Sections 1614 through 1622, and minimum Design Loads for Buildings and Other Structures (ASCE 7-05), provides engineering design standards for all new structures in New York State, including wind turbines. Specific processes and design provisions in the building code were developed for earthquake loads and seismic events. The design standards were developed in accordance with known existing fault lines, historic and probabilistic seismic activity, and anticipated spectral response accelerations for individual site class soil categories. Adherence to these standards and structural design of the wind turbine indicate that any vibrations which might be caused by turbine mechanical problems would not result in turbine foundation failure.

2.10.2.2.8 Health Effects

Recently, Dr. Nina Pierpont coined the term “wind turbine syndrome” to describe the alleged health effects associated with prolonged exposure to wind turbine. Pierpont’s wind turbine syndrome consists of: (1) symptoms associated with audible noise and related/indirect consequences such as sleep loss, communications interference, inhibited cognitive functioning, and exacerbation of headache; (2) symptoms associated with low frequency noise including "vibroacoustic disease" and its associated symptoms (cardiopulmonary fibrosis, seizures and cognitive changes); and (3) symptoms associated with shadow flicker including loss of balance, nausea, and triggering of epileptic seizures.

At the request of the Applicant, ENVIRON International Corporation of Amherst, MA, (ENVIRON) recently conducted a literature review to determine if the medical and scientific community shared Pierpont's opinion of the hazards posed by wind turbines as well as to find evidence from non-turbine related studies that might help substantiate a public health threat.

Threat from Audible and Low-Frequency Noise

Audible and low-frequency noises can be generated by both mechanical and aerodynamic actions of wind turbine operation. Aerodynamic noise results from the flow of wind over the turbine blades while mechanical noise results from the physical interaction of turbine components. ENVIRON found no peer-reviewed papers that investigated public health impacts of low-frequency turbine noise/vibrations. ENVIRON also found four peer-reviewed articles, including two surveys of existing literature (Jakobsen 2005) (Bellhouse 2004) that indicate low-frequency components of turbine noise tend to be inaudible and as such pose no threat to public health. Canadian and British government reports (HGC Engineering 2006) (Leventhall 2003) respectively reach similar conclusions. ENVIRON concludes that Pierpont's papers do not sufficiently demonstrate a correlation between low-frequency turbine noise and a public health threat.

Likewise, ENVIRON found no studies quantifying a public health threat posed by audible turbine-related noise. Empirical evidence shows that audible turbine-related noise can present a nuisance for sensitive receptors, however. It is logical to assume that sensitive receptors may experience elevated levels of anxiety that could potentially complicate existing health conditions. Exposure to any number of environmental risk factors, such as traffic noise, could present similar levels of risk to sensitive receptors in the Project Area. Without studies comparing such risk factors with audible turbine noise in a variety of real world conditions there is no evidence supporting singling out audible wind turbine as a public health threat. For more information on noise impacts, see Section 2.7.

Threat from Shadow Flicker and Visual Impact of Rotating Turbines

Shadow flicker results from the cast shadows of the rotating blades of a turbine intermittently blocking the sun. Shadow flicker only occurs when the sun is unobstructed and the turbine is between the viewer and the sun. Computer models can calculate shadow flicker exposure at residences within or adjacent to the Project Area. These models are based on known coordinates for Project turbines and area residences and take advantage of statistical data on cloud cover to develop an estimate of likely exposure. These models can also assess the relative intensity of an unobstructed shadow cast on a given house. Based on assumption of wind speed and direction, as well as orientation of “receptor” residences, and the presence of screening vegetation or topography likely exposure levels can be further refined. See Section 2.5.2.4 for further details of shadow flicker analysis.

Pierpont suggests that shadow flicker may cause adverse effects through both the strobe effect and through creating a disorienting sense of motion. Pierpont does not refer to any peer reviewed publications supporting adverse health effects from shadow flicker (loss of balance, nausea, and triggering of epileptic seizures) generated by wind turbines; nor could ENVIRON identify any relevant peer reviewed publications. Pierpont does not offer any studies that either examine shadow flicker generated by wind turbines or examine the health effects of shadow/light flicker from other sources.

Scientific studies have demonstrated a correlation between flickering light and negative health effects such as triggering seizures in people with epilepsy. According to the British Epilepsy Foundation, approximately five percent of individuals with epilepsy have sensitivity to light. Most people with photosensitive epilepsy are sensitive to flickering around 16 to 25 Hz (Hertz or Hz = 1 cycle per second), although some people may be sensitive to rates as low as 3 Hz and as high as 60 Hz. The frequency, or number something happens per second, is measured in Hertz. Depending on the blade rotational speed (RPM), shadow flicker from wind turbines have a frequency of 0.5 Hz to 1.25 Hz, which is equivalent to approximately 1 cycle per second, or 1 complete blade rotation. The applicant proposes, for the sake of this study a turbine with a 3-blade 82-meter diameter rotor, 80-meter hub height, and a nominal rotor speed of 16.7 RPM. This translates to a blade pass frequency of 0.84 Hz. Given this, health effects to individuals with photosensitive epilepsy are not anticipated.

As with audible noise, however, the annoyance of turbine-related shadow flicker could induce second-order health problems due to anxiety. Without studies comparing real world turbine-related shadow flicker to other established flicker-based risk factors there is no evidence supporting turbine-related shadow flicker as a public health threat.

ENVIRON conducted an independent literature search and found no reliable references indicating negative health affects from operating wind farms. The Global Wind Energy Council shows more than 59,000 MW of wind energy operating world-wide at the end of 2005. No reliable studies indicating adverse health effects from these operating facilities have been recorded, therefore no health related impacts are anticipated from the operation of the Project.

2.10.3 Mitigation Measures

2.10.3.1 Construction

The exposure to the general public to any construction-related risks/hazard is expected to be very limited because construction activities will occur primarily on private land and be well removed from adjacent roads and residences. The anticipated impacts will be further minimized by extensive signage across the Project Site warning the general public of the ongoing construction activities. The general public will not be allowed on the construction site, and after hours, vehicular access to such sites will be blocked by parked equipment or temporary construction fencing. Temporary construction fencing or other visible barriers will be placed around excavations that remain open during off hours. In addition, material safety data sheets (MSDS) for potentially hazardous construction materials will be provided to local fire and emergency service personnel. The contractor will also coordinate with these entities to assure that they are aware of various construction activity locations, and avoid potential conflicts between construction activity and the provision of emergency services (e.g., road blockages, etc.).

The risk of construction related injury will be minimized through careful safety planning, regular safety training and use of appropriate safety equipment. No crews will be allowed to begin work on the Project until they have gone though safety and environmental training. The construction contractor will appoint at least one safety officer who will be responsible for ensuring that the work site complies with the safety plan, that crews are trained, and that any safety incidents are addressed and/or reported as required by law and the provisions of the Project safety plan.

2.10.3.1.1 Fire and Explosion Risk

The following activities will be undertaken prior to and during Project construction:

- Prior to starting excavation work at the site, the construction contractor will review the location of underground facilities with site personnel. Sharing information and safety issues during an on site meeting between the construction contractor and its excavating crews will help avoid confusion and needless damage to underground facilities.

- The construction contractor will adhere to all applicable federal and state safety regulations, which include training as it relates to the protection of underground facilities. Construction crews will be informed regarding best practices and regulations applicable to the protection of underground facilities.

- The construction contractor will protect and preserve the staking, marking or other designations for underground facilities until they are no longer required for proper and safe excavation. The construction contractor will stop work and notify the one-call center for re-marks if any facility mark is removed or is no longer visible.

- The construction contractor will have an observer assist the equipment operator when operating excavation equipment around known underground facilities.
- The construction contractor will support and protect any exposed underground facilities from damage as required in the crossing agreement and by law.

Protection of exposed underground facilities is as important as preventing damage to the facility while digging. Exposed facilities can shift, separate, or be damaged when they are no longer supported or protected by the soil around them. OSHA has addressed this issue in Subpart P-Excavation Standard 29 CFR 1926.651(b)(4), which requires that underground installations be protected, supported, or removed as necessary to safeguard employees while the excavation is open. Contractors will comply with all OSHA regulations, in addition to state worker safety regulations, regarding electricity, structural climbing, and other hazards, during construction of the wind farm. To minimize safety risks to construction personnel, all workers will be required to adhere to a safety compliance program protocol, which will be prepared by the construction contractor or their representative, prior to construction. The safety compliance program will address appropriate site health and safety related issues including:

- Personal protective equipment such as hardhats, safety glasses, orange vest, and construction boots)
- Job safety meetings and attendance requirements
- Fall prevention
- Construction equipment operation
- Maintenance and protection of traffic
- Hand and power tool use
- Open hole and excavation area safety parking
- General first aid
- Petroleum and hazardous material storage, use, containment and spill prevention
- Posting of health and safety requirements
- Visitors to the job site
- Local emergency resources and contact information
- Incident reporting requirements

2.10.3.1.2 Transportation

As mentioned in Section 2.8 and further described in Appendix J, a preliminary construction routing plan has been developed to assure that construction vehicles avoid areas where public safety could be a concern (schools, clusters of homes, etc.). Oversize vehicles will be accompanied by an escort vehicle and/or flagman to assure safe passage of vehicles on public roads. The final routing plan cannot be created until after the SEQR process is complete because various aspects of the plan will depend upon permit conditions contained in authorizations that cannot be issued until a FEIS has been accepted.

2.10.3.2 Operation

2.10.3.2.1 Ice Shedding

During the development and siting phase, wind turbines are placed on a map in accordance with setbacks designed to protect the public from, among other things, ice shedding. Compliance with setbacks and measures to control public access (gates, warning signs, etc.) should minimize any public safety risk associated with ice shedding. All turbine locations have been sited to maintain a distance of a minimum of 1,000 feet from any structure, participating or non-participating. Skiing and snowmobiling does exist in the Project Area and multiple trails have been identified. Although the Project Sponsor cannot relocate these trails, the Project Sponsor will meet with local landowners to explain the risks of ice shedding and proper safety precautions.

Additionally, ice detectors will be installed at the maintenance facility, on the meteorological tower, and on wind turbines to alert maintenance personnel of icing conditions, and allow for turbine shut-down and/or notification of area residents.

Wind turbine manufacturers have developed engineering controls that help to minimize any safety risks associated with ice build up on wind turbine components. When ice builds up on rotor blades and/or sensors, the rotational speed is slowed and icing potentially creates an imbalance in the weights of the individual blades. Such effects of ice accumulation can be sensed by the turbine's computer (SCADA system) and result in the turbine being shut down until the most of the ice melts. The turbine has to be manually restarted by the operator for the turbine to commence operation.

Based upon the results of studies and field observations at other wind power projects, with the Project's siting criteria, the proposed control of public access to the turbine sites, and engineering controls in the turbines themselves, it is not anticipated that the Project will result in significant risks to the health or safety of the general public due to ice shedding.

2.10.3.2.2 Tower Collapse/Blade Failure

As stated above, the setbacks established for this Project are designed to protect nearby residences, buildings, roads, transmission lines and other infrastructure from the unlikely incidence of tower collapse and blade failure. If a tower collapsed or a blade failed, a fall zone setback from roads and transmission lines equivalent to the maximum turbine height (i.e., base of tower to tip blade), plus an additional distance safety factor, has already been built into the Project layout. Setbacks from homes and buildings provide even more protection. In those rare instances where towers have failed, the failure typically results in components crumpling. It would be very unusual for the tower to break off at the base and fall straight over. Similarly, wind turbines are designed so that if blade failure occurs, blades fall directly to the ground, close to the tower base. Further measures to reduce risk due to an unlikely turbine collapse or blade failure will be implemented through the use of gates, signage, and public education/outreach efforts to discourage unauthorized access onto the private lands on which the turbines are located.

Technological improvements and mandatory safety standards during turbine design, manufacturing, and installation as well as frequent maintenance scheduling have reduced occurrences of tower collapse or blade throw. Modern utility-scale turbines are certified according to international engineering standards. These include ratings for withstanding different levels of hurricane-strength winds and other criteria (AWEA 2006). The engineering standards of the wind turbines proposed for this Project are of the highest level and meet all federal, state, and local codes. In the design phase, state and local laws require that licensed professional engineers review and approve the structural elements of the turbines. State of the art braking systems, pitch controls, sensors, and speed controls on wind turbines have greatly reduced the risk of tower collapse and blade failure. The wind turbines proposed on the Project automatically shut down at wind speeds over approximately 45 mph. They also cease operation if significant vibrations or rotor blade stress is sensed by the turbines' blade monitoring system. For all of these reasons, the risk of catastrophic tower collapse or blade failure is minimal.

2.10.3.2.3 Stray Voltage

Stray voltage is a legitimate concern in the design of wind generating facilities. Stray voltage is preventable with proper electrical installation and grounding practices. The Project’s power collection system will be properly grounded, and will not be connected to the local electrical distribution lines that provide electrical service to farm buildings and homes. It will be physically and electrically isolated from all of the buildings in and adjacent to the Project Area. Additionally, the wind farm’s electrical collection lines will be located a minimum of 48 inches below ground, which will prevent any incidental contact with farming operations and will protect the collection system’s insulation materials from damage.

Proper grounding, installation, and maintenance practices will assure that the Project does not cause or contribute to stray voltage in the area. In the event that a Project participant suspects that there is a pre-existing stray voltage problem at their agricultural operation, the Project Sponsor will conduct tests to quantify the existing voltage potential prior to construction and during operation to determine later if the problem has increased as a result of Project improvements. The Project Sponsor will implement a complaint resolution procedure to assure that any complaints regarding stray voltage are adequately investigated and resolved.

2.10.3.2.4 Fire

All turbines and electrical equipment will be inspected by the installation contractor prior to being brought on-line. This, along with built-in safety systems, minimizes the chance of fire occurring in the turbines or electrical stations. However, though extremely rare, fire at these facilities could result from a lighting strike, short circuit or mechanical failure/malfunction. Any occurrences of fire at a turbine would be sensed by the SCADA system and reported to the Project control center. Under these conditions, the turbines would automatically shut down and/or Project maintenance personnel would respond as appropriate.

If a wind turbine were to catch fire, it would be allowed to burn itself out while maintenance and fire personnel maintained a safety area around the turbine and protected against the potential for spot ground fires that might start due to sparks or falling material. Power to the section of the Project with the turbine fire would be disconnected. An effective method for extinguishing a turbine fire from the ground does not exist, and the fire events generally do not last long enough to warrant attempts to extinguish the fire from the air (NYSERDA Power Naturally NY Website). However, since the public typically does not have access to the private land on which the turbines are located, risk to public safety during a fire event would be minimal.

Transformers at the substation are equipped with a fire suppression system. This system would quickly extinguish any fires that occur at the Project substation and automatically shutdown power to the facility.

Generally, any emergency/fire situations at a wind turbine site or substation that are beyond the capabilities of the local service providers will be the responsibility of the Project owner/operator. Construction and maintenance personnel will be trained and will have the equipment to deal with emergency situations that may occur at the Project Site (e.g., tower rescue, working in confined spaces, high voltage, etc.). Outside assistance from the local municipality may be required; however, they will be assisted by Project personnel. Many of these situations will be pre-planned for and all participants will be trained how to react. Consequently, such an incident would generally not expose local emergency service providers or the general public to any public health or safety risk.

An employee safety manual will include a Fire Protection and Emergency Response Plan and will be incorporated into the overall operating and maintenance policies and procedures for the Project. Included in that manual will be specific requirements for a fire prevention program. This program will include the following components:

- Initial and refresher training of all operating personnel (including procedures review) in conjunction with local fire and safety officials.
- Regular inspection of all wind turbines including regular bolt tightening.
- Regular inspection of transformer oil condition at each wind turbine step-up transformer.
- Regular inspection of transformer oil condition at each step-up transformer installed at the main substation.
- Regular inspection of all substation components, including thermal imaging and other continuous monitoring techniques.

- Regular inspection of fire extinguishers at all facility locations where they are installed.
- All Project vehicles will be equipped with fire fighting equipment (fire extinguishers and shovels) as well as communication equipment for contacting the appropriate emergency response teams.
- The MSDS for all hazardous materials on the Project will be on file in the construction trailers (during construction) and the O&M building (during operation). The MSDS for these materials will be provided to local fire departments and emergency service providers.
- The facility Safety Coordinator shall notify the local fire department of any situation or incident where there is any question about fire safety, and will invite an officer of the fire department to visit the workplace and answer any questions to help implement a safe operating plan.

Development and implementation of this plan will assure that Project construction and operation will not have a significant adverse impact on public safety, or the personnel and equipment of local emergency service providers. A preliminary Plan is provided in Appendix Q. However, the final plan cannot be created until after the SEQR process is complete because various aspects of the plan will depend upon permit conditions contained in authorizations that cannot be issued until a FEIS has been accepted.

2.10.3.2.5 Lightning Strikes

Lightning that strikes a blade must still be safely channeled and dispersed to the ground without interfering with the turbines electronics and power generation equipment. Manufacturers have designed lightning protection systems that integrate across each component of the wind turbine. Many first generation wind turbines deployed in the 1970s and 1980s did not have lightning protection built into the blades and instead relied on grounding of towers to prevent damage from a lightning strike. As blade size increased, this strategy became ineffective and by the early 1990s blade manufacturers began to incorporate tip-end lightning protection into their engineering design. This protection is now a standard component of modern turbines (Korsgaard and Mortensen 2006). Subsequent design improvements continue to improve turbine safety and performance during and after lightning strikes. A typical blade design, as shown in Appendix A (Technical Description of a Lightning Protection System, NEG Micon A/S 2003), shows the location of lightning receptors on both sides of a blade tip that are connected to a metallic mesh conduction system laminated into the blade and running the length of the blade. Using the example system in Exhibit 1.5-10, lightning that strikes a blade is conveyed from the rotor to the machine base frame through a copper brush. By design, the generator and other components inside the nacelle are not directly mounted to the machine base frame and would not impede the flow of current if lightning were to strike the nacelle. As a precaution, the generator and components are independently protected via grounding cables to divert any residual current safely to the ground. The machine base frame conveys the lightning current to the tower via grounding cables and the tower conveys the lightning current to a loop of copper cable encircling the tower buried at least 3 feet below ground surface. The loop of copper cable is connected to vertical two grounding rods buried beyond the edge of the turbine foundation (approximately 30 feet) on opposite sides of the tower and extending below the foundation depth. This network of underground cable and grounding rods conveys the current away from the turbine's shielded distribution wires and away from rebar in the foundation. A lightning strike to the nacelle will likely hit the lightning rod that extends above the nacelle. The lightning rod is connected to the machine base frame and the rest of the lightning protection system as described above. If a lightning strike is detected, the turbine may shut down automatically, and at a minimum, it will be inspected to assure that damage has not occurred.

The typical lightning diversion scheme of a wind turbine is illustrated in Exhibit 1.5-10.

Beyond the turbine lightning protection system, and the fire/emergency response plan described previously, no additional measures to mitigate the effects of lightning strikes are proposed. Mitigation measures regarding blade failure are addressed in Section 2.10.3.2.2 above.

2.10.3.2.6 Electromagnetic Fields

EMFs will be generated by the operation of various Project components, including the turbine generator, electrical collection lines, and transformers. However, the strength of the EMF produced by these components will not be significant at any receptor location. Electromagnetic fields are attenuated by objects such as trees and walls of structures, and are shielded by materials such as metal and the earth. Thus, the buried electrical lines are not anticipated to produce any EMF at the ground surface. Additionally, as distance from a source doubles, the amount of EMF exposure is quartered. The height of the turbine generator above the ground, the location of electrical collection cables, and the location of substation transformers and other electrical equipment inside a fenced yard, should adequately separate these components from any receptors.

Numerous public health review groups, including the National Institute of Environmental Health Sciences, the National Institutes of Health, and the U.S. Department of Energy, have examined the public’s exposure to EMFs produced by power lines. The consistent overall conclusion of these groups is that available data do not support a cause and effect relationship between exposure to environmental levels of EMF and elevated risk of disease.

Because no significant impacts from EMF are expected, no mitigation is required. However, to reduce the potential effects of EMF from the Project to the maximum extent practicable, the Project Sponsor will adhere to the electric field strength interim standards established in the New York State PSC Opinion No. 78-13, and the magnetic field strength interim standards established in the PSC’s Interim Policy on Magnetic Fields, issued September 11, 1990.

2.11 Community Facilities and Services

Community facilities for the Project Area include public utilities and private energy infrastructure, police protection, fire protection and emergency response, heath care facilities, education facilities, and parks and recreational facilities. The level of services provided to the Project Area was determined through telephone communications with state, county, individual towns, and school district personnel.

This section explains the existing conditions in Section 2.11.1, the anticipated impacts on these facilities and services in Section 2.11.2, and the proposed mitigation of any significant impacts in Section 2.11.3.

2.11.1 Existing Conditions

Wind power projects do not introduce significant burdens on local community services and facilities. In comparison to residential development and sprawl, the introduction of wind power projects results in a net gain for local communities. This is well researched and documented in a report performed by Ohio State University contained in Appendix S. According to the research, residential development has a net drain on the cost of community services: for every $1.00 contributed to the local tax base, the cost to the local community is $1.35.

2.11.1.1 Public Utilities and Private Energy Infrastructure

New York State needs more electricity, and the energy it does have typically comes from fossil fuels. The purpose of the proposed Project is to create a wind-powered energy facility that would provide a significant source of renewable energy to the New York power grid. The need for clean renewable energy in New York comes predominantly from the PSC “Order Approving Renewable Portfolio Standard Policy,” issued on September 24, 2004. This Order calls for an increase in renewable energy used in the state to increase to 25 percent (from 19 percent) by the year 2013. This renewable energy policy was identified in the 2002 State Energy Plan (New York State Energy Planning Board 2002), and the Preliminary Investigation into Establishing a RPS in New York (New York State Energy Research and Development Authority 2003). The New York State Energy Research and Development Authority 2003 preliminary report found that an RPS can be implemented in a manner that is consistent with the wholesale and retail marketplace in New York and that an RPS has the potential to improve energy security and help diversify the state's electricity generation mix.

Public utilities and infrastructure in the Project Area include various overhead and underground facilities. Aboveground components include electric distribution and telephone lines along most of the public roads. Communications towers, including television and radio broadcast antennas and cellular phone communications towers, also occur in and around the Project Area. Underground utilities include sewer and water mains, telephone lines, and cable television lines. These utilities are concentrated in the towns and villages in the vicinity of the Project Area. No known natural gas wells and their associated underground facilities occur in the Project Area (NYSDEC 2006a).

2.11.1.2 Police Protection

The New York State Police have police protection jurisdiction in the Project Area. The State Police operate out of the Malone satellite station located about 10 miles west of the Project Area. The State Police provide service 24 hours a day, 7 days a week. Generally, the State troopers work 12-hour shifts from 7 p.m. to 7 a.m. and 7 a.m. to 7 p.m. (Shea 2007).

2.11.1.3 Fire Protection and Emergency Response

The Project Area is primarily served by two volunteer fire departments (Burke Volunteer Fire Department and Chateaugay Fire Company) that both provide basic life support. Nearby local fire departments may provide additional support if needed and they would be chosen based on proximity and response time. For advanced life support, Northern Ambulance, located in Malone would serve the Project Area. Discussed below are those fire departments that have primary service responsibilities to each of the towns affected by the proposed wind facility.

The portion of the Project Area located in the Town of Bellmont is primarily served by the Burke Volunteer Fire Department, with secondary service provided by neighboring districts. The Burke Volunteer Fire Department is located at 1041 County Route 23 in the Town of Burke. There are 32 active volunteers who respond to over 165 calls annually, and over 70 percent are rescue related. The fire department’s equipment includes two engine-tankers, one tanker that holds 2,000 gallons, one brush truck, one rescue, and one utility vehicle with hand tools for extrication and a cascade system. This department does tanker shuttling with four other towns, including Chateaugay and Malone. These towns can arrive within 15 minutes of a request (Smith 2006).

The Chateaugay Fire Company primarily serves the portion of the Project Area located in the Town and Village of Chateaugay, with secondary service provided by neighboring districts. The Chateaugay Fire Company is located at 2 Lake Street in the Town of Chateaugay. There are 35 volunteer firefighters who respond to over 250 calls annually. The fire department has the following equipment: two pumper-tankers, one tanker, one elevated platform with an 85-foot ladder, one grassfire truck, two ambulances, and one utility vehicle for motor vehicle accidents (LaClair 2006).

Northern Ambulance located in Malone would serve the Project Area if advanced life support were needed. The Northern Ambulance station is located at 347 Elm Street in the Town of Malone and includes one paramedic, seven advanced emergency medical technicians (EMTs), and six basic EMTs. The station is staffed 24 hours per day, 7 days per week and provides immediate advanced and basic life support services. Northern Ambulance has four units: one for basic life support, and three for advanced life support (Rockhill 2006).

2.11.1.4 Health Care Facilities

Two major hospitals (Alice Hyde Medical Center and Adirondack Medical Center-Saranac Lake Site) are located in Franklin County. The Alice Hyde Medical Center is the closest hospital to the Project Area, located about 14 miles away in Malone at 133 Park Street. There are 38 physicians on staff at the hospital who provide primary medical care, intensive care, surgical care, social work service, and other specialty services to residents of and visitors to Franklin County. The hospital provides 76 beds for the following patient needs: intensive care (6 beds), maternity (6 beds), and medical-surgical (64 beds). There are five extension clinics in the County, and one, the Bessette Health Clinic, is located at 6087 U.S. Highway 11 in Chateaugay. This extension clinic is licensed to provide diagnostic radiology and primary medical care (New York State Department of Health 2006).

2.11.1.5 Educational Facilities

One public school district provides educational services to both towns and the Village of Chateaugay and is located just outside of the Project Area in the Village of Chateaugay. No other public or private schools are located in the Project Area.

The Chateaugay Central School District serves the Project Area, and is located about 1 mile from the nearest turbine. The district serves approximately 627 students in grades K through 12 in one building located in the Village of Chateaugay. The Chateaugay Central School District provides bus service to all elementary through high school students living within the Project Area, but buses are not provided to students living outside of the school district or to students in the Village of Chateaugay because they are within walking distance (New York State Education Department 2006).

2.11.1.6 Parks and Recreation

The Project Area and vicinity includes several parks and recreational facilities. These areas include Adirondack Park and its associated facilities, the Chateaugay State Fish Hatchery, High Falls Park and Campground, and Ponderosa Campground.

Adirondack Park is adjacent to the proposed Project Area, located on its southern border in the Town of Bellmont. This park was created in 1892, and its boundary encompasses 6 million acres, nearly half of which belongs to New York State (43 percent or 2.6 million acres). The remaining private lands (57 percent or 3.4 million acres) include settlements, farms, timberlands, businesses, homes, and camps. About 130,000 people live in the Park year-round in its 105 towns and villages. This region has over 3,000 lakes; 30,000 miles of rivers and streams; and a wide variety of habitats (New York State Adirondack Park Agency 2003).

The Chateaugay State Fish Hatchery is located near the Village of Chateaugay in northern Franklin County. This facility has a very diverse rearing program which includes Raquette Lake strain lake trout, brown trout, rainbow trout and brook trout, including the Temiscamiex domestic hybrid used extensively in Adirondack Mountain lakes and ponds. Annual production is approximately 90,000 pounds of fish (NYSDEC 2006b).

High Falls Park and Campground would be located within the Project Area. This park and campground is located 1 mile south of U.S. Highway 11, and 0.5 mile west of the Village of Chateaugay. It includes open wooded pull-thru sites, 120-foot waterfalls, full hookups, tent sites, a pool, hiking trails, trout fishing, a playground, 3 way hookups, a recreation room, and shower facilities.

Ponderosa Campground would be located within the Project Area. This campground is about 5 miles south of U.S. Highway 11, or 3 miles west of New York State Route 374. It is located on 200 acres, and provides daily, weekly, seasonal rates. There is fishing nearby at the Chateaugay Lake and River. The campground includes wooded and open sites, a store and recreation hall, a waterslide, a fresh water pool, 6 miles of trails, and shower facilities.

Many prime fishing waters in New York State are privately owned, and therefore, not accessible to the public. Since 1935, the NYSDEC has worked with private landowners to ensure access to these prime fishing waters. During that time, more than 1,280 miles of public fishing rights (PFR) easements and 250 points of access (parking areas and footpath rights-of-way) have been purchased on more than 350 streams across the state. PFRs are permanent easements purchased by the State from landowners, giving sportsman the right-of-way to fish and walk along the bank (usually a 33-foot strip on one or both banks of the stream). Fishing rights also allow the public to park in designated parking areas and to access the stream via marked footpaths (NYSDEC 2007). PFRs are found intermittently along the Chateaugay River near the Project Area. An existing PFR area is located along the right bank of the Chateaugay River, where the existing right-of-way (NYPA crossing) is located, as well as south of the existing right-of-way where the proposed transmission line would cross.

2.11.2 Anticipated Impacts

2.11.2.1 Construction

2.11.2.1.1 Public Utilities and Private Energy Infrastructure

Short-term impacts during construction of the Project would be limited to minor increases in the demand for fossil fuels and petroleum products necessary for the operation and maintenance of construction equipment, machinery, and vehicles. Energy use would increase as a result of construction personnel traveling to and from the site. However, neither of these represents significant impacts on energy resources. The Project would not result in a significant increase in the demand for utilities such as telephone, water, and sanitary sewer services. New connections to local utilities would be required during construction for the operation of the construction trailers.

Short-term, temporary impacts to existing telephone and electric distribution facilities may occur during the construction phase of the Project. There is a possibility that some overhead electrical distribution lines would have to be temporarily relocated to accommodate public road improvements. Other aboveground electrical lines with insufficient height clearance to accommodate construction equipment would have to be temporarily lowered or raised. The Applicant would prefer to avoid such relocations or adjustments and, if any were necessary, would collaborate with utility owners to reduce impacts to their facilities to the maximum extent practicable.

2.11.2.1.2 Police Protection

The Project would not have significant adverse impacts on the demand for existing police protection. The existing services have adequate personnel and equipment to respond to basic police protection needs during the construction and operation of the Project. The Project could experience vandalism and/or trespass problems that would require involvement of local police. Based on experience with other wind power projects in New York, this is not anticipated to be a likely occurrence. The Applicant would work with the appropriate county, town, and/or local personnel to address any emergency access issues and establish a plan for alternative transportation and emergency evacuation routes, if necessary, during the construction phase. The Applicant may also elect to retain private security services during the construction phase of the Project. Any private security plans would be coordinated with the New York State Police as described in the Mitigation Measures sections below.

2.11.2.1.3 Fire Protection and Emergency Response

The Project would not have significant adverse impacts on the demand for existing fire and emergency response services. These existing services have adequate personnel and equipment to respond to basic emergency needs during construction and operation of the Project. However, certain Project-related activities could affect the ability of emergency service providers to perform their duties. For instance, during construction, large vehicles and temporary road closures could block emergency vehicle access to area farms and homes. This is not anticipated to be a significant problem due to the small number of residents within the Project Area, the general availability of alternate access routes, and correspondence and coordination that would occur between construction managers and New York State Police.

2.11.2.1.4 Health Care Facilities

During construction, the Project should not adversely impact the local health care facilities. At most, any serious injuries during construction are likely to be isolated and handled by routine emergency services.

2.11.2.1.5 Educational Facilities

During construction, the Project would not adversely impact the local school district. Given the distance between the educational facilities located outside of the Project Area, dust and noise impacts would not be significant. Temporary construction workers would not create significant demand for school district services or facilities. Most of the construction workers employed would be from the surrounding area. Typically, those construction workers from outside of the surrounding area would not relocate children during this short construction period of time.

2.11.2.1.6 Parks and Recreation

During construction, the proposed Project would not adversely impact nearby parks and recreational facilities. Construction of the proposed Project would not impede access to High Falls Park and Campground or Ponderosa Campground, which is located within the Project Area. An existing PFR area is located along the right bank of the Chateaugay River, where the proposed overhead transmission line crossing would be located. Dust would be generated during road construction, as well as during clearing activities for the turbine pads and transmission line. Any potential impacts from dust are anticipated to be short-term (temporary) and negligible. The protection of nearby parks and recreational facilities from spills and erosion will be ensured through the adoption of an Erosion Control Plan and a SPCC Plan. During construction, noise impacts could occur with nearby residences, as well as fishermen along the Chateaugay River in the PFR areas. However, projected noise levels resulting from Project construction should meet the noise requirements of the state. Therefore, any potential impacts from noise are anticipated to be short-term (temporary) and negligible. Refer to Section 2.7 for more information.

Temporary construction workers would not generate a significant demand as construction schedules often run six days a week. The portion of the construction workers employed from outside of the region would moderately increase competition with recreational users for those temporary lodging facilities, such as hotels and campsites closest to the Project Area. Given the number of alternative accommodations in the Project Area and surrounding communities, potential recreational visitors would not be left without accommodations.

2.11.2.2 Operation

2.11.2.2.1 Public Utilities and Private Energy Infrastructure

Impacts to existing utility distribution facilities are not anticipated as a result of Project operation and maintenance. The Project would not result in any significant adverse long-term impacts to local utilities and energy resources. The operational Project would require limited amounts of electricity, mainly for the operations and maintenance facilities as well as a source of backup power at the Project substation, and fuel for 8 to 12 on-site service vehicles, typically vans or pickup trucks. However, this impact would be completely offset by the generation of wind energy. Local fuel suppliers and utilities have sufficient capacity available to serve the Project's needs, especially with the input of the new wind-powered generation. As a result, no significant improvements to the existing energy supply system would be necessary, other than those interconnection-related improvements contemplated in the existing Project plan and possibly back-up power from the local utility to supply power to substation instruments in the event of an outage of the main grid lines or power lines to the operations and maintenance facility. In addition, this wind farm would advance New York State's goal of having 25 percent of the State's power provided by renewable sources by 2013 (New York State Energy Research and Development Authority 2003). Additionally, the proposed Project would preserve recreational areas and create a new source of clean renewable energy with zero emissions.

2.11.2.2.2 Police Protection

During operation of the proposed Project, the need for police protection is expected to be minimal.

2.11.2.2.3 Fire Protection and Emergency Response

Local fire departments do not have the specialized equipment necessary to respond to a fire in one of the turbines, and while an effective method for extinguishing a turbine fire from the ground does not exist, the events do not last long enough to warrant attempts to extinguish the fire from the air (Power Naturally 2004). Construction and maintenance personnel will be trained and would have the equipment to deal with emergencies that may occur at the Project Site (e.g., tower rescue, working in confined spaces, high voltage) and the Applicant will design an emergency response and safety plans in coordination with the local emergency service responders prior to construction or operations of the Project. All access road entrances will be designed to provide safe access of emergency vehicles. The Applicant with consultation with local emergency providers as needed to ensure such design meets their needs and that turbines are readily accessible by emergency vehicles during routine maintenance. Further details regarding fire response are presented in Section 2.10 Public Safety.

2.11.2.2.4 Health Care Facilities

No significant public health or safety problems requiring local emergency service providers are anticipated to result from Project operation. The wind turbines would be located at least 1,000 to 1,200 feet from existing residences based on each town's local laws. Nevertheless, operation of the proposed Project could result in accidents that result in personal injury and/or property damage, as discussed in Section 2.10 Public Safety. Local emergency service providers have experience in responding to fire and accidents in remote locations.

2.11.2.2.5 Educational Facilities

The Project is not anticipated to result in a significant increase in the demand on educational facilities, and no noise impacts or shadow flicker impacts are expected to occur at the nearby schools. The operating Project would require 10 to 15 full-time employees, who may send children to area schools and may thereby generate the need for additional bus service. The existing educational facilities have sufficient capacity to accommodate families to the area. Transportation planning for construction would take into account school bus routes and schedules, but this planning cannot occur until very close to construction as school bus routes may change each year.

2.11.2.2.6 Parks and Recreation

The operational Project is not anticipated to have an adverse impact upon the recreational uses within and near the Project Area. No transportation, noise, dust, or shadow flicker issues are expected to occur given their distance from the Project Area. An overhead transmission line is planned to cross the Chateaugay River with PFR areas along the right bank. Potential operational impacts of the overhead transmission line crossing in existing PFR areas could include visual impacts, and land use used for pole placement, which should be minimal. The actual location of the overhead transmission line poles will be determined after the wetland delineation and other comments to the DEIS. However, potential for erosion and other potential impacts to waters and/or fishing areas is not anticipated. During operation of the Project, competition for lodging and recreational services is not anticipated. People who are curious about wind farms may come to visit the Project. In turn, this could lead to more use of the recreational activities in the area. However, this potential increase in tourist traffic from experiences at other New York State wind farms, should not tax existing amenities. As the Project Area is near the northern boundary of Adirondack Park, there may be several tourists.

2.11.3 Mitigation Measures

2.11.3.1 Construction

2.11.3.1.1 Public Utilities and Private Energy Infrastructure

Adding up to 87.45 MW of new generation capacity to the New York State grid would be a positive impact, since the state needs this power. This source of power is renewable and includes benefits to the environment such as clean air and local socioeconomic improvement. Additionally, the proposed Project would help the state meet its renewable energy goal.

To protect local utilities and utility services, including aboveground electrical lines and/or poles, and buried natural gas lines, the Applicant would meet with the corresponding utility entities to review the Project components, Project construction schedule, identify crossing methodologies, and develop any utility relocation plans that may be required. Prior to construction, buried utilities would be identified by the contractor using Protection of Underground Facility procedures (16 NYCRR Part 753) and in accordance with the Dig Safely New York Program.

2.11.3.1.2 Police Protection

Construction of the proposed Project would not have a significant impact on police protection and facilities; therefore, no mitigation is needed. However, the Applicant will develop plans in coordination with the local police forces prior to construction to ensure public safety.

2.11.3.1.3 Fire Protection and Emergency Response

Construction of the proposed Project would not have a significant impact on fire protection and emergency services. To address concerns of the local fire departments regarding inexperience with the components of the new wind facility, during construction of the wind power facility, the

Applicant would maintain an appropriate level of preparedness and equipment for emergency rescue operations involving the nacelle and tower. Additionally, the appropriate personnel involved with the Project would meet with the local emergency service personnel (e.g., police, fire, ambulance, and health care) to review and discuss the planned construction process. During this meeting, the Project representative would review with the local personnel the important details involved with Project construction including the unique construction equipment, the overall construction process and construction scheduling. During this meeting all hazardous materials that may be present during construction and/or operation would be discussed.

Prior to construction of the Project, the Applicant would have established with the appropriate County, Town, and/or local official a coordinated emergency response plan to be followed by all emergency response personnel in case of an emergency at the Jericho Rise Wind Farm. This Fire Protection and Emergency Response Plan would be developed for the Project to ensure the safety of employees and local residents, visitors, and their property. Prior to the commencement of construction the Applicant would present, review, and finalize this plan in cooperation with local fire departments. The plan cannot be created until after the SEQR process is complete because various aspects of the plan will depend upon permit conditions contained in authorizations that cannot be issued until a FEIS has been accepted. Further discussion regarding public safety is provided in Section 2.10 of this DEIS.

2.11.3.1.4 Health Care Facilities

Construction of the proposed Project would not have a significant impact on health care facilities, and therefore, no mitigation is required.

2.11.3.1.5 Educational Facilities

Construction of the proposed Project would not have a significant impact on educational facilities. Transportation planning for construction would take into account school bus routes and schedules, but this planning cannot occur until very close to construction as school bus routes may change each year. As described in more detail in Section 2.8, Traffic and Transportation, prior to construction, the Applicant will prepare a construction traffic and transportation plan in coordination with the local schools to ensure that appropriate measures are taken to address any overlaps of school bus routes and Project construction traffic.

2.11.3.1.6 Parks and Recreation

Construction of the proposed Project would not have a significant impact on parks and recreation. Construction of the transmission line would temporarily impact PRF areas on the right bank of the Chateaugay River. Mitigation measures would include keeping dust and noise pollution to a minimum. Dust would be controlled during the construction period by watering. Additionally, the Applicant will not construct transmission line facilities within existing recreational parking areas and will keep the construction as brief as possible.

2.11.3.2 Operation

2.11.3.2.1 Public Utilities and Private Energy Infrastructure

Operation of the proposed Project would not have a significant impact on public and private utilities.

2.11.3.2.2 Police Protection

Operation of the Project would not have a significant impact on police protection and would not require mitigation.

2.11.3.2.3 Fire Protection and Emergency Response

Operation of the proposed Project would not have a significant impact on fire protection and emergency services. During operation of the wind facility, the Applicant would maintain an appropriate level of preparedness, including a Fire Protection and Emergency Response Plan, and equipment for emergency rescue operations involving the nacelle and tower as stated above.

2.11.3.2.4 Health Care Facilities

Operation of the Project would not have a significant impact on health care facilities and would not require mitigation.

2.11.3.2.5 Educational Facilities

Operation of the proposed Project would not have a significant impact on educational facilities.

2.11.3.2.6 Parks and Recreation

To reduce operational impacts related to the overhead transmission line crossing of the Chateaugay River near PFR areas, several mitigation measures can be used. Mitigation measures could include either using the existing right-of-way (NYPA crossing), siting poles higher upon the embankment and out of cleared, known fishing areas. Either of the above mentioned impacts would minimize operational (long-term) visual impacts to the river and PFR areas. Because the proposed Project operation would not create air emissions or noise emissions, the Project would have no impacts on air quality or noise quality during the operational period.

2.12 Communication Facilities

Any structure may interfere with communications signals if it is located between a system transmitter and a receiver. Wind turbines in general have the potential to: create line of sight blockage in point to point microwave links, alter propagation characteristics of nearby telecommunications facilities, and impact the electromagnetic characteristics of surrounding telecommunications facilities. To evaluate the potential for the Project to impact existing telecommunication signals, the Applicant contracted Comsearch to conduct a Licensed Microwave Search and Worst Case Fresnel Zone (WCFZ) Analysis (Appendix L) and a TV

Broadcast Off-Air Reception Analysis (Appendix M). Comsearch excluded other forms of communication including cellular/mobile, land mobile radio, AM/FM radio transmission, and satellite reception for the following reasons:

Mobile Phones (cellular and personal communications system [PCS]): Telephone mobile communications in the cellular and PCS frequency bands should be minimally affected by the presence of wind turbines because the blockage caused by wind turbines is not very destructive to the propagation of the signals in these frequency bands. In addition, these systems are designed so that if the signal from (or to) a mobile unit cannot reach one cell, it will search and reach one or more other cells in the network. Therefore, local obstacles are not normally a problem for these systems, whether they are installed in urban areas near large structures and buildings, or in a rural area near a wind energy facility.

Land Mobile Radio (LMR): A LMR system is a collection of portable and stationary radio units designed to communicate with each other over predefined frequencies. In typical LMR systems, a central dispatch console or base station controls communications to the disparate handheld or mobile units in the field. Typical LMR system users include public safety organizations (e.g., police departments, fire departments, and medical personnel) as well as the private sector for activities like construction, building maintenance, and site security. LMR systems typically operate using single channel, 15-kHz bandwidth, analog FM radio frequencies. Wind turbine operation does not significantly interfere with signals in this frequency band. LMR systems often rely on connections to fixed systems, such as the public switched telephone network (PSTN) or cellular networks, to provide the sufficient range of communications for the mobile users. Cellular networks as described above are not significantly impacted by the operation of wind turbines, thus extended coverage LMR systems will also not encounter significant interference problems.

AM and FM Radio: Interference by wind turbines is caused by the moving blades which can result in signal variations due to deflection. This effect was more of a problem with first generation wind turbines that had metal blades. The blades of modern wind turbines are made almost entirely of synthetic materials which have a minimal impact on the transmission of electromagnetic radiation. FM radio antennas are usually installed much higher than the tops of the turbines, and FM audio signals are not affected as noticeably as video signals can be noticed. AM radio interference is not a problem as long as the separation of each of turbines from the AM antenna is greater than 1 km for an Omni-Directional antenna and 3 km for an AM directional antenna. Omni-directional waves are also less susceptible to interference from permanent structures because these broadcast waves spread in numerous directions. As shown in Appendix M, the closest AM/FM Radio Station has been identified to be just over 3 miles away from the Project Site.

Satellite TV: Satellite reception is unaffected by the presence of the wind turbines as long as the earth station antennas have a clear view of the satellite and are not obstructed by the wind turbines. Meaning an antenna on the ground should have a direct line-of-site to the satellites in the sky. Satellites orbit the earth at heights hundreds of miles from the earth's surface to eliminate drag caused by the earth's atmosphere which causes antennas on the ground to be pointed high with respect to the earth's horizon. Because the turbines were sited with setbacks between 1,000 and 1,320 feet from any house, lines-of-site should not be obstructed from wind turbines and satellite reception should not be impacted.

Radar: The National Defense Authorization Act of 2006 called for the Secretary of Defense to examine the effects of wind farms on military readiness. The Department of Defense (DOD) issued a report in 2006 that includes an assessment of wind farms' effects on the operations of military radar installations and of technologies that could mitigate any adverse effects on military operations. The Report concluded that wind turbine towers and blades could interfere with radar functions if located within the line-of-sight of the radar. Currently, a study of whether a wind farm will have an impact upon military radar is undertaken by the FAA as part of their Aviation Hazard Review. This review for each project is not initiated until a few months prior to construction, as a final permitted layout is required for the FAA to conduct their review. This necessarily occurs after the SEQR process is complete, as a layout cannot be permitted in New York until SEQR findings have been issued.

2.12.1 Existing Conditions

2.12.1.1 Microwave Analysis

Microwave telecommunication systems are wireless point-to-point links that communicate between two sites (antennas) and require clear line-of-sight conditions between each antenna. Comsearch performed an analysis to evaluate the potential effects of the Project on existing non-federal government microwave telecommunications systems. The analysis identified six microwave paths that intersect the Project Area. Paths 1 and 2 coincide with each other and cross the Project Area from the northeast to the southwest. Path 3 leads into Path 4, as both travel from west to east along the northern half of the Project Area. Paths 5 and 6 coincide with each other and are oriented northeast to southwest in the center of the northern half of the Project Area (see Figure 1 and Table 1 in Appendix L).

In addition to identifying non-federal government microwave transmitters, Comsearch contacted the National Telecommunications and Information Administration (NTIA) to request a search for transmitters operated by the U.S. government, which are not listed in public records. NTIA's response (Appendix A) states that NTIA did not identify any concerns within the Project Area regarding blockage of federal radio frequency transmissions.

2.12.1.2 Television Analysis

Off-air stations are television broadcasters that transmit signals that can be received from terrestrially located broadcast facilities directly on a television receiver. Comsearch conducted an analysis to examine the coverage of the off-air TV stations and the communities in the area that could potentially have degraded television reception because of the location of the wind turbines. Comsearch identified all of the off-air television stations within a 100-mile radius of the Project Site (Tables 1 and 2 in Appendix M), although the TV stations most likely to produce off-air coverage to the Franklin County, NY area would be those stations at a distance of 40 miles or less. Of the stations identified by Comsearch, a total of 27 stations were found within 40 miles or less (fourteen United States stations and thirteen Canadian).

To determine the existing quality of off-air television reception for the Project Area (and surrounding communities), Comsearch conducted on-site TV Broadcast Off-Air measurements from November 14 through November 15, 2006. To provide broad coverage of their study area, Comsearch selected ten test site locations by analyzing an FCC database to determine the television broadcasting in the region and to identify areas/communities that may potentially be affected by the Project (i.e., interrupted off-air television reception). The ten sites, referred to as sites 1 through 10, were located in Brainardsville, Chateaugay, Thayer Corners, Burke, Malone Junction, Bellmont Center, the Adirondack State Park, and three sites within the area of interest (see Figure 1.2-1 of Appendix M for test site locations). The results of the off-air reception analysis for each of the ten test sites, including the number of channels received (both analog and digital), the quality of the channels received, and the number of major networks received, is detailed below in Table 2.12-1.

Table 2.12-1. Summary of Results from the Off-Air Television Reception Analysis

ID	Site	Analog Channels Received	Analog Channels Suitable for Viewing	Digital Channels Received	Digital Channels Suitable for Viewing	Major Networks Represented
1	Brainardsville, NY	6	4	0	0	CBC
2	Inside Area of Interest	8	4	1	1	CBC
3	Chateaugay, NY	8	5	0	0	CBC
4	Thayer Corners, NY	13	7	1	1	CBC
5	Burke, NY	14	7	1	1	CBC
6	Malone Junction, NY	19	9	2	2	CBC
7	Inside Area of Interest	23	11	2	1	CBC, NBC, CBS, ABC, FOX
8	Bellmont Center, NY	22	6	0	0	CBC
9	Inside Adirondack State Park, NY	9	0	0	0	CBC
10	Inside Area of Interest	19	11	3	0	CBC

The Comsearch report concluded that the number of U.S. off-air television stations available to the local communities is extremely limited. The area only has two full service off-air TV Stations, six translator stations, one low-power station, and one digital TV broadcast station that is operating on a special Federal Communications Commission (FCC) authorization. Off-air reception is generally limited to a minimum of four channels and to a maximum of twenty channels, with primary transmitters coming from Montreal, Canada. Off-air antennas were visible on approximately forty percent of the residences, and forty percent were utilizing satellite systems. Based on this, it is not expected that the off-air television stations are the primary mode of television service for the local communities. TV Cable service and/or direct satellite broadcast are probably the dominant delivery mode of TV service to the wind facility's surrounding communities. Cable Television is only available in communities along US highways and state highways. In those areas where cable is available it appears that most homes are utilizing the system. The cable television programming provided is considered very good.

2.12.2 Anticipated Impacts

2.12.2.1 Construction

Temporary communication interference as a result of Project construction may occur. Cranes used during construction activities (and the individual turbine components being raised by the cranes) can cause temporary obstruction of microwave links as well as some degradation to television and radio signals (Polisky, L. 2006 pers. comm.). However, since individual turbines have been sited with a 144 foot setback from the WCFZ, the potential for microwave interference by equipment assembling and erecting these turbines should be minimal. Any impact on television reception caused by construction equipment would be temporary, as assembly and erection is typically completed within one to two days per turbine.

2.12.2.2 Operation

2.12.2.2.1 Microwave Communication Systems

To assure an uninterrupted line of communications, a microwave link should be clear, not only along the axis between the center point of each antenna, but also by a mathematical distance around the center axis known as the Fresnel Zone. A WCFZ was calculated for each of the six microwave paths identified within the Project Area. The WCFZ calculation includes only a horizontal analysis for each microwave path (i.e., its width). The Comsearch report originally identified five turbines within the WCFZ for four of the microwave paths. However, the final Project layout was revised based on the findings of this report to avoid the placement of turbines inside or directly adjacent to any WCFZs and thus, no impacts to microwave paths are anticipated during operation.

An analysis of the vertical limits of the WCFZ, to determine if the microwave path is actually above or below the proposed height of the turbines, was not conducted. Such an analysis, which considers vertical Z-height clearance objectives, would only be necessary if wind turbines needed to be located inside a WCFZ. Since the final Project layout was determined with consideration for WCFZ setbacks, no turbines are located in a WCFZ, and subsequently, a vertical analysis is not necessary.

2.12.2.3 Television Communication Systems

Based upon the data collected at each of the ten test sites, Comsearch determined that the placement of the turbines inside the area of interest should produce very little affect to off-air reception in the communities to the North and West. Communities to the South and East may experience some issues receiving all of the channels they now receive. These areas are already limited with regard to off- air TV reception because of the hilly terrain and trees in the area. Additionally, since the number of U.S. off-air television available to the local communities is extremely limited and since some of the Canadian stations may not be in English or of interest to the local U.S. communities, it is expected that the off-air television stations are not the primary mode of television service for the local communities. TV Cable service and/or direct satellite broadcast are probably the dominant delivery mode of TV service to the wind facility's surrounding communities. These services will be unaffected by the presence of the wind turbine facility.

After the wind energy facility is built, measurements can be made at all sites where signal blockage, multipathing, ghosting and/or electromagnetic noise is reported and/or suspected. These measurements can be compared to the baseline measurements reported by Comsearch to determine whether the degraded affects are the result of the presence of the wind turbines.

2.12.2.4 Military Radar

As indicated above, the DOD report on wind farms and radar concluded that wind turbine towers and blades could interfere with radar functions if located within the line-of-sight of the radar. The impact of the Project on military radar will be determined through the Projects' FAA Aviation Hazard review process. Currently, the FAA consults with the DOD on whether a proposed wind farm could potentially impact any nearby radar facilities important to national security. Based upon the FAA consultation, the Project could be requested to initiate a detailed radar study of the wind farm with the DOD.

2.12.2.5 Other Forms of Communication

During operation of the wind turbines, there are no anticipated impacts to mobile phones, LMR systems, or AM and FM radio.

2.12.3 Mitigation Measures

2.12.3.1 Construction

If disruption to existing communication systems should occur as a result of Project construction, the disruptions will be temporary, and will only occur during the erection of specific turbines. Because turbine installation/crane activity will occur at different locations and at different times during the construction period, any degradation/disruption to existing communications will not represent a constant interference to a given television/radio reception area or microwave signal (Polisky, L. 2006 pers. comm.). To reduce minor potential impacts, turbine erection will be performed as efficiently and a quickly as possible (under favorable conditions, a turbine can be erected in one day).

2.12.3.2 Operation

2.12.3.2.1 Microwave Communication Systems

Interference with microwave communication systems is deemed to be unlikely. The proposed layout has been prepared using the known microwave paths, with a margin of error, as a constraint. Turbines that were identified as potentially causing interference by the Comsearch analysis were relocated out of the WCFZ prior to finalizing the Project layout. Therefore, the final layout of the proposed Project will not result in any significant interference to existing microwave telecommunication systems. Beyond this, additional mitigation is not necessary and is therefore not proposed.

2.12.3.2.2 Television Communication Systems

If Project operation results in any impacts to existing off-air television coverage, the Applicant will address and resolve each individual problem, as necessary. This will be accomplished through the Complaint Resolution Plan Methods outlined in Appendix N. Mitigation actions could include adjusting existing receiving antennas, upgrading the antenna, or providing cable or satellite systems to the affected households. In addition, the Applicant can mitigate turbine-related contrast variation (shimmering) by outfitting households using analog TVs with digital converters to make use of digital broadcast signals. Many stations already broadcast with both analog and digital signals and the FCC has mandated the transition of all off-air television broadcasts from analog signals to digital signals by February 2009 (Polisky, L. 2006 pers. comm.).

2.12.3.2.3 Military Radar

As reported at the AWEA conference held on April 24, 2006 (AWEA 2006) and based upon the results of similar government studies conducted in Great Britain (BWEA 2003), interactions between military radar and wind turbines are highly solvable. There are engineering, hardware and software mitigation efforts that can be implemented to reduce or eliminate the effects of wind turbines on radars. In the most extreme situation, turbine locations could be eliminated. If the FAA and DOD detect a possible conflict with military radar, the Project will be required to solve the conflict to the satisfaction of the federal agencies involved prior to construction. Implementation of the potential remedies described above would not increase the environmental impacts of the Project.

2.12.3.2.4 Other Communication Systems

No impacts to other communication systems are anticipated. However, if there is a report of diminished mobile phone coverage (or other communications services, such as LMR, AM/FM radio reception or satellite reception) after the turbines are installed, the Complaint Resolution Plan outlined in Appendix N is designed to address those concerns. Mitigation for diminished phone coverage can be accomplished utilizing a location for the new cell on a tower (turbine, met or utility) within the wind facility. Mitigation for reported changes to LMR coverage includes repositioning affected repeaters or adding repeaters to the LMR system.

2.13 Land Use and Zoning

Current land use and zoning in the Project Area were determined through review of local town laws, land ownership data, aerial photographs, and field review conducted in November 2006. Land use is discussed in terms of regional, local, and Project Area land use patterns; compliance with local laws; agricultural land use; and future land use. Neither the Town of Bellmont, nor the Town of Chateaugay has zoning requirements.

This section explains the existing land use in Section 2.13.1, the anticipated impacts on land use in Section 2.13.2, and the proposed mitigation of any significant impacts in Section 2.13.3.

2.13.1 Existing Conditions

2.13.1.1 Regional and Local Land Use

The Project Site is located in the northeastern portion of Franklin County in the towns of Bellmont and Chateaugay on approximately 5,040 acres of leased privately owned land. The Project Site is located approximately 5 miles south of the Canadian border in Franklin County, approximately 1 mile southwest of the Village of Chateaugay, and 2 miles east of the Village of Burke. The Project Site is roughly bordered by the Burke/Chateaugay Town Line to the west, New York State Highway 374 to the east, the Malone Chateaugay Road to the north, and Brainardsville Road to the south.

Franklin County is located in northern New York and is bordered by Canada to the north, Clinton County to the east, Essex County to the southeast, Hamilton County to the southwest, and St. Lawrence County to the west. The county is dominated by forested land and agricultural land. The largest state recreational land in the county is the Adirondack Park, which is immediately south of the proposed wind farm in Bellmont along the northern-most boundary of the Park.

The Adirondack Park was created in 1892 by New York State due to concerns for the water and timber resources of the region. Today the Park is the largest publicly protected area in the contiguous United States. The boundary of the Park encompasses approximately 6 million acres, nearly half of which is owned and controlled by New York State, and is constitutionally protected to remain a “forever wild” forest preserve. The remaining half of the Park is privately owned land which includes settlements, farms, timber lands, businesses, homes, and camps (New York State Adirondack Park Agency 2003).

In terms of land use, Franklin County is characterized by 532 farms consisting of 138,236 acres (Census of Agriculture 2002) of active agricultural land, and residential land uses concentrated in and around villages and hamlets. Various pockets of commercial and industrial development are scattered throughout the county along state and county roadways. The highest percentage of land use by number of parcels for the county in 2005 is residential properties (55.8 percent), followed by vacant land (25.8 percent), and agricultural properties at 5 percent (New York State Office of Real Property Services 2006).

Agriculture is a significant contributor to the county's overall economy. It is one of the major dairy-producing counties, ranked 18th in the state, with a market value of production exceeding $37 million in 2002. Other important agricultural products in the county, based on market value of production include beef production ($3.6 million) and vegetable, melon, potato, and sweet potato production ($3.1 million). Main crops in the county include forage (land used for all hay and haylage, grass silage, and greenchop), corn for silage and grain, potatoes, and Christmas trees (Census of Agriculture 2002). Despite the importance of agriculture, employment in the agricultural sector has declined over the years and only accounted for 4.4 percent of total employment in the county in 2000. Meanwhile, the educational, health, and social services (28.8 percent); public administration (12.5 percent); and retail trade (11.2 percent) sectors have grown in importance (U.S. Census Bureau 2006).

Both of the towns within the Project Site are predominantly rural with crops and dairy farming leading the agricultural industry. In 2005, the highest percentage of land use by number of parcels was residential properties for the towns of Bellmont (48.1 percent) and Chateaugay (47.7 percent), followed by vacant land in the towns of Bellmont and Chateaugay at 32.1 percent and 26.6 percent, respectively. The third highest percentage of land uses by number of parcels were public parks, wild, forested, and conservation properties in the Town of Bellmont at 15.1 percent and agricultural land in the Town of Chateaugay at 17 percent (New York State Office of Real Property Services 2006).

In the Project Area, land use by acreage is predominately upland forest (65 percent) and agricultural land (34 percent). The remaining 1 percent is made up of developed lands, open water, and wetland habitat. The upland forest land is located on the southern portion of the Project Area, while the agricultural land is located on the northern portion of the Project Area. The remaining 1 percent of land use consists of residential development, including individual single-family homes and farmhouses concentrated along state, county, and local roadways in and adjacent to the Project Site. The higher-density residential and commercial land uses are primarily located in the villages and hamlets within the towns of Bellmont and Chateaugay, and along major roads such as U.S. Highway 11 and New York State Route 374.

2.13.1.2 Zoning and Other Applicable Local Laws

Neither town has zoning or comprehensive plans. However, both towns have adopted similar wind energy facility ordinances. The proposed Project would require a Wind Energy Permit from each town to construct, operate, and maintain a wind energy facility, which is described as "any wind energy conversion system, small wind energy conversion system, or wind measurement tower, including all related infrastructure, electrical lines and substations, access roads and accessory structures" (Town of Bellmont Local Law No. 2, 2006; Town of Chateaugay Local Law No. 7, 2006). On June 22, 2007, Horizon submitted its Wind Energy Permit applications to both the towns of Bellmont and Chateaugay. Upon completion of the review process, each Town Board will consider the application, and either approve, approve with conditions, or disapprove the proposed Project. If approved, each Town Board will issue a Wind Energy Permit upon satisfaction of all conditions.

Setbacks for the wind energy conversion systems (WECS) include factoring in noise levels and distances from residences. Additionally, each WECS would be setback from site boundaries as described in Table 2.13-1 below.

Table 2.13-1. WECS Setback Requirements for the Towns of Bellmont and Chateaugay

Setback Requirement	Town of Bellmont	Town of Chateaugay
Site Boundaries	500 feet of which the first 100 feet shall be a green buffer zone to provide natural screening. Cutting and clearing within the green buffer zone is prohibited except in connection with agricultural uses or as necessary to construct and maintain Wind Energy Facility access roads and electric lines.	600 feet of which the first 100 feet shall be a green buffer zone to provide natural screening. Cutting and clearing within the green buffer zone is prohibited except in connection with agricultural uses or as necessary to construct and maintain Wind Energy Facility access roads and electric lines.
US Route 11, NYS Route 374	1,200 feet	1,200 feet
Other Public Roads	500 feet	600 feet
Off-Site Residence	1,000 feet	1,320 feet
Property line of Church (not to include church owned cemetery); school, hospital or nursing facility	1,000 feet	1,200 feet
Non WECS structure or aboveground utility	1.5 times total height of WECS	1.5 times total height of WECS

The following standards would apply to all WECS, unless specifically waived by each Town's Board as part of a Wind Energy Permit.

- All power transmission lines from the tower to any building or other structure shall be located underground to the maximum extent practicable.
- No television, radio or other communication antennas may be affixed or otherwise made part of any WECS, except pursuant to the Town Code. Applications may be jointly submitted for WECS and telecommunications facilities.
- No advertising signs are allowed on any part of the Wind Energy Facility, including fencing and support structures.

- Lighting of tower. No tower shall be lit except to comply with FAA requirements. Minimum security lighting for ground level facilities shall be allowed as approved on the Wind Energy Facility development plan.
- All Applicants shall use measures to reduce the visual impact of WECS to the extent possible. WECS shall use tubular towers. All structures in a Project shall be finished in a single, non-reflective matte finished color or a camouflage scheme. WECSs within a multiple WECS Project shall be constructed using wind turbines whose appearance, with respect to one another, is similar within and throughout the Project, to provide reasonable uniformity in overall size, geometry, and rotational speeds. No lettering, company insignia, advertising, or graphics shall be on any part of the tower, hub, or blades.
- The use of guy wires is prohibited.
- No WECS shall be installed in any location where its proximity with existing fixed broadcast, retransmission, or reception antenna for radio, television, or wireless phone or other personal communication systems would produce electromagnetic interference with signal transmission or reception. No WECS shall be installed in any location along the major axis of an existing microwave communications link where its operation is likely to produce electromagnetic interference in the link's operation. If it is determined that a WECS is causing electromagnetic interference, the operator shall take the necessary corrective action to eliminate this interference including relocation or removal of the facilities, or resolution of the issue with the impacted parties. Failure to remedy electromagnetic interference is grounds for revocation of the Wind Energy Permit for the specific WECS or WECS causing the interference.
- All solid waste and hazardous waste and construction debris shall be removed from the site and managed in a manner consistent with all appropriate rules and regulations.
- WECS shall be designed to minimize the impacts of land clearing and the loss of open space areas. Land protected by conservation easements shall be avoided when feasible. The use of previously developed areas will be given priority wherever possible.
- WECS shall be located in a manner that minimizes significant negative impacts on rare animal species in the vicinity, particularly bird and bat species.
- WECS shall be located in a manner consistent with all applicable state and federal wetland laws and regulations.
- Stormwater runoff and erosion control shall be managed in a manner consistent with all applicable state and federal laws and regulations.
- The maximum total height of any WECS shall not exceed 400 feet from existing/original grade.

- Construction of the WECS shall be limited to the hours of 7 a.m. to 7 p.m., except for certain activities that require work at other times during the day. The Town Board may impose reasonable conditions to any such change in work hours.

In the Wind Energy Permit applications for both towns, Horizon has requested waivers for each instance where the required setback from the Project Site boundary line is not possible.

2.13.1.3 Agricultural Land Use

As stated above, approximately 532 working farms occupy 138,236 acres in Franklin County according to the Census of Agriculture (2002). Franklin County has approximately 56.3 percent of its land used as cropland, 29.3 percent used as woodland, 7.2 percent used as pastureland, and 7.2 percent used for other uses (Census of Agriculture 2002). According to U.S. Census Bureau (2006) statistics, 4.4 percent of the county's population was engaged in farming in 2000.

Most of the proposed Project would be built on or adjacent to agricultural lands. The Project Site includes one agricultural district designated in accordance with New York Department of Agriculture and Markets program standards (Agricultural District #1) and about 15 percent of the Project Site is located in this District. Agricultural land use is a significant component of the Project Area with about 1,689 acres (66 percent) of the Project Site in row crops, field crops, or pastureland.

2.13.1.4 Future Land Use

Other than land that is directly developed for the proposed Project, future land use patterns in the area are anticipated to remain largely unchanged for the foreseeable future. Existing agricultural and rural land uses will be able to coexist with the operating wind energy facility. Communication with the Town of Bellmont Supervisor (Cassavaw 2006) found no formally proposed or planned future developments. Communication with the Town of Chateaugay Supervisor (Bylo 2006) found no commercial or residential developments proposed in the area. There is currently a wind facility proposed in the Towns of Bellmont and Chateaugay directly to the east of the Project Area. The second wind facility is in the process of obtaining the appropriate permits and approvals and plans to commence construction in 2008.

2.13.2 Anticipated Impacts

Project impacts on land use would include temporary, construction-related impacts, and permanent, operation-related impacts. These impacts are described below.

2.13.2.1 Construction

2.13.2.1.1 Regional and Local Land Use

The proposed Project is consistent with land use patterns in both towns. The Project would be developed on privately owned land. The Project Area includes several parks and recreational facilities within 0.25 mile of the Project Site. These areas include Adirondack Park and its associated facilities, the Chateaugay State Fish Hatchery, High Falls Park and Campground, Ponderosa Campground, and an existing public fishing area located along the right bank of the Chateaugay River, where the existing right-of-way (NYPA crossing) is located, as well as south of the existing right-of-way where the proposed transmission line would cross. These recreation areas are discussed in more detail in Section 2.11 of this DEIS. Additionally, more information on land use during construction of the proposed Project is discussed in the agricultural land use section, Section 2.13.2.1.3.

2.13.2.1.2 Zoning and Other Applicable Laws

Construction activity would be conducted in compliance with local wind energy facility requirements in the towns of Bellmont and Chateaugay and any conditions appearing in the local permits acquired for the Project. The turbines would be sited in accordance with local height restrictions (of 400 feet or less) for both towns. However, the Applicant has requested three waivers from the 500-foot site boundary line setback in the Town of Bellmont and an additional 11 waivers from the 600-foot site boundary line setback in the Town of Chateaugay.

The Applicant would benefit from the grant of the waivers because it would be able to construct the WECS as proposed in the plan thereby maximizing the competitiveness, efficiency, and environmental benefits (e.g., clean renewable energy) of the proposed Project. Without these waivers, the WECS may need to be relocated, thereby decreasing the efficiency of the Project, potentially increasing impacts to several resources (e.g., wetlands), and potentially increasing the cost of renewable energy to New York consumers.

The Applicant examined other available alternatives, however, they were either infeasible or would cause undesirable environmental impacts and/or erode the Project’s ability to remain competitive and efficient. The Applicant would follow all other safety procedures and other compliance criteria in the towns’ local laws.

The proposed waiver would not have an adverse effect or impact on the physical or environmental conditions in the neighborhood or district. As discussed above, the waiver requests would improve the ability of the Applicant to avoid impacts while maximizing the efficiency of the Project. However, the issuance of the requested waivers may result in indiscernible differences in noise and visual impacts to the neighborhood at large. The Applicant will work with neighboring off-site landowners throughout the siting and development process.

2.13.2.1.3 Agricultural Land Use

Temporary, construction-related disturbance to agricultural land would affect approximately 400 acres in total. Along with this direct impact to agricultural land, movement of equipment and material could result in temporary dismantlement of fences and gates, inadvertent damage to subsurface drainage systems, and temporary blockage of farmers’ access to agricultural fields or to local roads. However, wind turbines and associated facilities have been located to minimize loss of active agricultural land and interference with agricultural operations. In addition, to the extent practicable, construction activities would occur in compliance with the New York State Department of Ag & Markets Guidelines for Agricultural Mitigation for Windpower Projects (Ag & Markets 2007), which provide guidance for avoidance of impact, mitigation, and restoration of agricultural assets. A small amount of residential land could be temporarily impacted by the Project, but these impacts would be confined to the properties of participating landowners, and would be largely temporary in nature (construction activity).

2.13.2.1.4 Future Land Use

No impacts are anticipated to future land use decisions or projects during construction of the proposed Project. Section 2.13.2.2.4 discusses operational impacts of the Project on future land uses.

2.13.2.2 Operation

2.13.2.2.1 Regional and Local Land Use

The proposed Project would change the appearance of the landscape; however, it is generally consistent with land use patterns in both towns given the rural-agricultural nature of the area. During operation of the Project, the turbines would be located primarily on land dominated by agriculture land and forest land. Therefore, impacts to residential areas and recreation areas would be minimized. More information on land use during operation of the proposed Project is discussed in the agricultural land use section, Section 2.13.2.2.3.

2.13.2.2.2 Zoning and Other Applicable Laws

Operation of the Project would be in compliance with local wind energy facility requirements in the towns of Bellmont and Chateaugay and Project permits issued by each town.

2.13.2.2.3 Agricultural Land Use

The operating Project would be compatible with agricultural land use, which dominates the Project Area. Location of the Project is likely to help keep land within agricultural use, which is considered a long-term positive impact of the proposed Project and the Town. There are several reasons that wind energy helps preserve agricultural uses. First, the presence of wind turbines is consistent with farming (agricultural uses can occur right up to the base of modern wind turbines). Second, the presence of wind turbines on agricultural land discourages encroaching non-agricultural uses such as residential suburban sprawl. And finally, income derived from hosting wind turbines on agricultural land can help family farmers afford to continue farming operations on their property by creating a stable supplemental source of income for several years. In 2004, the U.S. Department of Energy reported that if wind power comprised just 5 percent of the U.S. electricity market, about $60 billion in capital investment would be made in rural communities. The study stated further that this would include $1.2 billion in new income for farmers and landowners and the creation of 80,000 rural jobs. According to the Tim Bigham, Senior Field Advisor for the New York State Farm Bureau, a “carefully devised and well constructed wind farm can be a boon for agriculture in whatever area it is placed”

(Bigham 2007). These types of positive impacts created by the Project would provide long-term benefits to the local and regional agricultural industry.

Permanent impacts to agricultural land that would result from the wind facility operation would include the permanent conversion of productive agricultural land to use for Project facilities such as access roads, turbine foundations and O&M building. These impacts have been minimized through proper siting of the Project facilities and adherence to Ag & Markets Guidelines. Impacts would be further minimized and/or avoided with the use of BMPs to control erosion and sedimentation.

Minor changes in land use in the Project Area are anticipated as a result of Project implementation. The 53 turbine sites, substation, and other ancillary facilities represent the cumulative conversion of approximately 100 acres of land from agricultural land to developed land use.

During Project operation, adverse impacts on agriculture land would be minimal. Other than occasional maintenance and repair activities that could have discrete localized impacts similar to those described in Section 2.13.2.1, the Project would not interfere with ongoing farming operations. In fact, by supplementing the income of participating landowners, the Project would help keep farms in operation and the land in agricultural use. The presence of wind turbines may limit or prevent the conversion of agricultural land to seasonal or permanent residential use.

2.13.2.2.4 Future Land Use

The proposed Project would not interfere in any significant manner with proposed future plans to develop areas in either of the towns with single-family residential homes. Minimum setbacks from wind turbines do place some constraints on development that can be collocated on parcels that have wind turbines or are adjacent to wind turbines. However, capturing the wind asset provides an individual benefit to landowners, an economic benefit to the local community, and energy security; and environmental and human health benefits to the state. The minor setback constraints are not a significant impact on other equally desirable uses. There is no major conflict between the proposed Project and most future residential developments.

However, as noted in the Visual Impact Assessment prepared for the Project (Appendix F), the Project would result in a change in the viewshed from various vantages points in the vicinity of the Project Area, which could affect the manner in which some people perceive the rural character of this community. Perception of the rural character of the area could be altered for some viewers due to the presence of the turbines, especially in locations where a number of turbines can be seen or where the turbines can be viewed from foreground distances (i.e., under 0.5 mile).

2.13.3 Mitigation Measures

Since the Applicant has carefully planned and sited the Project facilities, and has minimized or avoided impacts to the extent practicable, there is little need for additional mitigation.

2.13.3.1 Construction

2.13.3.1.1 Regional and Local Land Use

The proposed Project is consistent with existing land uses and is compatible with the agricultural land use that dominates the Project Area. Anticipated mitigation measures to reduce the impact of the wind energy facility on existing land uses during construction include full compliance with the local laws regulating the development of wind energy facilities and sound implementation of all local and state permit conditions. These actions would assure that adverse impacts on land use are minimized or mitigated to the extent practicable.

2.13.3.1.2 Zoning and Other Applicable Laws

The Project construction would comply with local laws in both the towns of Bellmont and Chateaugay. This will include compliance with local wind energy facility ordinances and construction-related permit conditions designed to avoid or minimize environmental impacts.

2.13.3.1.3 Agricultural Land Use

The Project would impact agricultural land (at least temporarily) and would result in a change to community character and perceived land use throughout the area. To minimize and/or mitigate impacts to active agricultural land and farming operations, Project siting, and construction would fully comply with New York State Department of Ag & Markets Guidelines for Agricultural Mitigation for Windpower Projects (Ag & Markets 2007). A Notice of Intent to Undertake an Action within an Agricultural District would be filed with the New York State Department of Agriculture and Markets and the Franklin County Agriculture and Farmland Protection Board. Proposed agricultural protection measures have been prepared in accordance with New York State Department of Ag & Markets Guidelines for Agricultural Mitigation for Windpower Projects and are included in Appendix C. These mitigation measures include:

- Minimizing impacts to normal farming operations by locating structures and access roads along field edges where possible.
- Having roads that must cross agricultural fields stay on ridge tops and other high ground to minimize cut and fill and potential drainage problems.
- Avoiding disturbance of surface and subsurface drainage features (e.g., diversions, ditches, tile lines).
- Building the surface of access roads through agricultural fields’ level with adjacent field surfaces.
- Installing culverts and water bars to maintain natural drainage patterns.

- Prohibiting vehicular access to turbine sites until topsoil has been stripped and permanent access roads have been constructed.
- Stockpiling topsoil from work areas separate from all other excavated material (e.g., rock, subsoil).
- Maintaining a minimum depth of 48 inches in cropland, hayland, and improved pasture areas to bury electric wires.
- Removing excess subsoil and rock, and onsite disposal of such material may be allowed if approved by the Environmental Monitor.
- Temporarily fencing work areas in active pastureland to protect livestock.
- Removing and disposing of all construction debris offsite at the completion of restoration.
- Restricting heavy equipment to designated access roads, crane paths, and work pads at the structure sites for all setup, erection, and breakdown activities.
- Disposing of excess concrete offsite and washing of concrete trucks outside of active agricultural areas.
- Restoring agricultural land based on an appropriate seasonal schedule.
- Decompacting all disturbed agricultural areas to a depth of 18 inches after construction.
- Grading access roads to allow for farm equipment crossing and to restore original surface drainage patterns.
- Stabilizing restored agricultural areas with seed and/or mulch.
- Repairing all surface or subsurface drainage structures damaged during construction.
- Providing a monitoring and remediation plan of no less than two years immediately following completion of the initial restoration.

2.13.3.1.4 Future Land Use

The construction of the proposed Project and subsequent site restoration activities will not significantly alter the opportunity for future land uses in the Project Area. No mitigation measures have been identified.

2.13.3.2 Operation

2.13.3.2.1 Regional and Local Land Use

The proposed Project is consistent with existing land uses and is compatible with the agricultural land use that dominates the Project Area. No additional mitigation measures are anticipated during operation of the proposed Project. Project O&M staff will work with local landowners to coordinate their maintenance activities in a manner that will not adversely impact seasonal agricultural activities, especially as they relate to movement of vehicles or equipment over agricultural lands.

2.13.3.2.2 Zoning and Other Applicable Laws

The Project operation would comply with local laws in both the towns of Bellmont and Chateaugay. Close communication with local authorities and Project O&M staff will ensure that any operational issues that arise over time are addressed promptly. No mitigation measures are anticipated during operation of the proposed Project.

2.13.3.2.3 Agricultural Land Use

Continuing operation and maintenance activities may benefit existing land uses since Project site roads will be maintained by Project staff, thus benefiting current landowners who also rely on these roads for farming activities. Therefore, no additional mitigation measures are anticipated during operation of the proposed Project.

2.13.3.2.4 Future Land Use

Operation of the proposed Project is consistent with future land uses anticipated within the Project Area. No mitigation measures have been identified during operation of the proposed Project.

3.0 UNAVOIDABLE ADVERSE IMPACTS

The purpose of the Project is to create a reliable and profitable wind-powered electric generation facility that would provide a significant source of clean, renewable energy to the New York power grid. The Project would result in significant long-term economic benefits to participating landowners and neighbors, as well as the towns of Bellmont and Chateaugay in Franklin County. When fully operational, the Project would provide up to 87.45 MW of electric power generation capacity with no emissions of pollutants or greenhouse gases to the atmosphere. The development of the site is not inconsistent with surrounding land uses and would help maintain the area's predominant agricultural use. The positive and negative impacts of this Project, along with mitigation measures, have been presented in a tabular format in the Executive Summary and are described in detail in Section 2.0, Environmental Setting, Impact Analysis, and Mitigation Measures. The public need for and benefit derived from this Project is addressed in Section 1.4, Project Purpose, Need, and Benefit.

3.1 General Mitigation Measures

General planning and design measures include the procedures required as conditions of the various local, state, and federal ordinances and regulations that govern the Project development, as well as the inherent characteristics of the Project that would result in environmental and economic benefits to the Project Area. The primary government review/ approval processes and/or standard conditions that the Project would be developed in accordance with, include:

- State Environmental Quality Review Act (SEQRA);
- New York State Department of Transportation (NYSDOT) and Franklin County Highway Department highway regulations;
- Federal Clean Water Act regulations (Section 404 individual permit, 401 water quality certification);
- Towns of Chateaugay and Bellmont building and other local regulations;
- New York State Department of Environmental Conservation (NYSDEC) water resources regulations (Article 24, Article 15, Section 401 water quality certification);
- Occupational Safety and Health Administration (OSHA) regulations (standard conditions for safe work practices during construction);
- New York State Agricultural District's Law and Guidelines for Agricultural Mitigation for Windpower Projects;
- NYSDEC Program Policy for Assessing and Mitigating Visual Impacts;
- NYSDEC Program Policy for Assessing and Mitigating Noise Impacts; and
- Federal Aviation Administration (FAA) Marking and Lighting Standards.

SEQRA regulations require environmental review of proposed development projects, so that potential adverse impacts and public concerns can be identified prior to project implementation and avoided or mitigated to the extent practicable. This DEIS was prepared in accordance with these regulations, and provides the primary means by which the potential costs and benefits of the Project are described and evaluated in a public forum. Compliance with SEQRA regulations would assure that public and agency comments are solicited and appropriately addressed, Project alternatives are evaluated, and potential adverse impacts are identified and mitigated to the extent possible. Responses to comments and preparation of a FEIS will provide the information necessary for the lead agency and other cooperating agencies to draw conclusions (which will be contained in each agency's Findings Statement) regarding the Project's overall environmental impacts and impose conditions on its approval, if necessary.

Compliance with the other various federal, state, and local regulations and policies governing the construction and design of the Project also will serve to minimize adverse impacts. For example, it is a given that construction activities and building designs will be in compliance with state and local building codes and federal OSHA guidelines to protect the safety of workers and the public. State permitting required by the NYSDEC would serve to protect water resources, while state and county highway permitting would assure that safety, congestion, and damage to highways in the area are avoided or minimized. Compliance with the towns of Bellmont and Chateaugay ordinances that require building and highway permits, as well as specific requirements for wind energy facilities, will further serve to minimize impacts of the Project. For a complete list of the regulatory approvals and consultations required for this Project, see Section 1.10, Permits and Approvals Required.

3.2 Proposed Mitigation Measures for Long-Term Unavoidable Environmental Impacts

Although the overall impact of the Project is anticipated to be positive, there remain temporary and long-term unavoidable adverse impacts that must be considered and addressed. Aside from visual impacts, the majority of the adverse environmental impacts associated with the Project would be temporary, and will result from construction activities. Site preparation (e.g., clearing, grading), improvement of local roads, and the installation of roads, turbines, interconnects, staging areas, the O&M building, meteorological towers, and the substation will have short-term and localized adverse impacts on the soil, water, agricultural, and ecological resources of the site. This construction will also have short-term impacts on the local transportation system, air quality, and noise levels. These impacts will largely result from the movement and operation of construction equipment and vehicles, which will occur during the roughly nine months of actual Project construction. The level of impact to each of these resources has been described and quantified in other sections of this DEIS and will generally be localized and/or of short duration, and will be effectively minimized through strategies such as, but not limited to, best management practices and the development of a SWPPP.

Table 3.2-1 below lists long-term adverse impacts associated with Project construction and operation that will likely remain after mitigation, as well as measures proposed that would reduce the magnitude of these impacts.

Regarding unavoidable soil and land-use impacts, the Applicant voluntarily presented draft versions of the Project layout to host landowners and has incorporated their feedback into the layout. The Applicant will continue to work with host landowners to incorporate any additional suggestions, such as those that may result from the SEQR process, regarding the placement of Project components to further reduce such unavoidable impacts.

Water resource impacts will be mitigated through the proposed development of a SPCC Plan and a SWPPP based on best management practices related to erosion, spills, and excavation. In balancing the Project's disturbances to agriculture with wetland impacts, the Applicant minimized wetland impacts by designing the layout around wetland buffer zones as described by NYSDEC permitting standards. Where wetland and stream crossings could not be avoided, the Applicant sited access roads to cross wetlands and streams at their narrowest points and also minimized road width at these crossings to the extent practicable. A wetland delineation effort has not yet been completed for the Project Area; therefore, the Project layout may be subject to change following completion of the wetland delineation field work to be conducted in the Spring/Summer 2008, and up until the issuance of the Joint Wetland Permit. In keeping with the NYSDEC and USACE permitting requirements, the Applicant will, to the extent necessary, improve the quality of existing on-site wetlands or possibly construct new wetlands in or as close to the Project Area as practicable to mitigate residual wetland impacts.

With respect to biological resources, the Applicant conducted extensive studies to inventory the species endemic to the Project Area, as well as those that migrate through the Project Area. These inventories show that no endangered species would be at risk and that only avian and bat species would face risk of mortality. Avian and bat studies assessed the risk to these species and finds them comparable with other wind projects in New York. Although significant bird and bat mortality is not anticipated, the Project will implement a post-construction bird and bat mortality monitoring program as recommended by the USFWS Interim Guidance on Avoiding and Minimizing Impacts to Wildlife from Wind Farms (2003). The monitoring program would be overseen by a Technical Advisory Committee consisting of members of regulatory agencies, environmental organizations, the wind power industry, and landowners to assure unbiased reporting of avian and bat mortality. If the Technical Advisory Committee concludes that turbine-related mortality of birds or bats is biologically significant, the Applicant will consult with the Technical Advisory Committee to develop an adaptive management plan. This adaptive management plan would examine post-construction survey protocols to determine if changes were necessary, as well as identify potential mitigative strategies that could be implemented to minimize or avoid adverse effects to wildlife.

As discussed in Section 4.0, Alternatives Analysis, the Applicant evaluated a wide range of commercially available turbines with respect to noise and visual resource impacts and by associated architectural landscape impacts. Some of the turbine tower heights and turbine diameters considered by the Applicant would have required height variances from the towns of Bellmont and Chateaugay, but after consultation with the towns the decision was made that the output benefits from larger turbines on taller towers may not justify the impacts of taller turbines to the extent that a variance might be granted. The Applicant therefore is proposing a turbine that meets the height limit.

Table 3.2-1. Summary of the Project's Long-Term Unavoidable Adverse Impacts

Environmental Factor	Potential Impacts	Mitigation Factors
Soils, Geology, and Topography	Loss of agricultural land	Using existing public and private (i.e., farm) roads whenever practicable. Installing buried power collection cables at a depth that provides for long-term agricultural use above. Aligning roads and turbines at the edges of fields where possible to avoid impacting agricultural operations. Allowing for longer spans between overhead power poles that span agricultural areas.
Surface and Groundwater Resources	Wetland filling Permanent stream crossings	Aligning roads and turbines to avoid wetlands and streams or minimize impacts at crossings. Development of a SWPPP to protect surface waters. Funding for restoration or creation of wetlands, as needed to offset impacted wetlands. Implementation of a post-construction Invasive Species Management Plan to ensure the success of restoration activities and the wetland mitigation areas.
Biological Resources	Incidental wildlife injury and mortality Loss or alteration of habitat	Funding of post-construction studies to monitor potential impacts on birds and bats. Development of adaptive management plans in concert with execution of post-construction mortality studies. Development of a SWPPP to protect aquatic habitats.
Land Use and Zoning	Adverse and beneficial impacts on farming Changes in community character and land use trends	Aligning roads and turbines with existing field rows and seams whenever practicable. Preservation of existing agricultural land. Allowing for longer spans between overhead power poles that span agricultural areas.
Cultural Resources	Visual impacts on architectural resources Disturbance of historic archaeological resources	Funding and/or implementing mitigation programs for unavoidable impact to historic resources.
Visual Resources	Visual change to the landscape Visual impact on sensitive sites/viewers	Siting the Project away from population centers and areas of residential development and ensuring required setbacks from residential properties. Installing turbines that don't exceed 400 feet in height.

Environmental Factor	Potential Impacts	Mitigation Factors
	Shadow-flicker impact on adjacent residents	Shifting turbine locations within a given area to minimize shadow impact. Using buried electrical collection lines between turbines, unless otherwise required by technical or environmental reasons. Offering neighbor agreements to neighboring homeowners located outside of the Project Site within 2,500 feet of a wind turbine. Using turbines and towers that will be painted white to blend in with the surroundings. Implementation of the Complaint Resolution Procedure to allow for resolution of potential impacts from shadow flicker.
Noise	Operational impacts on adjacent residents	Siting the Project away from population centers and areas of residential development. Offering development agreements with neighboring homeowners located outside of the Project Site within 2,500 feet of a wind turbine. Implementation of the Complaint Resolution Procedure to allow for resolution of potential noise impacts.

As discussed in Section 2.0, the residual noise and shadow impacts have been conservatively estimated and are within the limits established under local law. In the case of noise, the Applicant designed its ambient noise assessment to be even more stringent than NYSDEC guidelines—using a measure of background noise well below average conditions. This assessment shows that the average receptor would experience noise impacts considered by the NYSDEC to be “unnoticed to tolerable,” and no receptors would experience “very noticeable” or “objectionable” noise impacts.

The Applicant will develop a neighbor program whereby any homeowner located outside of the Project Site, within 2,500 feet of a proposed turbine will be offered compensation of at least $1,000 per year (such figure approximating the average upstate New York electricity bill) for the life of the Project. The purpose of this neighbor program is to share the benefits of the Project with that group of neighbors that will experience the most significant change in their neighborhood. Such a program is not required by law and affirms the Applicant’s intent that those in the Project Area that would be faced with unavoidable changes should have the option to participate in the Project.

With respect to cultural impacts, the Applicant has been in communication with local historians and the SHPO. The Applicant has conducted an inventory of area architectural resources and will conduct additional impact assessments based on SHPO guidelines regarding architectural and archeological resources. In the event that shovel-test assessments unearth archeological resources, the Applicant will develop a protocol for the proper documentation and relocation or recovery of these resources. The Applicant is also committed to working with the SHPO and the host communities to develop and fund a visual mitigation program aimed at restoring or improving each community's cultural and/or historical resources.

The Complaint Resolution Procedure, provided in Appendix N, provides a process by which potential impacts to neighbors of the project can submit specific issues with respect to any of the aforementioned potential impacts that may arise during construction and/or operation.

With the incorporation of the above described mitigation measures, the Project is expected to result in positive, long-term overall impacts that will offset any unavoidable adverse effects. The following subsections summarize general planning and design measures that have been incorporated into the Project, and specific mitigation measures proposed to minimize adverse impacts to specific resources.

3.3 Environmental Compliance and Monitoring Program

The Project will be subject to many environmental restrictions and requirements. In order to ensure compliance with these measures, a formal environmental compliance and monitoring program will be created.

After the SEQRA process is complete and permits have been issued, but prior to construction, the Applicant will develop a construction-related environmental compliance program and will employ at least one environmental inspector to ensure compliance with Project environmental commitments and permit requirements. The environmental compliance program will include the following components:

Planning – Prior to the start of construction, the Applicant will review all environmental permits and studies, including the FEIS, and based upon the conditions/requirements of these documents, prepare an environmental management plan that will be used for the duration of the Project. This plan will outline the environmental requirements for construction and restoration included in Project permits, approvals, and other relevant documents such as those associated with SEQR review.

Training – A construction environmental training program will be developed for all personnel to be on the Project Site during construction. Prior to the start of construction the Applicant will hold environmental training sessions, in conjunction with safety training sessions, that will be mandatory for all contractors and subcontractors, as well as Applicant staff and agency representative who will be accessing construction work sites.

Preconstruction Coordination – At least one week prior to construction in any given area, the contractor(s) and the environmental inspectors will conduct a walkover of areas to be affected by construction activities. This walkover will identify landowner restrictions, sensitive resources, limits of clearing, proposed stream or wetland crossings, layout of sediment and erosion control features, and other important features. The limits of work areas, especially in sensitive resource areas, will be well defined prior to construction. Defining these areas may include the use of signs, flagging, staking or fencing prior to construction, as needed.

Construction and Restoration Inspection – A construction compliance inspection program will be created based upon the Project construction environmental compliance plan. The inspection program will include the daily inspection of every active construction work site by an environmental inspector. An inspector will be present during construction at environmentally sensitive locations and will keep a log of daily construction activities. This log will become the basis for periodic/regular reporting and compliance audits. Additionally, the inspector will work with the contractors to create a punch list of areas for restoration in accordance with issued permits. The Applicant or an environmental inspector will maintain a monitoring presence, as required in Project authorizations, following the completion of site restoration to evaluate areas disturbed during construction and assure that agricultural and ecological functions and values are restored and maintained over the long-term.

Ecological Resource Monitoring – The Applicant will monitor avian and bat activity during Project operation in accordance with the post-construction monitoring protocol developed in cooperation with the NYSDEC and USFWS. If significant mortality occurs, the Applicant will consult with the Technical Advisory Committee to develop an adaptive management plan. This adaptive management plan would examine post-construction survey protocols to determine if changes were necessary, as well as identify potential mitigative strategies that could be implemented to minimize or avoid adverse effects to wildlife. The Applicant will also monitor the restoration or creation of any wetlands that result from the final mitigation program, in accordance with NYSDEC and USACE wetland permitting conditions.

Agricultural Resource Monitoring – The Applicant will monitor the restoration of topsoil following Project construction in cooperation with the Ag & Markets as outlined in the Agricultural Protection Measures in Appendix C. This includes a monitoring and remediation period of no less than two years immediately following the completion of initial restoration.

Restoration of Public Roads – The Applicant will monitor the condition public roads with the respective highway superintendents and will restore roads impacted by the Project to a condition that is as good as or better than prior to construction as agreed to within the Road Use Agreements to be developed with the towns of Chateaugay and Bellmont.

4.0 ALTERNATIVES ANALYSIS

The following alternatives to the proposed action are described and evaluated: no action, alternative project location, alternative project design/layout, alternative energy production technologies, alternative turbine technology, alternative project size/magnitude, and alternative project timing. These alternatives offer a potential range and scope of development that could reasonably be undertaken by the Applicant for comparative analysis and consideration. The no action alternative, which is required for consideration under SEQRA, represents the environmental conditions that would exist if current land use and activities were to continue as is.

In addition, alternative mitigation options are discussed based on the anticipated impacts described in Section 2.0.

4.1 No Action

The no action alternative assumes that the Project would not be built. The Project Area would remain as active agricultural land, residential property and vacant land, and Project-related adverse impacts would be averted. Similarly, the Project's positive environmental and economic impacts described in Section 1.4, Project Purpose, Need, and Benefits, would also not be realized. Further, if this Project were not developed, potentially negative impacts from the lack of economic development activities in the Project Area or the development of other, less desirable land uses could ensue.

Within the affected environment, the following positive environmental impacts associated with adding a new renewable energy source to the NYISO electric power system would not occur:

- Reduction of reliance on fossil fuels and eliminating the associated impacts of refining and transporting these fuels and disposing of pollutant byproducts;
- Reduction of air emissions, specifically displacement of 111 tons of NOx and 466 tons of SO_2 during Project operation (Section 2.4.2.2]); and
- Reduction of greenhouse gases, specifically displacement of 91,085 tons of CO_2 during Project operation (Section 2.4.2.2).

In addition, if the no action alternative was selected, the lack of economic development activity in the Project Area could result in undesirable impacts in the following areas of the affected environment:

- Loss of increased revenues to local taxing jurisdictions of over $700,000 per annum;
- Loss of lease revenues for participating landowners of over $500,000 per annum;
- Loss of income from operation and maintenance jobs of over $500,000 per annum;
- Loss of payments to Project neighbors of up to $100,000 per annum; and
- Loss of income from approximately 130 construction jobs.

Given the short-term nature of anticipated construction impacts and the generally minor long-term impacts of Project operation compared to the significant environmental and economic benefits that the Project would generate, the no action alternative is not preferred. Specifically, the no action alternative is not preferred because:

- it fails to meet the Project purpose, need, and benefits;
- it does not further the goal of the New York State RPS of increasing the percentage of renewable electricity purchased by New York consumers from 19 percent to at least 25 percent by 2013;
- it precludes the specific Project-related benefits from occurring in the community; and
- there are potential adverse impacts associated with the no action alternative, as summarized above.

4.2 Alternative Project Location

Under 6 NYCRR § 617.9(b)(5)(v)(g), site alternatives addressed in an Environmental Impact Statement may be limited to parcels owned by, or under option to, a private project sponsor. The Applicant does not own, or have under option, any parcels other than the ones that (a) constitute the Project Site, (b) a number parcels in the Town of Burke, and (c) a number of parcels in the Town of Chateaugay, north of Route 11. The current moratorium on wind energy development in the Town of Burke prohibits development of a wind energy project. The additional parcels currently under option in Chateaugay are not sufficient for development of a wind energy project at this time; further, use of those parcels would impact the area similarly to those included in the Project Site. Therefore, there is no requirement to evaluate any alternative project locations other than those listed above. Nonetheless, this section provides background information on the Applicant's selection of the Project Site to facilitate understanding of the criteria that the Applicant employed.

Alternative site location analysis occurs very early in the planning process for wind power projects. Because sites suitable for wind energy development in New York are limited, there is a great deal of competition among companies for potential development sites. In order to secure the right to develop in an area, a developer must obtain adequate land control and expend considerable funds in transmission, meteorological, and environmental studies. This requires a significant expenditure of limited financial and human resources. Therefore, a very careful screening process is employed.

The selection of wind farm locations is affected by several factors which allow a project to operate in a technically and economically viable manner. These factors include the following:

- Adequate wind resource that allows for the operation of utility-scale wind turbines;
- Proximity and sufficient access to an adequate electric transmission/bulk power source;
- Contiguous areas of available land resource;

- Compatible land use;
- Willing land lease participants and host communities;
- Limited sensitive ecological issues;
- Sufficient distance from major population centers; and
- Compliance with local, state, and federal laws and regulations (i.e., setbacks, avoidance areas, maximum wind turbine height).

The Applicant searched for possible locations to site wind farms throughout New York State. The Applicant searched various regions throughout the state, with the search in northern New York region of Clinton and Franklin Counties beginning in 2003. From initial studies, it was clear that the largest windy area existed in western Clinton County, with evidence of a suitable wind resource also apparent in eastern Franklin County. Given the larger potential in Clinton County and the high level of developer interest, the Applicant focused initial efforts there to develop a 218-MW project (Marble River Wind Farm).

While the Applicant was performing the necessary development work in Clinton County, another developer, PPM Energy commenced measuring the wind resource in Franklin County (in North Chateaugay, Northwestern Burke and in Southwestern Burke) and made a request to the NYISO to interconnect 102 MW of wind generating capacity to the grid. In September 2006, the Applicant made an agreement with PPM Energy to acquire the latter’s assets in Franklin County. Using local wind maps produced by AWS Truewind and the two years of wind data acquired from PPM Energy, the Applicant concluded that the most attractive contiguous area to develop was in southwestern Chateaugay, eastern Burke and north central Bellmont, bearing in mind (a) that it likely would not be possible to develop a project within the Adirondack Park; (b) that another developer (Noble Environmental Power) had advanced plans to construct in eastern Chateaugay and Bellmont; and (c) the wind in western Burke, as measured by the PPM Energy met towers, was not as strong.

In addition to the wind resource evaluation, the Applicant conducted an interconnection Feasibility Study and a System Reliability Impact Study with the NYISO to confirm that the Project could be interconnected to either of the alternative substation locations identified in Figure 1.1-2. Finally, extensive landowner and site visits, and critical issues/fatal flaw analyses confirmed that the optimal Project indicated by the wind map could be developed. Finally, the Applicant presented its preliminary Project proposal to the Town Boards of Burke, Chateaugay, and Bellmont and concluded that the Project should be limited to the towns of Chateaugay and Bellmont, given that a local law permitting a wind farm did not exist in Burke at the time the wind farm location was being settled on.

The Applicant selected the proposed site for development because it possesses a quality wind resource close to a relatively lightly loaded electric transmission line. Other site characteristics include relatively low population density, highly receptive landowners and neighbors, compatible existing land uses, and relatively few sensitive ecological and cultural resources. These factors combine to make the proposed site desirable from the standpoint of wind power development.

The analysis of other potential sites screened out many locations in the region due to the following constraints:

- Significant development constraints/incompatible land uses; for example, lands within the Adirondack Park were screened out;
- Insufficient available land due to presence of another developer (eastern Chateaugay, eastern Bellmont);
- Insufficient wind resource (northwestern Burke);
- Combination of lesser wind resource with significant wetlands (southwestern Burke); and
- More complicated transmission access, including crossing the Chateaugay River (northern Chateaugay).

The Applicant did not identify any other site in the region (other than ones already under development for a wind project) that possessed the same combination of desirable features, and that avoided the types of constraints listed above.

As pointed out in Section 1.4, Project Purpose, Need, and Benefits, New York State has established a green power market with the intention of supplying the State with roughly 9.8 million MWh of renewable energy from large-scale generation facilities. Economic models suggest that wind power will provide over two thirds of this new supply of renewable energy–the equivalent of roughly 3,300 MW. Of the roughly 5,500 MW of wind energy projects that have made requests to the NYISO to interconnect to the grid, not every project will ultimately be constructed and many will be downsized. As such, meeting the State’s requirement suggests that every technically feasible site, including this Project, should be seriously considered.

4.3 Alternative Project Design/Layout

In arriving at the Project layout, the Applicant developed a number of different configurations over the course of seven months. Each version incorporated wholesale or minor adjustments based on the criteria outlined below. As stated in Section 1.5.1, numerous criteria go into creating a project layout. Primary siting criteria include:

- Exposure to adequate wind resource;
- Setbacks from and impacts on homes, structures, roads, property lines;
- Sufficient spacing between turbines to maximize power production and minimize turbulence effects;
- Adherence to agricultural protection measures;
- Avoidance of environmental and cultural resources;
- Avoidance of unstable land forms and other engineering constraints;

- Landowner preferences; and
- Sensitivity to viewshed and noise issues.

The first iteration of the Project layout was based upon a review of desktop constraint information and wind resource data and contained significantly more turbines than the current layout. This layout was refined after initial engineering and environmental field work to account for wetlands and other significant natural resource areas. Further iterations of the layout took into account the results of a wetland and stream inventory, meteorological modeling, newly passed local land use ordinances, field engineering surveys, detailed pictometry analysis, and landowner acceptability. Each consecutive iteration of the layout minimized environmental impacts or adjusted for engineering constraints, while preserving the Project's energy efficiency and thereby its economic viability. As a result, the preferred Project layout presented in this DEIS incorporates the most impact avoidance measures of all the alternatives. The mitigation options presented in Section 2.0 of this DEIS reflect the reduced need for mitigation due to impact avoidance.

The Project layout as proposed has been engineered to capture the area's wind resource, while minimizing wake effects on downwind turbines. However, optimal siting of the turbines from a wind resource perspective has been modified by landowner agreements/considerations, public involvement, and recognition of the need to protect sensitive resources such as forest habitat, wetlands, and agricultural land. The layout as proposed reflects a carefully achieved balance of energy production and environmental protection. Relocation of any turbines in a tightly-constrained project area has a ripple effect, in that the location of other turbines would have to be reexamined and possibly changed to maintain an efficient/workable project design. Therefore, reduction of environmental impacts in one location could result in increased impact in another location and/or reduced power generation. In the case of visual impact, removal or relocation of one or two individual turbines from a 53-turbine layout is unlikely to result in a significant change in project visibility and visual impact from most locations.

Permanent access road widths will be the minimum necessary to maintain the Project and have been sited in consultation with Ag & Markets guidelines to minimize loss of agricultural land and impacts on farming operations. To minimize the visual impacts associated with the electrical collection system, all on-site utility interconnects will be placed underground with the exception of the portions of interconnect that will traverse the Chateaugay River and, subject to final detailed engineering analysis, a large wetland area in the southwest portion of the Project Site. These portions of the power collection system will be installed as an overhead 34.5-kV transmission line.

Alternative locations for the Project laydown areas were also evaluated through a similar process as described above for the Project layout. Other locations were identified and eliminated due to environmental or construction constraints. The current locations of the two laydown areas (as shown in Appendix B) will be further evaluated during the wetland delineation effort to be conducted in spring/summer 2008.

This DEIS currently includes two alternative locations for the substation and POI, as shown in Appendix B and described throughout Section 2.0. These locations will be further evaluated during the wetland delineation and through the SEQR review process of this DEIS.

Consequently, alternative Project designs were likely to pose equal or greater risk of adverse environmental, engineering, or community acceptability impacts and thus were rejected.

4.4 Alternative Energy Production Technologies

The purpose of the proposed Project is to create a profitable, economically viable wind-powered energy facility that will provide a significant source of renewable energy to the New York power grid. An important component of that purpose is to be compliant with the PSC "Order Approving Renewable Portfolio Standard Policy," issued on the 24th of September 2004 (PSC 2004). This Order calls for NYSERDA to purchase renewable energy attributes from qualifying facilities to spur an increase in renewable energy used in the state to 25 percent by the year 2013. The Applicant proposes to construct a facility that generates electricity by converting the energy in the wind to electricity. Such a facility is clearly a qualifying facility for the RPS, and therefore, eligible to bid to receive payment from NYSERDA for up to 95 percent of the renewable energy attributes it produces. The following section describes other technologies that comply with the RPS. These technologies are reviewed for purposes of completeness. None are reasonable alternatives to the selected technology, because none would fulfill the Applicant’s purpose of constructing and operating a wind energy generation facility. However, all could, potentially, comply with the RPS.

Hydroelectric Energy

Conventional hydroelectric generating stations are typically operated in one of two methods, namely "store-and-release" or "run-of-river." Store-and-release facilities impound water behind a dam, forming a reservoir. Run-of-river facilities are systems in which the discharge of water from the facility equals the inflow at any instant time. The amount of water flowing through the turbines is determined by the available water in the river.

Seventy-four percent of New York’s hydro capacity is at the NYPA St. Lawrence and Niagara “store-and-release” facilities. According to the New York Department of Public Service (DPS), “development of large hydroelectric projects in New York is essentially complete.”

The RPS treats as eligible only two categories of hydroelectric resources: 1) new low-impact hydro, defined as new facilities of up to 30 MW, as long as they are run-of-river, with no new storage impoundment; and 2) the incremental production associated with upgrades to existing facilities, as long as no new impoundments are created. The Applicant does not own any existing hydroelectric facilities, so expansion of an existing facility would not be an alternative reasonably available to the Applicant.

According to the DPS, the potential RPS-eligible in-state hydroelectric development between now and 2013 is 43.3 MW, equating to 220,622 MWh/year, …. "*if the appropriate economic conditions existed.*" To reach this amount would require numerous run-of-river facilities–as demonstrated by the fact that, in 2006, NYSERDA awarded renewable energy contracts for ten hydro projects, averaging less than 1 MW per project.

The Applicant does not own or have any access or rights to hydroelectric facilities. However, the Applicant can produce almost an equivalent amount of wind energy from the Project as the total estimated potential generation for the entire state of New York by 2013 from eligible hydro projects, at a significantly lower development, permitting, interconnection, and construction cost.

Biomass Energy

The term biomass includes a wide-variety of closed-loop and open-loop organic energy resources. Closed-loop resources, which can be either woody (i.e., willow or hybrid poplars) or herbaceous (i.e., switchgrass), are those that are grown exclusively for the purpose of being consumed as an energy feedstock. Open-loop resources are typically either woody residues produced as byproducts in the wood processing industry or clean, non-treated, woody waste materials intercepted from the municipal solid waste stream.

A variety of technologies can be used to produce electricity from biomass. In some cases, a particular biomass resource is more suitable for conversion to electricity using a particular technology. Primary types of energy conversion technologies from biomass are presented below:

1. Customer-Sited Biomass Combined Heat and Power
2. Co-firing Biomass with Coal
3. Gasification
4. Direct-Fire
5. Co-firing Gasified Biomass with Natural Gas or Coal

The opportunities to produce electricity using the above biomass technologies are discussed herein.

Customer-Sited Biomass Combined Heat and Power (CHP)

As implied by the title, this technology is typically employed at "customer" facilities, generally wood processing plants (especially in the pulp and paper industry) that have large electricity and steam needs and a captive supply of biomass residues. Opportunities also exist in some food products manufacturing facilities.

The typical scale of CHP technology is 1 to 30 MW. It is estimated by the DPS that the market potential for new biomass CHP in New York is 18 MW by 2009 and 40.5 MW by 2013 spread over several mills.

Given the fact that the Applicant is not a facility owner or operator in the pulp and paper or food industries, the small size of these facilities relative to the Project and the targets of the RPS, the difficulty in negotiating stand-by agreements with the local utility, customer-sited biomass CHP would not be a reasonable alternative for the Applicant even if it could fulfill the Applicant's purpose of constructing a wind energy generation facility.

Co-firing Biomass with Coal

For companies that generate electricity from coal, it is possible to directly displace a portion of the coal used in the combustion process with biomass. The typical application for co-firing coal with biomass is in larger base-load electricity generators. Biomass can be blended with coal on the coal-pile (mixed feed), or injected through a separate biomass transfer system.

With 10.7 MW of active co-firing capacity at Greenidge Station in Yates County, an additional (currently unused) 11 MW of co-firing capacity at two other plants, in Chenango and Steuben Counties, respectively, and a 10-MW co-firing system at the Dunkirk Station, in Chautauqua County, co-firing biomass with coal is a minor activity in New York. This alternative is not open to the Applicant because the Applicant is not an owner or operator of coal generation facilities.

Biomass Gasification

Biomass gasification is a thermal conversion technology that converts solid biomass fuel into a combustible gas. Gasification applies air to the biomass feedstock in a high temperature reactor to produce the product gas, which can then be used to generate electricity from standard gas turbines or in a combined cycle unit. Biomass gasifiers have the potential to be up to twice as efficient as conventional boilers to generate electricity. A typical scale of biomass gasification is from 5 MW to 40 MW.

However, biomass gasification is still considered an emerging technology with only a few gasifiers in operation in the United States, and no biomass gasification in New York State. Given that, biomass gasification is not considered to be a reasonable, commercially available alternative technology.

Direct-Fire, Stand-Alone Wood-Fired Power Plants

The technology consists of combustion of wood fuel directly to produce power, which is sold in the wholesale market. Although this technology is in widespread use nationally, efficiency is typically low (17 to 24 percent) relative to most other types of power plants. The typical scale of this technology is 1 to 50 MW.

Direct-fire, wood-fired power plants produce solid waste and air emissions. The ash requires disposal either by being spread over land, or in a landfill. If the wood fuel is treated with compounds such as chromium, chlorine and arsenic, the ash produced may have a higher concentration of hazardous materials resulting in greater environmental risks associated with disposal. The air emissions from biomass in combustion technology will vary depending on the properties of the wood, but will in all cases require emissions control technologies. Unless the amount of biomass combusted is replaced by the applicable amount of biomass growth (i.e., closed-loop), this technology results in CO_2 emissions, both at the generation facility and from collecting and transporting the biomass and the solid waste. The available supply of suitable biomass fuels in any given geographic area is limited.

New York currently has two operating direct-fire, stand-alone wood-fired power plants in operation–an 18-MW plant in Chateaugay, Franklin County, and a 21-MW plant in Lyonsdale, Lewis County. Even though both facilities have been operating for a number of years and would have been expected to have paid off their financing, both facilities were able to demonstrate that they needed RPS funds to continue economical operation. Since these facilities were constructed, there has been a significant increase in the cost of key materials used in boiler house and turbine construction (most recently due to the war in Iraq and economic growth in China and India), leading to a more difficult competitive environment.

In recognition that RPS objectives include (a) promoting a cleaner and healthier environment, improved air quality, and a reduction of greenhouse gases and (b) a competitive green energy price, and given the potential for increased costs due to the Regional Greenhouse Gas Initiative, generating renewable energy at direct-fired, stand-alone wood/biomass power plants would not be a reasonable alternative for the Applicant even if it fulfilled the Applicant's purpose of generating energy from wind.

Biofuels

In addition to the biomass generation technologies mentioned above, a variety of other fuels–ethanol, methanol and biodiesel–can be made from biomass resources. Biofuels are primarily used to fuel vehicles and, although they can fuel engines or fuel cells for electricity generation, both biofuels and fuel cells are considered emerging technologies and, as such, are not a reasonable viable alternative for the Applicant to use for commercial scale electric power generation.

Biogas Energy

Landfill Gas

Landfill gas (LFG) is generated when organic materials in municipal solid waste landfills naturally decompose by bacteria. The gas is approximately 50 percent methane, the primary component of natural gas. The other 50 percent of the gas is predominantly CO_2, with small amounts of NOx, and trace levels of non-methane organic compounds. LFG generation typically begins after waste disposal and can continue for 20 or 30 years after the landfill is closed. LFG can be used for on-site electricity generation, a use widely practiced throughout the United States with approximately 330 landfill gas to energy facilities currently in operation.

Reciprocating engines are the most common technology used to generate electricity from LFG. Engine models used at landfills range in size from approximately 0.5 to 3 MW. The engines are generally used in projects with capacities ranging from 0.8 to 6 MW (many with more than one engine).

Landfill gas-to-electricity projects have been in operation at large landfills in New York for the past 20 years. There are approximately 15 in operation in the State, with a total generating capacity of approximately 65 MW, ranging in size from 1 MW to 11.2 MW and averaging 4.33 MW. The USEPA identifies New York as having potential for 17 additional landfill gas to energy sites through 2013. The potential sites are spread across the state. Landfill gas generation is not a reasonable alternative for the Applicant both because it will not fulfill the Applicant’s purpose of generating electricity from wind, and also because it cannot be applied at a scale even approaching the scale of the Project. Further, the Applicant is less well positioned to develop these projects than local engineering or packaging firms, landfill gas developers, engine manufacturers or the landfill owner operator itself.

Methane Digesters

A methane digester system, commonly referred to as an anaerobic digester, can be used for manure waste management on farms, or to process methane waste at wastewater treatment facilities. At farm locations, digesters promote the decomposition of manure into methane gas. The manure is fed into an anaerobic (without oxygen) tank where bacteria convert the organic matter into methane, which is collected under a plastic dome or hard cover. The gas is piped into an engine generator to generate electricity for farm use, with any excess sold into the grid.

The DPS projected the potential level of development of manure digesters in New York based on, among other things, the number of dairy farms and milk cows in the state. It was estimated that approximately 44 MW of potential generating capacity could be operating by 2013. The State University of New York at Morrisville announced a manure digester project that would produce approximately 1 MWh per cow per year. It is appropriate for large farms to install manure digesters, initially with the support of organizations like NYSERDA, for the purposes of controlling odors and pollution and to produce electricity for on-site consumption. The technology is not a reasonable alternative generation technology for the Applicant, however, because of its small scale and distributed nature. A single wind turbine can produce up to 5,000 times the energy per year per acre used as a manure digester/dairy farm combination.

Photovoltaics

Photovoltaic (or PV) systems, commonly known as "solar cells," convert light energy directly into electricity. Today's PV devices convert 7 percent to 17 percent of light energy into electric energy.

The largest drawback to solar power today is price, with electricity from PV systems costing about 30 cents per kilowatt-hour (c/kWh). Another drawback to PVs is that they only generate electricity during daylight, and are most efficient when the sun is shining. On a small scale, therefore, energy storage systems are required.

There are three main applications for solar energy in commercial use:

- *Residential*. A typical residential system can average 3 kilowatt (kW) installed capacity, and take advantage of utility net metering. Net metering permits the customer to spin their meter backwards when the solar electric system produces more power than is consumed at the home, and to receive retail credit for this power.
- *Commercial/Industrial sited systems*. These systems are designed to maximize solar energy and capacity output. These systems, with an average installed capacity of 200 kW, will generally be sized so that they produce power "behind the meter" for the customer, and not export any power to the utility grid since they are not eligible for retail net metering. Although the customer is not exporting power to the grid, the electric and capacity benefits produced by these systems reduce the customer load, and therefore, directly off-set demands on the power grid.
- *Building integrated photovoltaic systems*. These systems typically vertically oriented on facades with orientations between east and west in a southerly direction. These systems will typically provide lower levels of solar output, due to orientation, but can provide building material cost reductions (for glazing or cladding materials) that can partially or wholly off-set the power production penalty. To take advantage of this benefit, building integrated systems are therefore most likely to be installed in new construction applications. These systems are primarily sized to meet loads on the customer's side of the meter.

PV technologies remain a very small generation source in the current State energy mix (generating together considerably less than the output of the smallest wind farm in the state). The market development and application of solar technologies will be greatly affected by cost factors and the availability of sites. Solar technologies are best suited for generation near points of electricity use, because solar will be much more competitive with retail electricity rates of up to 15 c/kWh than with wholesale rates of 6.5 c/kWh. Deployable spaces include roofs, facades, parking lots, and exclusion zones (i.e., along roadways). The DPS estimates that New York's PV potential development is 18.7 MW by 2013. Due to the reasons outlined above, photovoltaics are not a reasonable alternative for the Applicant.

Ocean Energy

Generating technologies that derive electrical power from the world's oceans include tidal energy, wave energy, and ocean thermal energy conversion. Tidal energy takes the highly predictable nature of the tides and converts its kinetic energy into electricity by placing turbine equipment in off-shore areas. It is only practical at those sites where energy is concentrated in the form of large tides and where the geography is suitable for tidal plant construction. These conditions are not commonplace, but several locations in Maine and Alaska have been identified as having the greatest potential in the United States. The first tidal energy turbine project in the United States was installed in 2006 as a demonstration project in New York’s East River. Most of the efforts in this field are taking place in Europe. In 2003, the world's first offshore tidal energy turbine was built in the United Kingdom. Many devices have been invented to harness the waves' power, but few have been tested. Of those that have, most have only been in artificial wave tanks.

Ocean thermal energy conversion converts the temperature difference between the ocean's surface and at depth into electricity. This is done by using the warmer water to heat a working fluid which evaporates at pressure and operates a turbine. Conditions require a temperature difference of at least 36ºF, at a depth of around 1,000 meters for the process to work, meaning there is no real potential in and around New York. Further, these technologies are still under development and are not expected to become commercially available in the foreseeable future. Due to the reasons outlined above, ocean energy is not a reasonable alternative for the Applicant.

Summary

To summarize, the Applicant’s purpose is to generate electricity from wind. Even if the Applicant’s purpose were broader–to generate renewable energy from any technology that could qualify under the New York State RPS–the alternative technologies open to the Applicant to meet such broader purpose are limited, and none are reasonable alternatives for the Applicant at the current time given the Applicant’s capabilities. The Applicant has no existing coal facilities that can be co-fired with biomass and no portfolio of hydroelectric facilities that can be developed or expanded. The Applicant is not a large dairy farmer, an engineering contractor, landfill developer or landfill owner/operator. The ocean energy, biofuel and biogasifier fields are not well developed and not necessarily suitable for power generation in New York. The photovoltaic market in New York is tiny and is generally limited to residential and commercial behind-the-meter applications.

4.5 Alternative Turbine Technology

Exhibit 4.5-1 compares various wind turbine technologies on the basis of the relative scale and size of commercially used units and their typical sizes. Although larger versions of all models shown have been produced, the diagram illustrates the average sizes of versions that have been implemented on a substantial scale with hundreds of units installed. Several types of wind energy conversion technologies were evaluated for the Project. However, for the application of utility scale electrical power generation, the technology that has demonstrated itself as the most reliable and commercially viable is the 3-bladed, upwind, horizontal axis, propeller-type wind turbine as shown in Exhibit 4.5-1 (turbines labeled (c) and (d)). The Project contemplates the use of the most successful class of wind turbines which are megawatt-class wind turbines. The choice of this type of turbine also minimizes overall impacts, since there are fewer turbines, a smaller overall Project footprint, less visual impact, and less potential for avian or bat impacts due to a smaller total Rotor Swept Area and a lower RPM.

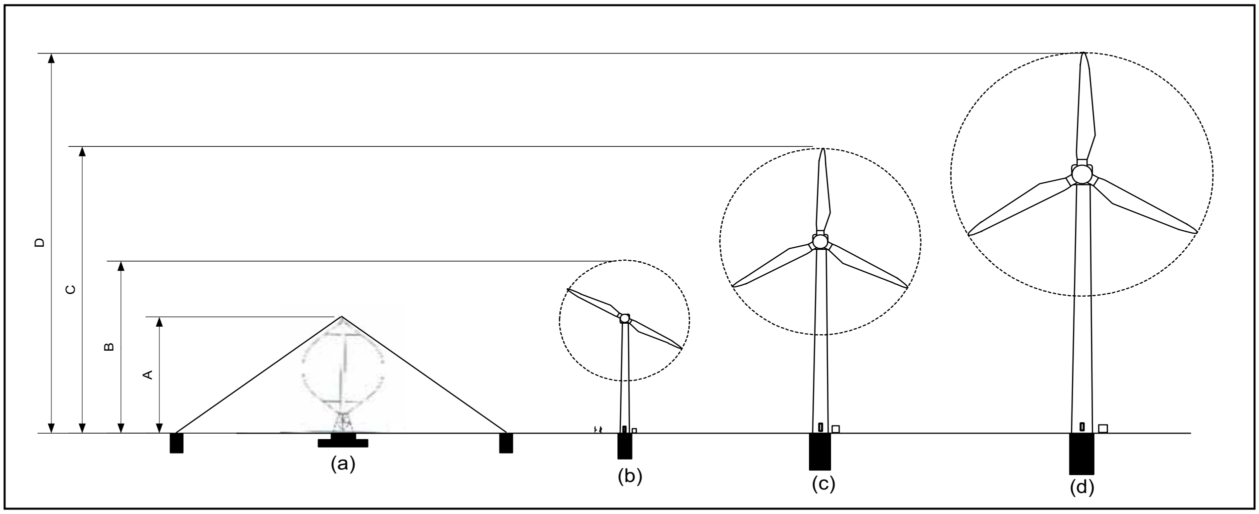

Exhibit 4.5-1 Comparison of Various Wind Turbine Technologies

Table 4.5-1. Comparison of Various Wind Turbines

	Type	Typical Generator Size	Typical Size	Typical Rotational Speed
a	Darrieus Rotor	50-100 kW	A - 100-150 ft.	50-70 RPM
b	2-bladed (downwind)	50-200 kW	B - 150-200 ft.	60-90 RPM
c	3-bladed (upwind)	500-1,000 kW	C - 240-300 ft.	28-30 RPM
d	3-bladed (upwind)	1,500-3,000 kW	D - 300-475 ft.	9-25 RPM

Vertical Axis Darrieus Wind Turbines

The most widely used vertical axis wind turbine (VAWT) was that invented in the 1920s by French engineer, DGM Darrieus. It is called the Darrieus Wind Turbine, Darrieus Rotor and commonly dubbed the “eggbeater.” Exhibit 4.5-1 illustrates both the eggbeater (vertical axis) and the propeller types (horizontal axis - HAWT) of wind turbines. The Project will utilize the horizontal axis type of wind turbines.

The Darrieus turbine was experimented with and used in a number of wind power projects in the 1970s and 1980s, including projects in California. Exhibit 4.5-2 illustrates an example of a Darrieus turbine in Washington State.

Despite years of diligent design, experimentation and application, the Darrieus turbine never reached the level of full commercial maturity and success that horizontal axis turbines have due to inherent design disadvantages. Over the years, the 3-bladed horizontal axis wind turbine has proven to be the most reliable, efficient, and commercially viable wind power technology.

A few of the advantages of propeller type wind turbines over the eggbeaters are discussed in further detail below.

Exhibit 4.5-2 FloWind Vertical Axis (Darrieus Wind Turbine) Located on Thorp Prairie, near Ellensburg, WA

Higher Wind Speeds Higher Above the Ground:
Darrieus rotors are generally designed with much of their swept area close to the ground compared to HAWTs. As the wind speed generally increases with the height above ground, HAWTs benefit from having higher wind speeds and higher wind energy incident to their rotor plane that can be extracted.

Cut-in Wind Speed:
VAWTs require a higher level of wind speed to actually start spinning compared to HAWTs. Older VAWT machines were generally “motored-up” by using the generator as a motor to start-up. HAWTs do not require as much wind speed for start-up and most have the advantage of variable pitch blades, which allow the turbine to simply change blade pitch to start-up. Modern HAWTs do not use the generator to motor-up the rotor.

Variable Pitch:
Most all modern HAWTs have mechanisms which pitch the blades along their axis to change the blade angle to catch the wind. Variable pitch allows the turbine to maximize and control power output. VAWTs generally do not have variable pitching capability and rely on stall regulation. This results in less efficient energy capture by VAWTs.

Avian Hazards – Guy Wires:
VAWTs are generally constructed with guy wires, which have been shown to be a greater hazard to birds than turbines themselves, as they are much more difficult for birds to see and avoid. The HAWTs contemplated for the Project use free-standing tubular steel towers and do not require guy wires.

Turbine Footprint:
VAWTs are generally fitted with four sets of guy wires which span out from the top of the central tower and are anchored in foundations as shown in Exhibit 4.5-2. Including the tower base foundation, VAWTs require a total of five foundations all spread apart. The result is that the overall footprint and disturbed area for a VAWT is larger than that for a comparably sized HAWT. HAWTs on free-standing towers use only one main foundation and have a relatively small overall footprint in comparison.

Fatigue Life Cycles:
Due to their design, VAWTs have higher fatigue cycles than HAWTs. As the rotor blades rotate through one full revolution, they pass upwind, downwind and through two neutral zones (directly upwind of the tower and directly downwind of the tower). In contrast, the rotor blades on a HAWT do not pass through similar upwind/downwind neutral zones. As a result, VAWTs are subjected to a far higher number of fatigue load cycles compared to HAWTs which, past operating history shows, has resulted in far more frequent mechanical failures and breakdowns on VAWTs.

Two-Bladed, Downwind Wind Turbines

The most widely used vertical 2-bladed wind turbines were of the downwind variety and were in the size range of 50 to 200 kW. They are referred to as downwind since the blades are downwind of the supporting tower structure. Although there is continued experimentation with prototype wind turbines of this design of a larger scale (300 to 500 kW), they have not proven to be reliable and commercially viable units.

The 2-bladed turbines require a higher rotational speed to reach optimal aerodynamic efficiency compared to a 3-bladed turbine. The 2-bladed rotors are also more difficult to balance and this combined with the downwind tower shadow, results in higher fatigue loads and higher noise compared to the 3-bladed design. As shown in Exhibit 4.5-3, 2-bladed downwind turbines use guy wires with associated avian and agricultural impacts.

Exhibit 4.5-3 Two-Bladed Downwind Wind Turbine

Smaller Wind Turbines

Over the past 20 to 30 years, wind turbines have become larger and more efficient. The Applicant considered using smaller turbines in the 600 to 1,000 kW range for the Project; however, this is both less cost-effective and would result in a far higher total number of turbines, a larger Project footprint, and an overall higher impact to the surrounding environment. Use of 600 to 1,000 kW turbines would result in up to twice as many total turbines and a greater total Rotor Swept Area to produce the same amount of energy. For example, the total height of the typical 660-kW turbine is about 73 percent of the total height of the typical 1,500-kW turbine, while its total output is only 44 percent of the output of the 1,500-kW turbine. As the growth trend of the wind energy industry has continued, smaller machines have become less cost-efficient. Use of multi-megawatt class turbines result in lower energy prices than sub-megawatt-class turbines.

Using more turbines to produce the same amount of energy also results in more turbine foundations, which results in more land area being disturbed. Potential operational impacts (e.g., noise, avian mortality) could also increase with a larger number of smaller machines. In terms of visibility and visual impact, while smaller turbines might be marginally less visible, they would still be very tall structures and their higher density/greater number could actually increase the Project's visual impact.

Alternative Multi-Megawatt Turbines

The Applicant initially considered nine potential turbine models produced by five manufacturers. Turbine sizes ranged from 1.5 MW with 77 meter rotor diameters to 3.0 MW and 100 meter rotor diameters.

The Applicant rejected the extreme ends of the spectrum (below 1.5 MW or above 3 MW), based largely on limited availability in the marketplace or unfavorable pricing/economics in the current timeframe. Given the limited land under option and the constraints previously mentioned, a 1 MW turbine would have reduced the Project output by almost 30 percent without reducing the access road or collection line length or making any significant difference to the footprint of the substation. The Applicant had originally considered the Siemens 2.3 MW unit, but this turbine (and others of a similar or higher nameplate capacity) could not be utilized without exceeding the height limit in the local laws of Bellmont and Chateaugay. Such larger turbines, therefore, were not reasonable alternatives for this Project. Upon evaluating the remaining turbines for noise impacts, the Applicant opted to focus on the two turbine models that met the height limit–the 1.65 MW Vestas V-82 and the GE 1.5 sle. The Applicant finally chose the Vestas V-82, as this turbine combines reduced sound impacts, and complies with the Towns' height restrictions while also enabling the Applicant to utilizing the full available potential transmission capacity given all the constraints.

Alternative Turbine Tower Design and Size

The Project Site, as with most places in New York State, has positive wind shear, which means that the average wind velocity increases along with the height of the wind turbine tower. One hundred meter towers are the highest towers available commercially and require the use of larger more expensive cranes to erect turbines. The Applicant has estimated the costs associated with using 100 meter towers and finds that the additional energy generated (over 10 percent) may offset these costs. However, the towns of Chateaugay and Bellmont have both passed local laws limiting the total height of the turbine at tip height to 400 feet (121 meters) from original grade. The 100 meter towers, therefore, are not a reasonable alternative for this

Project. The Applicant has ruled out the possibility of using towers less than roughly 80 meters due to weaker energy production, bearing in mind that the Project has to compete with many other wind projects in the state with similar wind regimes that will be using 80-meter towers. As such, the Applicant has chosen to use 80-meter towers for the Project.

In terms of other Project components, the Project is using tubular steel towers instead of lattice and free-standing meteorological towers instead of guyed structures. Both of these preferred structures are believed to reduce potential avian and bat collision impacts and have fewer visual and agricultural land impacts.

4.6 Alternative Project Scale and Magnitude

The Applicant is doing business in a wholesale electric market that is highly competitive and extremely price-sensitive. Commercial wind farms produce two main commercial products: a) the commodity electric energy; and b) "environmental attributes" that are generated along with each unit of electricity. Wind farms can also sell their "capacity," but the revenue from such sales is typically no more than 2 percent of total revenue. As currently designed, New York State's RPS is such that there is a single buyer, NYSERDA, for the environmental attributes that would be produced for RPS compliance. The RFP process allows NYSERDA to compare all renewable energy projects and to contract with only the lowest cost providers that have the largest relative New York content. Given the economies of scale involved in the development and construction of a wind project, all other things being equal, a larger scale project produces lower cost energy. As such, increases in the Project's costs, or scale reductions below a certain point, reduce its likelihood of winning a NYSERDA contract, or any other contract for renewable energy in the region, and thus eventually being built. Of the proposed wind projects in the NYISO transmission study queue, the average scale is roughly 100 MW, which suggests that the Project needs to maintain its current scale to remain economically viable and capable of contributing significantly to state renewable energy production mandates.

The Applicant has explored increasing the Project's scale. As discussed in the previous sections, Project components of alternative size and number were considered. Initially, the Applicant proposed a larger project and associated project components, including a layout that placed roughly 11 wind turbines within the Town of Burke. Prior to the commencement of the SEQRA process, the Town of Burke had not adopted a local law allowing the development of commercial wind power generation facilities and on January 3, 2008, extended a moratorium on such development for an additional 90 days. Understanding the need for public acceptance and compatibility, the Applicant does not contemplate facility construction and operation in the Town of Burke jurisdiction while the moratorium is in place.

As described in the previous sections, the Applicant reduced the Project's scale to more effectively mitigate impacts on sensitive environmental, agricultural, and cultural resources, while achieving a reasonable balance with the desired energy production goals that ensure economic viability.

Further reductions in the Project's scale would also proportionately reduce local economic benefits. Fewer host landowners and adjacent neighbors would realize direct economic benefits from participating in the Project. In addition, PILOT and mitigation/host community agreements with the host taxing jurisdictions, as well as construction expenditures (which are typically developed on a "per megawatt" or "per turbine" basis), would be reduced.

4.7 Alternative Project Timing

The Project cannot be constructed until the SEQR process is complete, a wind energy permit has been issued by the towns of Bellmont and Chateaugay, and the required wetlands permits issued by the USACE and the NYSDEC. It is not expected that these permits will be issued, or that an interconnection agreement will be executed, until late 2008 or early 2009, making construction in 2008 impossible. The Project may be constructed in 2009 if the Applicant receives its permits and regulatory approvals in time, if the Applicant can secure the turbines and other long lead time equipment, and if the System Upgrade and Attachment Facilities can be identified and agreed to by the NYISO and the interconnecting transmission owner in time. If any of these events do not occur in time, the Applicant will seek to construct in 2010. Once the Applicant has committed to the purchase of the turbines and other major equipment, the Interconnection Agreement has been signed and the permits issued, economics dictate that the Project be constructed as soon as feasible.

4.8 Alternative Mitigation Strategies

Section 2.0 describes the anticipated environmental impacts and corresponding mitigation measures for each resource based on the preferred Project layout. The selection of specific Project facility locations was based on a comprehensive process. The Applicant placed a high priority on defining the environmental resource and land use constraint areas within the proposed Project Area and avoiding these areas where possible. Constraint areas that could not be avoided are limited in impact based on micro-siting decisions, the use of tailored design features or construction techniques, and timing of construction activities. Mitigation measures have been proposed where unavoidable impacts exist and are described at the end of each resource discussion in Section 2.0.

The selected mitigation strategies were developed by the Applicant in coordination with agency staff, local officials, and affected stakeholders. They are generally site-specific in nature and attempt to locally compensate for anticipated impacts. A range of options were considered by the applicant when developing its proposed mitigation measures. Ultimately, the mitigation plan is a product of matching Project requirements with all applicable laws and regulations. Reasonable mitigation measures were established that minimize impacts both during construction and operation of the wind energy station and allow for flexibility to adapt to unforeseen impact conditions that may be encountered.

5.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed Project will require the irreversible and irretrievable commitment of certain human, material, environmental, and financial resources as described below. The commitment of these resources will be offset by the benefits that will result from implementation of the Project.

Human and financial resources have already been expended by the Applicant, the State of New York (i.e., various state agencies), Franklin County, and the towns of Bellmont and Chateaugay for the planning and review of the Project. The expenditure of funds and human resources will continue to be required throughout the permitting and construction phases of the Project (e.g., for environmental reviews and permitting, site plan approval, and building and construction inspections). The Applicant has entered into an agreement with the towns of Bellmont and Chateaugay to cover the third-party costs incurred by the towns in their capacity as Co-Lead Agents in the SEQRA review of the Project. Therefore, limited local investment of governmental economic resources will be required to complete the review of the Project, and these resources would be regained exponentially in economic benefits to local government should the proposed Project be approved and implemented.

The Project also represents a commitment of land for the life of the Project. Specifically, approximate 400 acres of land developed for wind turbine tower locations, access roads, and substations would not be available for alternative purposes for the life of the Project. However, because the turbines/towers would be removed at the end of their useful life, and the land may be reclaimed for alternative uses at some future date in accordance with the decommissioning plan, the commitment of this land to the Project would be neither irreversible nor irretrievable. It is possible that after 20 years, the wind turbines can be repowered with newer, more powerful and even more efficient wind turbines. This is a common occurrence in places like California where first-generation turbines have been repowered (replaced) with modern multi-megawatt wind turbines. Such activities fall outside the scope of this review and would in any case only prolong the use of land for a finite period of time.

During the life of the Project, surface drainage patterns may be altered because of the presence of the impervious surfaces associated with the Project. The Applicant would attempt to restore the ground surface to pre-existing grade to the best of their ability through the Project restoration plan. Temporary loss of habitat could result in a relocation of plants and animals that could be different than their pre-existing location and concentration. Any wildlife takes or kills would be minimized to the fullest extent, but some are still expected and would only be recovered through continued breeding of the species.

Various types of construction materials and building supplies would be committed to the Project. The use of these materials, such as gravel, concrete, steel, etc., would represent a long-term commitment of these resources, which would not be available for other projects. Some of these materials may be reusable and recycled after Project decommissioning at the end of the Project's useful life; however, much of the concrete foundations will not be recycled, but will be left in place below three feet. Experience with other, older wind power projects demonstrates that older wind turbines are used for their scrap value in steel, copper, and aluminum, etc. and the projects are re-fitted with newer wind turbines.

Energy resources also would be irretrievably committed to the Project, during both the construction and operation of the Project. Fuel, lubricants, and electricity would be required during site preparation and turbine construction activities for the operation of various types of construction equipment and vehicles, and for the transportation of workers and materials to the Project Site. However, the energy resources used to construct and operate the Project would be minor compared to the clean, renewable energy generated by the Project and made available to the people of New York State.

6.0 GROWTH INDUCING IMPACTS

The SEQRA process requires the analysis of any growth inducing impacts associated with the proposed Project. The potential to trigger further development by either attracting a significant local population, inviting commercial or industrial growth, or by inducing the development of similar projects adjacent to the built facility must be addressed. Possible growth inducing impacts resulting from the Project are mentioned below.

The Project will not result in long-term population growth in the Project Area. The proposed Project does not require a work force greater than approximately 10 to 15 employees for the operation of the Project, most of who will be drawn from the surrounding area. Even if all of the employees were to be imported from other areas, this increase represents a nominal increase in population. In addition, as discussed in Section 2.9, Socioeconomics, the existing number of housing units in the Project Area is adequate to absorb any incidental population growth and Section 2.8, Traffic and Transportation, discusses that the roads are not used to full capacity. Although the Project's operations phase work force will likely support the local economy through the purchase of goods and services, the type and level of expenditures are not anticipated to generate significant growth in the businesses that serve the proposed facility.

The Project may result in improved local infrastructure such that the Project Area would be in a better position to support unrelated economic development. For example, select local roads would be improved to accommodate Project construction equipment. After the Project is completed, roads would be able to support heavier loads and intersections would be able to accommodate larger vehicles. The addition of a new source of electricity generation into the local electric transmission system would enhance the reliability of the local electrical system to some extent. Additionally, the increased Project-related income to local governments may allow localities to create amenities to attract desirable economic development within the Project Area. These improvements and enhancements are considered Project benefits.

The Project may enhance tourism traffic in the area, especially in the first few years of operation. Greater tourist traffic could generate business for local providers of gasoline, overnight accommodations, and restaurant services. As discussed in Section 2.9, the experience of communities surrounding other wind farms in New York State is that there is a noticeable increase in tourist traffic, but it is not of the level that has led to the establishment of significant new businesses or expansion of existing businesses. Small enterprises, such as wind farm-related souvenir sales, have developed around the Fenner and Maple Ridge wind farms and are the most likely form of new businesses that result from the Project. As the novelty of wind energy decreases, the amount of tourist traffic experienced at wind farms may decrease. However, certain communities such as Fenner have established a renewable energy education and visitor center aimed at sustaining wind farm-related tourism.

Local farmers hosting wind turbines would receive economic benefits that would give them an opportunity to also enhance their operations through better technology or expansion of available property and resources. The preservation of agricultural land and economic gain in the Project Area would allow these landowners another option other than selling their farms for construction of residential tracts and subdivisions if they so choose. The Project would provide a second revenue stream that could balance their income in years of lower agriculture and farm yield.

The Project is proposed in its specific location because of its strong local wind resource and the presence of an existing transmission line that can bring the Project's power to market. The availability of these resources/facilities has shown that other wind power projects will be proposed on adjacent. As mentioned in Section 4.0, other developers are pursuing creation of a wind energy project in the towns of Bellmont and Chateaugay to the east of the Jericho Rise Project site. In addition, a wind energy project is currently under construction in the towns of Ellenburg and Clinton. However, this would be the case whether or not the proposed Project is built.

The construction of the Project will not encourage the development of additional wind power projects in the area. In fact, because existing transmission facilities serving the Project Area have limited additional capacity, the Project would make other wind projects more difficult to develop, because such development could likely only be accommodated by upgrading the existing transmission line. The cost of such upgrades would likely make future projects less economically viable. In addition, landowner willingness and environmental sensitivity play a significant role in the location of wind power projects. The local and state permitting processes in Bellmont and Chateaugay would allow for a thorough review of any subsequent applications for wind energy development.

7.0 CUMULATIVE IMPACTS AND BENEFITS

This section evaluates the potential cumulative impacts that may arise from interactions between the Project and other projects that are under review for approval by local regulators, have been approved for development, and/or are planned for construction in the vicinity of the Project Area. In general, cumulative impact analysis is required under SEQRA where other projects have been specifically identified and either are part of a single plan or program, or there is a sufficient nexus of common or interactive impacts to warrant assessing such impacts together. Cumulative impacts occur when two or more individual project impacts compound or increase the extent of an impact. Cumulative impacts are most often the result of concurrent actions within the same location or in an overlapping larger impact area. These actions may vary from temporary uses associated with construction (i.e., construction traffic resulting from two or more projects being built at the same time) to more permanent impacts simultaneously affecting the same resource (i.e., cumulative visual impacts resulting from wind turbines from two or more projects within the same viewshed).

7.1 Other Development Projects

The Applicant has identified a number of development projects proposed to be constructed in Franklin and Clinton Counties within a 30-mile radius of the Project. These projects include other wind energy projects as well as other commercial development projects in various phases of planning, development, and/or construction.

Eight other wind energy projects have been identified within the Project Area. Two of these projects, the Noble Cherry Hill Windpark and NY Windpower LLC North Slope Wind Project, are in the earliest stages of development and currently have not submitted any formal plans to town or county regulators. Because sufficient information regarding the location and construction schedules for these projects is not available, these were not included in a cumulative impact analysis. The remaining six projects, listed in Table 7.1-1 and shown in Figure 7.1-1, are currently in various stages of the permitting and or construction process. These projects have been selected to be reviewed for potential cumulative impacts with the Project due to their proximity to the Project and similar potential environmental and socioeconomic impacts.

Table 7.1-1. Proposed Wind Projects, Franklin and Clinton Counties, New York

Project Name	Number of Turbines	Approximate Distance of Project Boundary from Jericho Rise Wind Farm a/	Project Status b/
Jericho Rise Wind Farm	53	N/A	Project construction scheduled to commence in Spring of 2009 with some minor grading to occur in the Fall of 2008. Construction is scheduled to be completed by December 2009.
Noble Chateaugay/Bellmont Windpark	86 a/	1.1 mi E of the Project	Construction scheduled to be completed March 2008, but this schedule is unlikely to be met. For the purpose of this document, it is assumed that construction (which is dependent on financing) will be complete in December 2008. Received PSC Certificates of Public Convenience and Necessity in November & December 2007. Received Wind Energy Permit from towns October 2007. Joint DEIS with Bellmont Windpark accepted February 2007. FEIS accepted September 2007.
Noble Altona Windpark	68	20.3 mi SE of the Project	Joint FEIS with Clinton and Ellenburg approved July 2006. Current construction status unknown, although the developer has stated it plans to bring the project on-line in October 2008 (assuming the project receives financing in time).
Noble Clinton Windpark	68	4.3 mi E of the Project	Construction began in June 2007 and scheduled to be completed November 2007, but this schedule has not been met. For the purpose of this document, it is assumed that this project will be commercial by April 2008.
Noble Ellenburg Windpark	54	4.3 mi E of the Project	Construction began June 2007 and scheduled to be completed November 2007, but this schedule has not been met. For the purpose of this document, it is assumed that will be commercial by April 2008.
Marble River Wind Farm	109	7.5 mi NE of the Project	DEIS accepted April 2006. Supplemental EIS accepted September 2007. Expected to begin construction in Spring 2008 and to complete construction and restoration activities in fall 2009.
Wind Horse Beekmantown Wind Farm	13	22.5 mi SE of the Project	Special Use Permit submitted and approved. Scheduled to begin construction in 2007. Limited information is available regarding the project. No EIS was prepared for this project. Current construction schedule unknown.

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a/ Distance calculated using a central point within project boundary of the Project and the closest point of each proposed boundary.
b/ Information obtained through publicly available DEIS information for each project.

Figure 7.1-1 Regional Wind Energy Projects Proposed Within Franklin and Clinton Counties

The subsections below assess the extent to which the impacts of the projects listed in Table 7.1-1 will be cumulative with the impacts of the Project. Specific project information for these other projects was obtained through publicly available documentation such as DEISs, FEISs, and other public notices available through the corresponding company and/or County websites.

Additionally, the Applicant continues to prospect for potential development sites within this wind rich area. While no formal application for development has been made, the Applicant has continued to option land within the Project Area where the possibility of future development may exist. As no formal project plans have been developed at this time, a cumulative impact analysis with the Project is not possible. If project plans are sufficiently developed prior to preparation of the FEIS for this Project, this cumulative impact analysis will be updated to include the new plans.

In conducting this cumulative impact analysis, the following general assumptions have been made:

- The most recent construction schedules available are included in Table 7.1-1 and show some overlapping construction efforts. These schedules are dynamic and subject to change, but for the purposes of this analysis they are the schedules being assumed.
- Construction of the Horizon Marble River Wind Farm is not scheduled to begin until after the construction of the Noble Clinton and Noble Ellenburg Windparks are scheduled to be completed.
- The analyses in this section assume that all of the indicated projects will be constructed as proposed and are based on publicly available project information appearing in project permit applications and permit documents.

The extent to which the potential impacts of the Project and of these identified wind energy projects will be cumulative is discussed in the sections below.

7.2 Wetlands

Wetlands and surface waters are commonly encountered habitats throughout the proposed Project Area, as shown on NYSDEC and NWI wetland maps. The facility layout was purposely developed to avoid or minimize disturbance to wetland habitats to the extent practicable; however, some impacts to wetlands are unavoidable. As discussed in Section 2.2, the Project would temporarily affect 8.82 acres and permanently affect 0.88 acre of wetland habitats through soil disturbing activities. In addition, some wetlands would be permanently affected by vegetation maintenance practices rather than soil disturbances, which would convert 1.50 acres of forested wetlands to non-forested wetlands.

Other wind generation facilities within the northern New York region, including Noble Chateaugay/Bellmont Windpark, Noble Clinton Windpark, Noble Altona Windpark, Marble River Wind Farm, and Noble Ellenburg Windpark, are also unable to completely avoid disturbance to wetlands. Together, these wind generation facilities (excluding this Project) will temporarily disturb 77.22 acres and permanently disturb 17.81 acres of federally regulated wetlands, as listed in Table 7.2-1. Permanent and temporary disturbances to state-regulated wetlands by these regional wind generation facilities are estimated to total 124.4 acres, with approximately 257.3 acres of state-regulated upland buffer habitats. Only the smaller Windhorse Beekmantown Windpark will result in no effects to wetlands.

Table 7.2-1. Regional Comparison of Wetlands Impacts from Wind Generation Facilities in Northern New York (values are in acres)

	NYSDEC-regulated				Federally regulated	
	Temp	Perm	Total	Buffer	Temp	Perm
Noble Chateaugay/Bellmont Windpark a/	-	-	-	2.11	0.88	0.01
Noble Clinton Windpark b/	2.47	0.68	3.15	32.21	4.05	1.04
Noble Altona Windpark c/	0.49	0.07	0.56	5.05	0.62	0.23
Marble River Wind Farm d/	-	-	116.34	217.88	68.45	15.5
Noble Ellenburg Windpark e/	3.54	0.82	4.36	-	3.22	1.03
Windhorse Beekmantown Windpark f/	-	-	-	-	-	-
Jericho Rise Wind Farm g/	-	-	-	-	8.82	0.88

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a/ Noble Chateaugay / Bellmont Windpark DEIS. Note that in its DEIS, Noble does not differentiate between federal- and state-regulated wetlands.
b/ USACE Revised Wetlands Permit Application, July 2006; New York State Environmental Notice Bulletin (NYS ENB), Region 5, September 20, 2006
c/ USACE Public Notice, January 8, 2007; NYS ENB Region 5, September 27, 2006
d/ Supplemental DEIS
e/ USACE Public Notice, December 28, 2006; NYS ENB, September 20, 2006
f/ NYS ENB, February 14, 2007
g/ the Applicant has not completed a formal wetland delineation survey, the values presented here may change.

Disturbances to wetlands and waterbodies affects the functions and values, such as fish and wildlife habitat, flood protection and abatement, and retention and biological diversity, among others (NYSDEC 2008), that they provide to surrounding areas. Wetland disturbance will be necessary in six of the seven regional wind generation facilities listed in Table 7.2-1 during construction to develop access roads, underground and overhead collection lines, turbines and crane pads. According to information that is publicly available, projects under consideration in this cumulative impacts analysis have differing schedules (see Table 7.1-1), where Noble's Clinton and Ellenburg Windparks were scheduled to have completed construction as of 2007; Noble Chateaugay/Bellmont Windpark, Noble Altona Windpark, and Marble River Wind Farm will construct in 2008. This Project will construct in 2009, when construction of the Marble River Wind Farm will be primarily restoration activities and nearing completion. Most of these wind generation facilities will cause localized and temporary effects to wetlands during construction;

however, these effects would occur asynchronously through time throughout the five projects, and wetland functions and values would be restored following construction. Therefore, significant cumulative impacts from temporary disturbances associated with these five projects are not anticipated.

Permanent disturbance to wetlands is regulated, both by state and federal agencies, which require avoidance and minimization, as well as compensatory mitigation for unavoidable disturbances. All wind projects under consideration in this cumulative effects analysis that would disturb wetlands have undergone avoidance/minimization assessments, and are also required to restore or improve functions and values of degraded wetlands through compensatory mitigation, resulting in a net increase in wetland acreage. To maintain ecological functions, wetland mitigation sites are usually located in the same watershed in which the affected wetlands occur. Compensatory mitigation is typically implemented and functioning in advance of or soon after project impacts, thereby reducing temporal losses of functions and values as well as uncertainty over whether the mitigation will be successful in offsetting project impacts. Because compensatory mitigation is anticipated to be in effect during and following construction, wetland functions and values to the watershed are adequately maintained. Furthermore, compensatory mitigation works to prevent “no net loss” of wetlands, and tends to have greater than 1 to 1 replacement ratios. Therefore, operation of the planned wind generation facilities considered in this analysis is not expected to result in significant cumulative adverse impacts to wetlands.

7.3 Wildlife

As discussed in Section 2.3, construction and operation of the Project is not expected to significantly affect most wildlife species. Limited mortality may occur to less mobile species (e.g., amphibians, reptiles, small mammals); however, mobile species are expected to avoid areas of active construction in favor of suitable adjacent habitat. Temporarily displaced wildlife are expected to return to the area after the completion of construction activities. Some wildlife habitats would be permanently converted to other uses, causing a localized reduction in habitat availability; however, wildlife use of suitable adjacent habitats is expected to limit these effects. Significant adverse effects to the quality or quantity of wildlife habitats are not expected to occur as a result of the proposed Project.

From a regional perspective, localized disturbances to wildlife and wildlife habitats are expected to occur during construction of all of the wind farms listed in Table 7.1-1. Temporal differences in project schedules will ameliorate the cumulative effects of temporary project impacts to wildlife and wildlife habitats; as of January 2008, construction of the Noble Ellenburg and Noble Clinton Windparks appears to be mechanically complete as scheduled, with the remaining four projects in various stages of construction or construction planning. Disturbances to wildlife and wildlife habitats associated with wind development are consistent with disturbances caused by agricultural and logging practices throughout the region. Permanent loss of wildlife habitats caused by development of these six projects is minimal relative to the habitat coverage in the region. In these projects, wildlife and wildlife habitat are common and regionally appropriate. Significant cumulative adverse effects are not anticipated because none of the projects, taken on their own, are anticipated to cause significant impacts to wildlife or wildlife habitats and the projects, taken together, will not cause impacts that interact with or increase the extent of the impacts of other projects.

Potential cumulative impacts on threatened and endangered species are discussed in Section 7.5.

7.4 Birds and Bats

Construction Impacts to Birds and Bats

As discussed in Section 2.3, construction of the Project is expected to result in direct and indirect disturbances to birds and bats. Some species are likely to be displaced from preferred habitats; however, displaced species would relocate to other adjacent suitable habitat areas. Impacts from direct or indirect construction-related disturbances are expected to be short-term, temporary, and localized. Species that occur in the Project Area are common and widely distributed. Significant adverse affects caused by construction of this Project are not anticipated to occur.

Although some birds and bats would be affected by construction of regional projects, none listed in Table 7.1-1 are expected to result in significant adverse effects to these species. The DEIS of each wind generation facility considered in this analysis indicated that birds and bats in the project area were common and widely distributed, and that the amount of bird and bat habitat affected by construction was minimal relative to that which is available in adjacent areas. Each wind generation facility concluded that displaced birds and bats would return to the project area soon after the completion of construction activities.

Construction related effects to birds and bats caused by one project are not expected to amplify the effects caused by other projects considered in this analysis. Temporal differences in project schedules will lessen the cumulative effects of temporary project impacts to birds, bats, and their habitats; as of January 2008, construction of the Noble Ellenburg and Noble Clinton Windparks appears to be mechanically complete as scheduled, with the remaining four projects in various stages of construction or construction planning. Cumulatively, construction-related effects are not expected to result in significant adverse impacts to birds and bats.

Operation Impacts to Birds

Operation of wind generation facilities is known to cause fatalities to birds. Results from mortality studies at eastern wind facilities have reported fatality rates between 3 and 10 bird fatalities per turbine per year (Kerns and Kerlinger 2004; Nicholson 2002, 2003; Jain et al. 2007). The Maple Ridge Wind Farm in Lewis County, New York, is the closest wind project at which post-construction monitoring studies have been conducted. In that study, the annual per turbine fatality rate estimate was between 3.1 and 9.6 birds (Jain et al. 2007). In all the eastern studies, it was estimated that approximately 60 to 80 percent of the avian fatalities were migrant songbirds.

Relative to other sources of avian mortality, that which is caused by avian-wind turbine collision is low. According to Erickson et al. (2001), major sources of avian mortality are attributed to collisions with windows and buildings (97,600,000 to 976,000,000 birds per year) and automobiles (60,000,000 to 80,000,000 birds per year), among many others. The National Wind Coordinating Collaborative (2004) reported 2.3 bird deaths per turbine per year for 12 wind facilities across the country; those located in the eastern United States reported an average 4.3 bird deaths per turbine per year.

Migrant and Breeding Birds

WEST's study of the Project Area, the Noble Clinton Windpark, and the Marble River Wind Farm concluded that large concentrations of migrating birds were absent from those project areas. Breeding bird surveys identified commonly and widely distributed species present in the Project. WEST noted that no unusual or unique bird observations were made in the Project Area during either breeding bird or migrant bird studies. Operation of the Project is not anticipated to significantly affect migrant or breeding birds.

Conclusions from WEST's studies were echoed by conclusions drawn from similar avian studies for projects listed in Table 7.1-1. Migrant birds may be subject to turbine collisions; however, these occurrences are expected to be low because passage rates over each of the five projects are low. Commonly observed spring and fall migrant species in the Project Area, as well as in the Noble Clinton Windpark and Marble River Wind Farm study sites, consisted of species with stable populations (see Appendix E). Of the projects considered herein, none indicated significant adverse affects to migrant bird populations.

Similarly, the breeding bird survey identified regionally appropriate species in the Project Area, where commonly observed birds consisted of disturbance-tolerant species (e.g., European starling, red-winged blackbird). As with migrant birds, large or unusual populations of breeding birds were absent from the Project Area; this same conclusion was reached with respect to each of the five projects considered herein. Localized reductions in these stable populations are not expected to cause significant adverse effects to breeding bird populations in the project areas.

National and regional average estimates of avian mortality from post-construction monitoring studies of wind farms can be used to evaluate potential avian mortality at individual wind farms. In its DEIS, each project considered in this analysis estimated bird fatalities per turbine per year based on the national average bird fatality per turbine per year as well as the eastern region bird fatality rate (2.3 and 4.3 birds per turbine per year, respectively [NWCC 2004]), as listed in

Table 7.4-1. Based on these estimates, cumulative avian mortality from regional wind generation facilities could be 1,037 to 1,766 birds per year. Each of these projects concluded that significant adverse effects were not anticipated as a result of project operation.

Table 7.4-1. Estimated Cumulative Avian Mortality from Wind Generation Facilities in Northern New York

Project	Number of Turbines	Estimated Bird Fatalities per Year Based on NWCC 2004 National Average a/	Estimated Bird Fatalities per Year Based on NWCC 2004 Eastern Average b/	Estimated Range of Bird Fatalities per year based on 1st Year Results of Maple Ridge Wind Farm c/
Jericho Rise Wind Farm	53	122	228	164 - 509
Noble Chateaugay/Bellmont Windpark	86	198	370	267 - 826
Noble Clinton Windpark	68	156	293	211 - 653
Noble Ellenburg Windpark	54	124	233	167 - 518
Noble Altona Windpark	68	156	293	211 - 653
Marble River Wind Farm	109	251	293	338 - 1,046
Wind Horse Beekmantown Wind Farm	13	30	56	40 - 125
Total	**451**	**1,037**	**1,766**	**1,398 - 4,330**

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a/ National Wind Coordinating Collaborative (NWCC 2004) reported national avian mortality rates of 2.3 birds per turbine per day (birds/turbine/day). Estimated rates of avian mortality in this table were derived by multiplying the number of turbines in each wind generation facility by the national average avian mortality rate.

b/ NWCC (2004) reported average avian mortality rates in the eastern US region of 4.3 birds/turbine/day. Estimated rates of avian mortality in this table were derived by multiplying the number of turbines in each wind generation facility by the eastern regional average avian mortality rate.

c/ Maple Ridge Wind Farm post-construction monitoring occurred from June through November, 2006 using several methods. Depending on the method employed, average fatalities ranged from 3.1 to 9.6 birds/turbine/year) (Jain et al. 2007). Ranges reported in this table, based on data from Maple Ridge, were estimated by multiplying the low and high average mortality rates per turbine per year by the number of turbines in each wind facility.

The Maple Ridge Wind Farm, which recently completed its first year of post-construction monitoring, found that avian mortality ranged from 3.1 to 9.6 birds per turbine per year (Jain et al. 2007); this range of values provides insight about potential avian mortality in the projects considered in this analysis. Using mortality rates from Jain et al. (2007), cumulative mortality per year of wind developments considered herein could range between from 1,398 to 4,330 bird fatalities, as shown in Table 7.4-1. These values are consistent with or exceed those reported in NWCC (2004); however, none of the projects considered in this analysis, either alone or taken together, are expected to cause significant adverse impacts to migrant and breeding bird populations. Each of the five projects in this regional analysis reported similar conclusions about potential effects to birds: populations found in the project area were not unusual, and commonly observed species were considered to be stable or increasing populations (rather than declining populations of rare species); a diversity of species were observed during pre-construction surveys, which translates to a diversity of species potentially affected by turbine collisions; each study concluded that evidence of concentrated migration was lacking the project area; and that the group with greatest risk of turbine collision were fall migrant passerines. Expectations about these regional projects are bolstered by findings from the Maple Ridge Wind Farm (Jain et al. 2007). At Maple Ridge Wind Farm, avian fatalities affected 30 species; 26 of which were passerines. Over the course of the study, fall migrants accounted for 65 percent of fatalities; and 99 percent of affected passerine species are nocturnal migrants. Jain et al. (2007) reported that most of the species affected by fatality (most commonly found carcasses were golden-crowned kinglet [*Regulus satrapa*] and red-eyed vireo [*Vireo olivaceus*], respectively) were listed as regionally stable or increasing populations; several species were listed as locally declining populations (e.g., red-winged black-bird and common grackle), however, those species were common and widely distributed.

Because concentrated migration corridors are lacking in the region considered in this analysis, fewer migrating birds would be at risk of colliding with turbines. Rare or unusual populations are lacking from the region; and migrant populations most likely to be affected by turbine fatality are mostly stable or increasing throughout the region in this analysis. The cumulative loss of birds from the region considered in this analysis is not considered to be biologically significant and is unlikely to adversely affect breeding and migrant bird populations found in these areas. Therefore, cumulative significant adverse affects are not anticipated to result from operation of wind generation facilities in the region.

Raptors

Although raptors were observed with some regularity during avian surveys of the Project, WEST reported that concentrations of spring and fall migrant raptors were largely absent from the Project Area and from the Noble Clinton Windpark and Marble River Wind Farm sites. Raptors that were commonly observed during surveys, including turkey vulture and red-tailed hawk, are common and widely distributed populations that would be unaffected by localized project-related mortality. WEST concluded that both migrant and breeding raptor use of the Project Area was low, and thus Project impacts to raptors would also be low.

From a regional perspective, wind projects considered in this analysis are not expected to cause significant cumulative adverse effects to breeding or migrant raptors. In general, mean raptor use of the region is low, both in migrating raptor and breeding bird surveys; therefore, direct raptor mortality is expected to be low. Habitats used by raptors may be indirectly affected by a wind project; however, raptors are expected to return to the area after temporary impacts cease, or relocate to nearby suitable habitats. For these reasons, each project considered in this analysis indicated that no significant adverse effects were expected to occur as a result of construction or operation of the wind facility.

The expectation that regional wind development will not cause significant adverse impacts to raptors is strengthened by studies of raptor mortality at wind generation faculties around the country. Raptor mortality at newer generation wind projects is lower than that reported for older California projects (Erickson et al. 2001, 2002); similarly, few raptor fatalities were reported for eastern wind projects that have been monitored (see Nicholson 2002, 2003; Kerns and Kerlinger 2004; Koford et al. 2005; Johnson et al. 2000). Only one raptor fatality was found during the first year of monitoring at the recently constructed Maple Ridge Wind Farm in Lewis County, New York (Jain et al. 2007). Because raptor use of the projects considered in this analysis is low, and regional and national studies of newer wind farms show evidence of low raptor mortality, cumulative impacts to raptor populations are expected to be low.

Operations Impacts to Bats

Operation of wind generation facilities is known to cause fatalities to bats, particularly to long-distance migrant tree bats of the *Lasiurus* genus. Results of AnaBat acoustical surveys indicated high call rates from the Project Area; however, AnaBat does not differentiate between calls made by single bats or single passes made by individual bats. As an innovative approach to better understand bat activity in the Project Area, radar studies conducted during suspected periods of fall migration were used in conjunction with other passive and active sampling methods. WEST found that, in contrast to high call rates observed in the Project Area, bat passage rates recorded during fall migration were very low, particularly when compared to passage rates collected during avian migration. These passage rates suggest that concentrations of migrant bats in the Project Area are quite low (see Appendix E). WEST concluded that although migrant bats will be at greater risk to turbine collisions than resident bat species, significant adverse impacts to migrant bat species are not anticipated.

During mist-net surveys, commonly encountered resident bat species included the eastern red bat, little brown bat and big brown bat; rare species were not encountered. WEST conducted surveys for bat habitats, especially the small-footed myotis, in the Project Area and concluded that only marginal habitat was present. More information about this species is presented in Section 7.5. Impacts to resident bats in the Project Area are anticipated to be low.

Based on data collected from other wind facilities considered in this analysis, operational impacts to resident bats are expected to be lower than to migratory bats. The NWCC (2004) reported average fatalities of 3.4 and 46.3 bats per turbine per year for the U.S. national average and eastern region wind facilities, respectively; however, these values do not indicate seasonal trends in bat fatality, nor do they differentiate between resident and migrant populations. Annual average bat fatality estimates from the Maple Ridge Wind Farm, the nearest monitored project to the proposed Project, varied from 15 to 24 bats per turbine, where 244 of 326 identified bat fatalities (75 percent) occurred in July and August (Jain et al. 2007). If patterns of bat fatality in other regional wind facilities are consistent with those observed in the Maple Ridge Wind Farm, then cumulative annual bat fatality could average 6,855 to 11,050 bats from northern New York, as described in Table 7.4-2. Information about bat mortality from wind generation facilities is limited; estimates of bat mortality presented in this discussion could vary among individual turbines.

As recommended by the USFWS Interim Guidance for Avoidance and Minimization to Birds and Bats from Wind Development (2003), and by Stilwell (2007), the Applicant will conduct post-construction monitoring for birds and bats for a period of three years to determine the extent to which bird and bat fatalities occurred as a result of operational activities. These data will be provided to wildlife management agencies to better understand the implications of wind development on bird and bat populations, as well as to develop appropriate mitigation measures if impacts to bats significantly exceed the anticipated impacts.

Table 7.4-2. Estimated Cumulative Bat Mortality from Wind Generation Facilities in Northern New York

Project	Number of Turbines	Estimated Bat Fatalities per Year Based on NWCC 2004 National Average a/	Estimated Bat Fatalities per Year Based on NWCC 2004 Eastern Average b/	Estimated Range of Bat Fatalities per year based on 1st Year Results of Maple Ridge Wind Farm c/
Jericho Rise Wind Farm	53	180	2,454	806 - 1,299
Noble Chateaugay/Bellmont Windpark	86	292	3,982	1,307 - 2,107
Noble Clinton Windpark	68	231	3,148	1,034 - 1,666
Noble Ellenburg Windpark	54	184	2,500	821 - 1,323
Noble Altona Windpark	68	231	3,148	1,034 - 1,666
Marble River Wind Farm	109	371	5,047	1,657 - 2,671
Wind Horse Beekmantown Wind Farm	13	44	602	198 - 319
Total	**451**	**1,533**	**20,881**	**6,855 - 11,050**

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a/ National Wind Coordinating Collaborative (NWCC 2004) reported national average bat mortality rates for the 3.4 bats per turbine per day (bats/turbine/year). Estimated bat fatalities based on NWCC results were derived by multiplying the number of turbines by the reported national average. This estimate was used in each of the Noble Windpark's DEISs and the Marble River Wind Farm DEIS.

b/ NWCC (2004) reported bat mortality rates for the eastern US region of 46.3 bats/turbine/year. Estimated bat fatalities based on NWCC results were derived by multiplying the number of turbines by the reported eastern regional average. This estimate was used in the Marble River Wind Farm DEIS.

c/ Maple Ridge Wind Farm post-construction monitoring occurred from June through November 2006 using several methods. Depending on the method employed, average fatalities ranged from 15.2 to 24.5 bats/turbine/year) (Jain et al. 2007). Ranges reported in this table, based on data from Maple Ridge, were estimated by multiplying the low and high average mortality rates per turbine per year by the number of turbines in each wind facility.

7.5 Threatened and Endangered Species

According to USFWS, federally protected species are not expected to occur within the Project Area. With the exception of a few transient individuals, birds and bats protected by the ESA were not observed in the Project Area during spring, summer, and fall surveys. Because few, if any endangered or threatened species are likely to be present in the Project Area, adverse effects to these species are not anticipated. Similarly, federal species[3] were not identified by nearby wind generation projects listed in Table 7.1-1, and none observed federal species during site surveys. Because only transient individuals are expected to be present in the project areas considered in this analysis, cumulative adverse effects to federal endangered and threatened species are expected to be low and are unlikely to occur at levels sufficient to cause significant adverse effects at those populations.

The potential occurrences within the Project Area of two state-endangered and four state-threatened species, as well as 10 state species of concern, were identified during consultation with NHP and other sources, as discussed in Section 2.3. Three of four species identified by the NHP (i.e., upland sandpiper, common loon, and least bittern) that were known to occur within 10 miles of the Project Area were not observed during surveys conducted in spring, summer, and fall. Similarly, the small-footed myotis was not observed during mist-net sampling efforts. Because these species were not observed during surveys, they are expected to occur only as transient individuals. These species are unlikely to be affected by significant adverse impacts from the Project.

Northern harriers, a state-threatened species identified by the NHP to occur within 10 miles of the Project, were observed and likely nest within the Project Area due to the predominance of agriculture and the presence of old weedy fields and hay meadows, particularly in the northern portion of the Project Site. Though northern harriers are relatively common in open agricultural areas, individuals generally fly close to the ground (<5 meters) and rarely soar while on breeding grounds. Because this behavior is not likely to put them at great risk from turbine collisions, significant adverse effects to northern harriers are not expected to result from this Project. As noted in Section 2.3, this species is not a common turbine fatality at other wind generation facilities. Most of the wind generation projects in the area observed resident and potential migrant northern harriers as well, and drew similar conclusions. Although this species commonly occurs throughout the areas considered in this analysis, due to the reasons described above, cumulative effects to this species are not anticipated to be significant.

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[3] The bald eagle was removed from the ESA, as discussed in the *Federal Register* (50 CFR Part 17) on July 9, 2007. Noble Chateaugay/Bellmont, Noble Clinton, Noble Ellenburg, Noble Altona, and Horizon Marble River each indicated that the USFWS identified potential presence of transient bald eagle individuals in the project areas. The bald eagle is listed in New York as threatened.

As discussed in Section 2.3, critical habitats for potential state threatened and endangered species were not identified as being present in the Project Site during consultation with the USFWS and NHP; however, many habitat types that state-listed species require for various life stages would be affected during construction and operation. These effects would be localized and temporary because suitable adjacent habitats are readily available. Most of the wind generation projects considered in this analysis also identified potential habitats for state-protected species; those projects similarly concluded that although displacement and mortality might occur, direct and indirect effects would be localized and would affect few, if any individuals. Each project concluded it would not cause significant adverse effects to state-listed species. Because few individuals of state-listed species are expected to occur in this region, cumulative adverse effects are not anticipated to result from construction and operation of the wind generation facilities listed in Table 7.1-1.

Development of wind generation facilities in northern New York is not expected to cause cumulative significant adverse effects to threatened and endangered species. The environmental impact statements of the Noble Altona, Noble Clinton, Noble Ellenburg, Noble Chateaugay/Bellmont Windparks, and Marble River Wind Farm projects each reported that, although transient individuals were likely to occur, threatened and endangered species would not be significantly affected by construction and operational activities. The magnitude of temporary effects, primarily habitat displacement caused by project construction to the few individuals that may be affected is likely to be ameliorated by temporal variations in project schedules. As noted in Table 7.1-1, the Noble Clinton and Noble Ellenburg Windparks are expected to have completed construction; and the remaining projects are all expected to conclude the majority of construction before the Project commences construction. The temporary effects of habitat displacement from these projects will cease when construction activities end. Cumulatively, significant adverse effects to threatened or endangered species are not anticipated to occur from construction of these projects. Permanent changes in the landscape, primarily from habitat loss and increased fragmentation, amount to very little cover of the total area affected by these six projects. As a result, cumulative significant adverse affects to threatened or endangered species would not result from operation of these projects.

7.6 Aesthetic and Visual Resources

Aesthetic and visual impacts of the Project would occur within the context of landscape modifications associated with past, current, and expected future uses in the Project Area. As discussed in Section 2.5, the local landscape shows evidence of changes resulting from agricultural practices, forest management activities, urban and rural residential development, large correctional facilities, a direct-fire, wood-chip power generation facility, and construction of infrastructure facilities, such as roads and electric transmission and distribution lines, including the double circuit Massena-Willis-Plattsburgh 230-kV line, the Malone-Willis-Plattsburgh, and the Willis-Chateaugay 115-kV line, and the 115-kV-rated transmission line feeding the Chasm hydroelectric facility in northern Chateaugay. Although the existing landscape in the vicinity of the Project and elsewhere in the surrounding area has been substantially modified, the additive visual effect of the Project would represent a noticeable change from the baseline aesthetic condition in areas where those facilities were visible and prominent.

A key consideration in evaluating the visual impacts of the Project is its incremental effect within the context of other current and near-future wind energy developments within the surrounding region. When construction of the Project begins, the landscape of the surrounding region would already have been modified by the development of the other wind energy projects under consideration. These seven wind energy projects combined would result in the presence of 398 large wind turbines within northwestern Clinton County and northeastern Franklin County. The landscape setting and aesthetic impacts for these other wind projects would be similar to those described for the Project, although there would be some differences with respect to viewer locations, numbers, and sensitivity for the specific viewer groups affected.

Evaluation of the cumulative visual impacts of the Project is based on joint consideration of the analysis summarized in Section 2.5 (as documented in more detail in Appendix F) and the cumulative impact analyses performed for other wind projects in the vicinity. In particular, the combined results for two cumulative visual impact analyses performed by Saratoga Associates (2007a and 2007b) provide viewshed and photo simulation documentation that is directly applicable to assessing the cumulative impacts of the Project in the context of the visual impacts of the remaining wind projects.

In addressing the potential cumulative visual impacts of multiple wind power projects, it is important to consider the geographic distribution of the projects. The Noble Altona Windpark and Wind Horse Beekmantown Wind Farm project sites are both located along the eastern boundary of the Adirondack State Park. They are approximately 20 miles or more from the Project, and at least 8 to 10 miles from any of the other wind project sites. A cumulative viewshed analysis for the Noble projects (Chateaugay/Bellmont, Clinton, Ellenburg, and Altona Windparks), Wind Horse Beekmantown Wind Farm, and the Marble River Wind Farm projects (Saratoga Associates 2007a) indicates that locations within the region from which a viewer would be able to see one or more turbines from all of the other projects would be extremely limited, comprising only 63 total acres at a number of widely scattered sites. Based on the distance separating the Altona and Beekmantown projects from the other pending and proposed projects, the visual impacts of these two projects would have little interaction with the visual effects of the Project and the other projects under consideration.

Conversely, the Project and the Noble Chateaugay/Bellmont, Noble Clinton, Noble Ellenburg and Horizon Marble River project sites are grouped together in an area stretching to the north and northeast from the Adirondack State Park to the international border. The project areas for these six projects form an essentially continuous swath stretching nearly 20 miles from east to west and from 5 miles to nearly 10 miles north to south. With all projects completed as proposed, this area would include a combined total of 370 wind turbines. The overall scale of wind farm development and the number of turbines would likely influence how viewers perceive the change in the landscape. Viewers exposed to wind projects have been shown to react more negatively to longer lines of turbines than to isolated smaller clusters (Righter et al. 2002). This finding suggests that the combined effects from multiple projects developed next to each other might be greater than the sum of their individual impacts.

Based on the geographic arrangement of the respective projects, the potential for cumulative visual impacts from the Project is greatest in association with the Noble Chateaugay/Bellmont Windpark, which abuts the Project Area to the east. The viewshed analysis discussed in Section 2.5 indicates that one or more turbines from the Project would be visible from approximately 18 percent of the area within a 5-mile radius of the Project, while no Project turbines would be visible within 82 percent of the visual study area. Similarly, the original cumulative visual analysis for the Noble Chateaugay/Bellmont Windpark (which did not include consideration of the Project) determined that no turbines from the Noble Chateaugay/Bellmont project or from the other Noble projects (Clinton, Ellenburg, and Altona Windparks), Marble River Wind Farm, and/or Beekmantown projects would be visible from 64 percent of the area within 5 miles of the Noble Bellmont/Chateaugay Windpark (Saratoga Associates 2007a). A supplemental cumulative viewshed analysis of the Noble Bellmont/Chateaugay Windpark and the Project (Saratoga Associates 2007b) determined that no wind turbines (from the combined projects) would be visible from 82 percent of the area within 5 miles of the exterior boundary of either project. This finding is virtually identical to the viewshed analysis for the Project alone, which determined that no turbines would be visible from 82 percent of the area within 5 miles of the Project. The supplemental analysis performed by Saratoga also showed that 11 percent of the area within 5 miles of one or both projects would have views of 51 or more turbines, and 4 percent of the area would have views of 101 or more turbines (of the combined total of 139 turbines for the two projects). In comparison, the viewshed analysis for the Project alone indicated that 41 or more turbines could be visible from 2 percent of the area within 5 miles of the Project boundary.

Figure C2 in the supplemental visual analysis for the Noble Bellmont/Chateaugay Windpark and the Project (Saratoga Associates 2007b) identifies the geographical distribution of the areas with views of turbines within one or both projects, and helps to illustrate the incremental contribution of the Project to turbine visibility. For example, there is a substantial area situated between Chateaugay and Earlville that would have distant views of the Project to the southwest; in most locations, these views would include 41 to 53 Project turbines (see Figure 2.5-2 in this DEIS). With both the Noble Bellmont/Chateaugay Windpark and the Project in place, the views from most of these same locations (excluding, for now, the effect of other wind projects further to the east) would include from 101 to 139 turbines (see Figure C2 in the Noble Bellmont/Chateaugay Windpark supplemental analysis). Consequently, most viewers in these specific locations would see all or virtually all of the turbines in both projects within the same general view orientation. A similar situation in terms of numbers of turbines is mapped for several other locations, including an area along the Malone-Chateaugay Road southwest of the Town of Burke and several areas generally southeast of the Town of Chateaugay and north of Brainardsville. In summary, comparison of these two viewshed maps indicates that most locations that would provide views of Project turbines would also have views of Noble Bellmont/Chateaugay Windpark turbines, and the total number of turbines visible would be substantially larger than would be the case for either project in isolation. However, this condition would occur within a small percentage of the visual study area, as no turbines from either project would be visible in over 80 percent of the study area.

The original cumulative visual analysis for the Noble Chateaugay/Bellmont Windpark (which addressed all of the pending wind projects except the Project) included viewshed analysis for proposed turbines located to the east of the Noble Chateaugay/Bellmont Windpark. This analysis indicated that views of more than 200 turbines would be possible from nearly 2 percent of the Noble Bellmont/Chateaugay Windpark visual study area, and that from 100 to 200 turbines would be visible over another 7 percent of the study area (Saratoga Associates 2007a). Several areas identified in this analysis as having views of large numbers of turbines in projects other than the Project correspond to areas of turbine visibility identified in the Project visual analysis. For example, the original Saratoga analysis indicates that 208 turbines (from projects other than the Project) would be visible from a viewpoint at the intersection of Earlville and Summit Roads to the northeast of the Village of Chateaugay, and that much of the area surrounding that viewpoint would have views of more than 200 turbines. As noted above, the Project viewshed analysis determined that more than 40 Project turbines would be visible from much of the same area. In this case, considering the effects of the full set of wind projects, the net incremental effect of the Project would be to increase the number of turbines visible from about 200 to around 250, or an increase of approximately 25 percent. By comparison, the original Noble Bellmont/Chateaugay Windpark analysis shows another area near Cemetery Road southwest of Chateaugay where up to 277 turbines would be visible; parts of this area are screened from views to the Project turbine locations, while from 1 to 10 Project turbines would be visible from other locations in this general area. While this area is outside, but close to the Project Site, the incremental visual effect from the Project in this specific area would be limited at most, ranging from no incremental effect to an increase of up to about 4 percent in the total number of turbines visible.

The potential for the Project to contribute to cumulative visual impacts would be diminished by the location of the Project at the western end of the series of pending wind farms. For essentially any viewing locations situated to the east of the Noble Chateaugay/Bellmont Windpark, any Project turbines in the same field of view with turbines from the other projects would be seen at background viewing distances, and would be the most distant structures in the view. At locations far enough to the east that facilities from the Marble River Wind Farm, Noble Ellenburg Windpark, Noble Clinton Windpark, Noble Chateaugay/Bellmont Windpark and the

Project could all be in the view, the Project turbines would be at such a distance (over 10 miles from the central part of the Marble River Wind Farm, for example) that they very likely would not be discernible. Even from areas within the Noble Clinton or Ellenburg windparks, Project turbines would be far enough in the background (at least 5 miles) that they would be dominated by views of closer turbines in other projects, and would be fading into the terrain. The supplemental visual analysis for the Noble Bellmont/Chateaugay Windpark and the Project (Saratoga Associates 2007b) includes simulations (see Figures C-7b, C-7c, and C-7d in the referenced document) that exemplify future views toward the Project from areas to the east. From a viewpoint on New York Highway 190 slightly to the east of the Noble Bellmont/Chateaugay Windpark, viewers would see portions of a large number of Project turbines in the background above the treeline. These simulations also show that over 20 of the Noble Bellmont/Chateaugay Windpark turbines would be evident in the middleground; however, and would overshadow the visible presence of the Project turbines.

The cumulative contribution of the Project would be larger from some locations, particularly in the northern and/or northwestern parts of the study area. The viewshed analyses for the respective wind projects indicate there are some locations, primarily in open areas to the north of U.S. Highway 11, from which viewers would likely be able to see the full sweep of wind farms extending from Marble River to the Project. While all of the projects would be seen at considerable distances in these views, the numbers of turbines visible and their geographic expanse would be large. Even in these cases, however, the Project would represent a moderate increase to the number and expanse of turbines within the Marble River Wind Farm, Noble Chateaugay/Bellmont Windpark, Noble Ellenburg Windpark, and Noble Clinton Windpark. In areas to the northwest of the Project, however, the Project turbines would be noticeably more prominent than the turbines from the other projects. The supplemental visual analysis conducted by Saratoga Associates (2007b) also includes simulations (see Figures C-6b, C-6c, and C-6d in the referenced document) that illustrate this condition. From a viewpoint on U.S. Highway 11 near Burke Center, viewers would see portions (primarily rotors) of most of the Project turbines in the background to the southeast; in this view, the turbines fade into the sky and are faintly visible. While the corresponding viewshed analysis indicates that some Noble Bellmont/Chateaugay Windpark turbines would also be visible at this location, they are not evident in the simulations (see Figure C-6b and C-6d). Because the viewing distance at this location is more than 3 miles, the turbines are not at all prominent and the visual impact from the Project alone or in combination with the Noble Bellmont/Chateaugay Windpark would be low.

The preceding discussion addresses the potential for cumulative visual impacts from specific viewpoints or localized areas. The overall effect of multiple wind energy projects on the regional landscape and the experience of viewers when considered over time and at multiple locations is also a consideration. Depending on their route, travelers passing through the Franklin-Clinton County area might have at least intermittent views of wind farms for a relatively long duration.

For example, motorists traveling east on U.S. Highway 11 would likely begin to notice wind development (turbines from the Project, initially) near the Hamlet of Malone Junction, about 8 miles west of Chateaugay. Facilities from other projects would come into view with continued progress eastward. Based on the visibility analyses for the respective projects, at least moderate numbers of turbines would be in view almost continually from Malone Junction to the vicinity of Ellenburg. Travelers on this route could be viewing turbines most of the time over a stretch of highway of about 20 to 25 miles, and over a time duration of possibly one-half hour or more. While these views of wind turbines would be intermittent and would be at background distances in some locations, viewers would likely recall seeing extensive wind energy development in the region. Similar experiences, although over shorter distances and with more intermittent views of turbines, would occur for people traveling on New York State Routes 374 and 190.

This type of impression would also occur, probably on a more consistent basis, for residents and frequent visitors to the local area. While some residents of the Village of Chateaugay, for example, might not see turbines from one or more of the wind projects on a daily basis, they would likely experience repetitive views of large numbers of wind turbines through their local travels over a period of weeks, months, or years. Consequently, many local residents and frequent visitors would likely perceive a substantial change to the overall character of the regional landscape.

Based upon the findings above, some cumulative visual impacts may be realized by the Project in conjunction with the other projects. These impacts would be limited and incremental due to the location of the Project in relation to the other projects, as well as proximity of sensitive receptors.

7.7 Sound

Cumulative noise impacts were assessed for Project construction and operation. In assessing cumulative effects of noise for the Project, the Project noise study area was extended to include other wind energy development projects, which could potentially impact the residences of concern. Two separate studies were conducted to assess potential cumulative impacts of the Project in association with other wind energy development projects.

Conestoga-Rovers & Associates (CRA) conducted the first study during the application process for the Noble Chateaugay/Bellmont Windpark. CRA only evaluated the Noble Chateaugay/ Bellmont Windpark in conjunction with the Project, since it is located approximately 1.1 mile from the project boundary. The other wind energy development projects in Table 7.1-1 were determined to be at a sufficient distance from the Project that they would not contribute to cumulative noise impacts on potentially sensitive receptors within the project study area. Tetra Tech performed the second study, which modeled the cumulative scenario for the same contributing wind projects. Tetra Tech's study acted as a confirmatory analysis to that completed by CRA.

Construction of the Project is not expected to overlap with construction activities at the Noble Chateaugay/Bellmont Windpark. Therefore, no cumulative impacts due to construction noise are anticipated.

Cumulative noise impacts resulting from project operations in conjunction with the Noble Chateaugay/Bellmont Windpark were evaluated by CRA and Tetra Tech. CRA conducted noise modeling using WindFarm (v. 4.0.2.3) and CadnaA (v. 3.6.1). Of the 329 structures (potentially sensitive receptors) identified in the Chateaugay-Bellmont area, the highest predicted cumulative noise level was 47.9 dBA. The cumulative noise analysis predicted that none of the modeled residences would exceed the 50 dBA absolute noise limit set by the towns of Chateaugay and Bellmont.

Tetra Tech completed the Project NIA, modeling operational sound levels using CadnaA (v. 7). Noise modeling results showed that there are no potential exceedances of the 6 dBA NYSDEC incremental noise guideline at residential receptors using the Vestas V-82 WTG.

In addition to the acoustic analysis presented in the Project NIA, Tetra Tech conducted a cumulative noise impacts analysis for this DEIS. In its cumulative noise impacts analysis, Tetra Tech selected representative residential receptors, modeled in the Project NIA and the Noble Chateaugay/Bellmont Windpark NIA. Hessler Associates Inc. conducted the Noble Chateaugay/Bellmont Windpark NIA as a supporting document to the Noble Chateaugay/ Bellmont Windpark DEIS. Receptor 1 (Sancomb Road, Chateaugay) was selected from the Noble Chateaugay/Bellmont Windpark NIA as representative because it is located in the same general vicinity as receptor 6 (UTM Coordinates NAD27 Z18N: 566909.58 4974210.85), modeled in the Project NIA. Receptor 32 (Cooper Road, Bellmont) was selected from the Noble Chateaugay/Bellmont Windpark NIA as representative because it is located in the same general vicinity as receptor 426 (UTM Coordinates NAD27 Z18N: 575546.06 4968618.62), modeled in the Project NIA. These two receptor locations represent the worst case as they are two of the easternmost Project receptors; therefore, they would not only receive sound generated by Project operations, but would also be most susceptible to noise generated by the Noble Chateaugay/Bellmont Windpark, as it is east of the Project. Table 7.7-1 shows predicted cumulative operational noise levels at Project receptors 6 and 426 for the Vestas V-82.

The predicted cumulative noise levels given in Table 7.7-1 will fully comply with the 50 dBA regulatory noise limit prescribed by the towns of Chateaugay and Bellmont. It should be noted that predicted cumulative noise levels at Project receptors 6 and 426 are likely over-predicted as Noble Chateaugay/Bellmont Windpark receptors 1 and 32 are actually situated closer to the Chateaugay and Bellmont Windparks than receptors 6 and 426. If Noble Chateaugay/Bellmont Windpark receptors 1 and 32 were at the exact same location as Project receptors 6 and 426, their predicted operational noise levels resulting from the Noble Chateaugay/Bellmont Windpark would be lower, translating to a lower contribution to the predicted overall cumulative noise levels.

Based upon the two cumulative noise studies performed, the Project will not cause or contribute to any significant cumulative sound impacts.

Table 7.7-1. Predicted Cumulative Operational Noise Levels for Vestas V-82

Jericho Rise Wind Farm Predicted Noise with the Vestas V-82 WTG			Noble Chateaugay/Bellmont Windpark	Predicted Cumulative Noise Level at Jericho Rise Wind Farm Receptor
Receptor ID No.	**Receptor Address**	**Predicted Operational Noise Level (dBA) a/**	**Predicted Operational Noise Level Noise for Corresponding Receptor Location (dBA)**	
6	131 Pulp Mill Rd Chateaugay	37.7	42	43.4
426	6552 State Rte 374 Bellmont	37.7	43	44.1

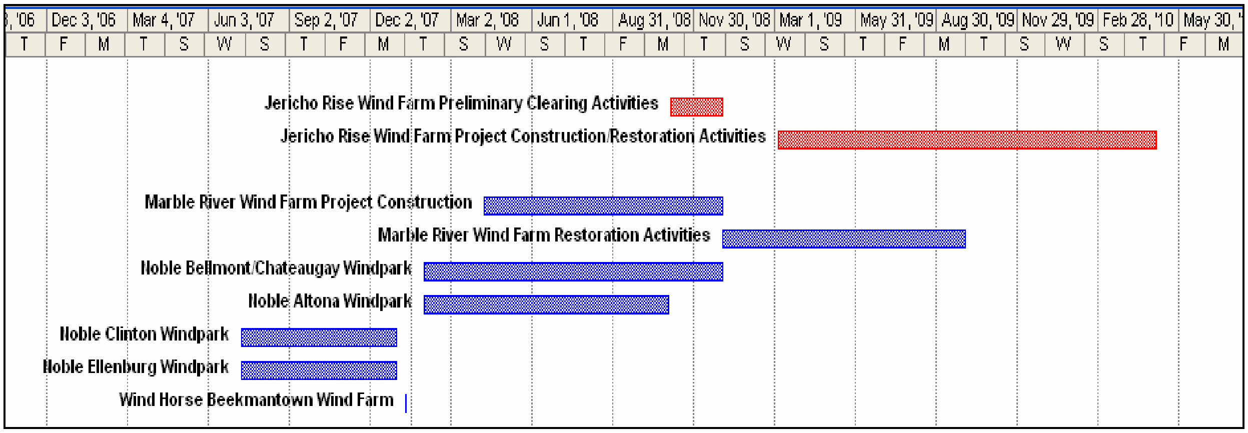
a/ Predicted operational noise levels include the ambient baseline noise level of 37.2 dBA.

7.8 Traffic and Transportation

Minimal cumulative impacts to traffic and transportation routes are expected as a result of the Project.

As discussed in Section 2.8 and Appendix J, minor temporary increases to traffic volumes are expected as a result of the construction of the Project. As described in Table 7.1-1, the current construction schedules of other projects discussed in this section do not significantly overlap with the Project. As shown in Figure 7.8-1, the construction periods for Marble River Wind Farm and the Noble Chateaugay/Bellmont Windpark and the Project overlap slightly.

Figure 7.8-1 Project Construction Schedules as Proposed a/



a/ All schedules are based on publicly available construction schedule information

The main construction activities of the Noble projects and the Marble River Wind Farm (road, foundation, underground collection lines, switchyards, and substations) are currently scheduled to be completed prior to the commencement of the main construction activities at the Project, although it is expected that there will be some work remaining at the Noble projects and Marble River Wind Farm while the main construction work is being carried out at the Project. The Project construction activities that may overlap with construction work at the other projects include clearing and grading in the substation/switchyard area. Traffic associated with these activities would be minimal and no adverse impact is anticipated. Activities at the Marble River Wind Farm and the Noble projects that may still be taking place while the Project is under construction include completion of erection work, commissioning activities, restoration of agricultural land, post-construction monitoring, and various warranty work. Although the latter activities can include crane work, the amount of traffic caused by the Noble projects and Marble River Wind Farm should be small compared to that required during component delivery and road/foundation construction. Therefore, cumulative impacts to traffic due to the Project would be minimal.

Use of some of the same roads by the various wind energy projects during their construction periods may collectively impact the condition of these roads. The Applicant will conduct preconstruction surveys to determine any road improvements that may be required to accommodate construction equipment and deliveries. These surveys will be coordinated with the towns and county and will be incorporated into the Road Use Agreements as described in Section 2.8 in order to coordinate any paving and resurfacing previously planned by the towns and those required by the Applicant.

Should construction schedules for the other projects change to coincide more with that of the Project, coordination regarding use of proposed transportation routes would be undertaken by the involved project developers, NYSDOT, and local highway authorities to assure that the duration and extent of impact is minimized and that road repair/restoration work is accomplished at the appropriate time.

Road traffic in the Project Area is currently below capacity and traffic conditions are light. During operation of the Project, as well as the other projects under consideration in this section, a limited number of trucks will access the Project Site as well as the other projects in the area for service and maintenance. No adverse cumulative impact is anticipated on local traffic and transportation due to operation of the Project.

7.9 Land Use and Zoning

Regional and Local Land Use and Community Character

Land use impacts may occur due to the number of wind farm projects proposed or under construction in the Project Area. The physical and social qualities of the region determine the community character, which is shaped by natural, cultural, societal, and economic forces over many years. As stated in Section 7.6, local residents and frequent visitors will likely perceive a substantial change to the overall character of the regional landscape.

Cumulatively, these projects will change the appearance of the landscape. However, as described in Section 2.13, the wind farms are generally consistent with the land use patterns within the region. Since the projects will be primarily located on agricultural land and forested land, they are less likely to impact nearby residences/hamlets, villages, and recreation areas within each of the towns.

Zoning and Other Applicable Laws

Compliance with local town laws regulating the development of wind farm projects will ensure that cumulative impacts on land are minimal. Additionally, the town laws regulating the projects have specific agriculture mitigation measures that each project must comply with prior to construction and operation of the projects. Construction and operation of these wind farm projects will be conducted in compliance with each Town's local wind energy facility requirements and any conditions appearing in the local permits acquired for each of the projects.

Agricultural Land Use

Impacts to agricultural land will be greatest during construction of the projects because additional acreage will be required for workspace and movement of equipment and material. However, these projects have been located to minimize loss of active agricultural land and interference with agricultural operations. In addition, as discussed in Section 2.13, construction activities will occur in compliance with agriculture mitigation measures based on New York State Ag & Markets guidelines, and those included in Appendix C, that provide guidance for avoidance of impact, mitigation, and restoration of agricultural assets. Operation of the projects will be compatible with agricultural land use and could have a long-term positive impact of the projects and individual towns in both counties. This is because the presence of wind turbines is consistent with farming (agricultural uses can occur right up to the base of modern wind turbines) and also because the presence of wind turbines on agricultural land discourages encroaching non-agricultural uses, such as residential suburban sprawl. Additionally, income derived from hosting wind turbines on agricultural land can help family farmers afford to continue farming operations on their property by creating a stable supplemental source of income for several years.

Future Land Use

The proposed projects should not interfere with proposed future plans to develop land in the area with single-family residential homes, for agricultural use, or for any other type of development assuming new homes comply with the appropriate setbacks established in each local law.

7.10 Socioeconomics

Population and Housing

As discussed in Section 2.9, lodging, in the form of campsites, motels/hotels, apartment rentals, and rental housing units will be required to house workers during construction. Cumulatively, construction and operation of the wind projects are not anticipated to adversely affect population and housing in the area, and it is not anticipated that additional housing (i.e., new housing) will be required. The other projects are anticipated to finish construction in late 2008 (although some construction-related activities may take place into 2009 on a few of those projects), and this Project will not start construction until 2009 or 2010 with some minor grading potentially conducted in the fall of 2008. Because there will be so little overlap of Project construction with the other projects discussed in this section, Project construction will not cause or contribute to significant cumulative impacts on population and housing.

It is estimated that approximately 125 to 200 construction workers will be needed over a nine-month period to build the proposed Project. As stated above, all construction from the Noble projects (e.g., Chateaugay/Bellmont, Altona, Clinton, and Ellenburg Windparks), Marble River Wind Farm, and the Windhorse Beekmantown Wind Farm should be completed by the time that this Project is ready to go to construction in late 2009 or 2010. Therefore, construction of the wind projects is not anticipated to adversely impact population and housing, because there will be no overlapping of construction schedules.

Property Values

Given the results of several wind energy reports discussed in Section 2.9, and the similarity of these studies to the wind farm projects, it is reasonable to conclude that, cumulatively, the proposed projects should not have an adverse impact on local property values. The sales data collected in existing wind farm markets indicates that the construction and operation of wind farms has no influence on property values.

Economy and Employment

The regional economy, and specifically Franklin County, will experience cumulative benefits from the projects in the area. In addition to the direct jobs created during steady construction over the past year (2007) and into the next three years (2010), the wind projects will have indirect impacts on the local economy through the purchases of goods and services, which will support local businesses and perhaps result in the creation of additional new jobs throughout the region. Additionally, local lease payments throughout the project areas will enhance the ability of participating landowners to purchase additional goods and services. To the extent that these purchases are made locally, they will have a broader positive affect on the local economy.

The Noble windpark projects (e.g., Chateaugay, Bellmont, Altona, Clinton, and Ellenburg Windparks) are expected to spend a total of approximately $136.4 million during construction. Total regional economic benefits, based on regional multipliers applied to direct project expenditures in original capital investment and ongoing operational expenses, is expected to be approximately $513.8 million over a 20-year period. Those economic benefits, coupled with Horizon's Jericho Rise Wind Farm and Marble River Wind Farm benefits of $236.5 million[4], provide an economic benefit to the region. While these figures are not known for the Windhorse Beekmantown Wind Farm Project, it is accurate to state that direct and indirect project expenditures will result in cumulative significant economic benefits to the region during construction and operation of the projects.

Municipal Budgets and Taxes

The projects will have a cumulative beneficial impact on municipal budgets and taxes since the taxing jurisdictions will receive additional revenues from the projects in the form of PILOT revenues.

7.11 Cultural Resources

The Applicant anticipates that construction and operation of the Project will not have any impacts on archeological resources. Based upon the results of the Phase IA investigation, the Applicant has developed the Project layout to avoid areas in which archaeological resources are anticipated to be present. The Phase IB investigation will be utilized to confirm such avoidance. When results from the Phase IB survey become available, the Applicant will modify the design of the Project as may be necessary to avoid, to greatest extent practicable, affecting any archeological sites that may be recommended as eligible for the NRHP. Based upon the work performed to date, the Applicant expects that few such adjustments will be needed, and that any adjustments will be small. As appropriate, the Applicant will review cultural resource issues with the SHPO concerning site significance, NRHP-eligibility, and avoidance measures. Since no Project-specific impacts are anticipated, it follows that the Project is not anticipated to contribute to any cumulative impacts on archeological resources that might be caused by planned development of the several additional wind energy projects in the region.

Construction of the Project will not have any direct impacts on architectural resources (e.g., through demolition of any NRHP-listed or NRHP-eligible buildings), and no potential direct impacts have been identified in connection with the other projects under consideration in this evaluation. There is, however, the possibility that, during construction, each of these projects could have visual and noise impacts on NRHP-listed or -eligible properties. It is unlikely that these impacts will be significant due to their temporary nature. In addition, since the Project will not be under construction at the same time as the other projects under consideration, there will be no cumulative effect to the historic architectural resources due to construction.

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[4] Jericho Rise Wind Farm operational expenses do not include regional multipliers.

Operation of each of the projects in the region will result in visual impacts on NRHP-listed and -eligible projects. Based on a 5-mile viewshed of the Project, the extent of the SHPO-determined viewshed for historic structures, 72 properties listed in or determined eligible for the NRHP will have views of the Project. An additional 18 properties within the APE have been recommended to the SHPO as potentially eligible for the NRHP. Ninety-three NRHP-listed or -eligible properties will have views of Noble Chateaugay/Bellmont Windpark, including 70 of the 72 properties determined to be eligible, and 0 of the 18 recommended as potentially eligible, as referenced above. Of the 113 properties in the combined viewshed for the Project and the Noble Chateaugay/Bellmont Windpark that are listed in, determined eligible for, or recommended as eligible for the NRHP, 70 will have a view of elements of both projects from within 5 miles of each. The visual impact on these NRHP-listed or -eligible properties resulting from the operation of the two projects will therefore be additive, although the magnitude of the impact will vary depending on the number of turbines that are visible from each property. The number of turbines visible from each NRHP-listed or -eligible property is just one factor in assessing the cumulative impacts; other factors include topography, distance from the turbines, existing landscape and vegetation, and surrounding land uses. The Applicant will review potential cumulative impacts with the SHPO, lead agencies, and interested stakeholders, and develop a mitigation strategy that addresses any identified issues prior to the FEIS. A number of possible mitigation strategies are discussed in Section 2.6.

7.12 Environmental Benefits

The construction and operation of the collective regional wind energy projects discussed in this section will result in significant short-term and long-term benefits, both regionally and statewide. In addition to the economic benefits provided through new jobs and demand for regional services, the financial benefits provided to landowners hosting wind turbines will also increase the likelihood that family farms and their associated low-density development will conserve regional environmental resources in the future.

The cumulative result of the eight proposed wind energy facilities currently under consideration in Clinton and Franklin Counties will be a significant contribution to reaching the New York State Renewable Portfolio Standard policy, which mandates an increase in renewable energy used in the state to 25 percent by 2013 (NYSERDA 2003). Assuming all eight projects are operating as planned, a gross nameplate capacity of over 750 MW will be provided by new non-polluting wind energy, resulting in a significant net benefit in reducing power generation-related air emissions from acquisition and transport of fuels and pollutants caused by power generation and disposal of pollutant byproducts. This substantial addition of clean, renewable energy will also strengthen federal efforts to achieve its Clean Air Act and climate change emission reduction goals and lessen our dependence on foreign fuel sources. Direct long-term benefits will result for human health, wildlife and related habitat integrity and natural ecosystem vitality.

7.13 Transmission Capacity

The cumulative result of the proposed wind energy facilities in Clinton and Franklin Counties will absorb a considerable portion of the capacity on the 203-kV Willis Plattsburgh 230-kV lines. As a result, the Project will interconnect at the 115-kV level and will take advantage of its proximity to the NYPA Willis Substation, thus ensuring that impacts due to additional electrical improvements take place in an area where there is already significant infrastructure in place.

8.0 EFFECTS ON USE AND CONSERVATION OF ENERGY RESOURCES

The Project will have significant, long-term beneficial effects on the use and conservation of energy resources, particularly as a contributor to meeting international, federal, and state energy policies and initiatives.

At the federal level, the U.S. Department of Energy Draft Strategic Energy Plan (September 2006) establishes as its number one strategic theme to promote America's energy security through reliable, clean, and affordable energy. The plan prioritizes reducing our growing national demand for fossil fuel based energy sources, many of them depending on imported fuels, and promotes alternative energy development as a key element of reversing this long-term trend. At the international level, the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (February 2007) provided a status summary of the physical science base for documented climate change. The international working group preparing this report concludes that "warming of the climate system is unequivocal" based on a broadening base of scientific evidence, and that man-made greenhouse gases caused by fossil fuel based energy sources are a significant contributor to this increasing warming trend. Global emission reduction targets have been established by the United Nations Framework Convention on Climate Change and the Kyoto Protocol in response to findings such as these. Increasing the use of pollution-free renewable energy as a replacement for existing sources that contribute polluting greenhouse gases is imperative to meeting internationally established pollution reduction goals and reducing global warming.

In New York State, SEQRA requires that new electric generation projects demonstrate that they will satisfy electric generating capacity needs in a manner reasonably consistent with the most recent state energy plan. The *2002 State Energy Plan and Final Environmental Impact Statement* (Energy Plan) encompasses policies designed to keep New York at the forefront among the states in providing its citizens with fairly priced, clean, and efficient energy resources. The Project is consistent with the five broad policy objectives of the Energy Plan:

(1) ENERGY AND TRANSPORTATION INFRASTRUCTURE SECURITY: At the federal and state level, energy policy is increasingly focused on the manner in which increasing the country's use of domestic sources of renewable energy will strengthen our country's homeland security. Wind energy is an inexhaustible, domestic resource helping reduce our dependence on imports of natural gas, oil, and other fuels, often from politically unstable countries. The American Wind Energy Association (AWEA) estimates that existing wind farms save over 13.7 million cubic feet of natural gas per day per year. Natural gas supplies in North America are being depleted and current U.S. natural gas shortfall is about 3 to 4 billion cubic feet per day. New York State is particularly susceptible to concerns over energy security as it imports 98 percent of the natural gas consumed each year, primarily from the Gulf Coast where production facilities are vulnerable to hurricane activity, but also from Canada. Maximizing the use of indigenous

energy resources reduces the market impacts of political instabilities in other regions of the world or uncontrollable weather patterns that can affect access to supplies, as demonstrated most particularly in the NYSERDA report (GE Power Systems Energy Consulting 2004), which states that the presence of 3,000 MW of wind energy in New York would reduce New York wholesale electricity prices by at least $350 million, and up to $540 million (see later NYS PSC estimate below) per annum. Furthermore, the Energy Information Administration reports that in 2005 a record number of gas wells were drilled in the United States for a single year and that the number of producing wells has increased every year since 2000. Despite the increase in wells, production is not increasing proportionally. While the number of gas wells increased by 17 percent in the first eight months of 2006 compared to 2005, actual production increased by only 0.8 percent (http://www.eia.doe.gov/neic/brochure/oil_gas/natgas06/natgas.html).

New York State wind generation currently offsets the equivalent of burning more than 3.4 million cubic feet of gas per day. By expanding wind generation, price spikes associated with fuel supply can be avoided and gas supplies can be conserved.

Energy facilities such as nuclear power plants, liquefied natural gas (LNG) receiving terminals, and natural gas pipelines are subject to careful planning in order to reduce their accessibility and vulnerability as targets for terrorist activity. These types of energy facilities are thought to be vulnerable targets for terrorist activity, because in addition to the disruption of energy provision such an attack would cause, the associated loss of human life and property damage associated with such an attack would make a larger psychological impact on the country. Wind generating facilities do not present a good target for terrorist attacks. Wind energy facilities have no fuel supply, storage or treatment infrastructure, and the facilities themselves consist of multiple small individual generators which are spaced relatively far apart so that they cannot easily be damaged at the same time. Wind turbines are also relatively easy to replace compared to thermal power plants or LNG facilities. And if a wind farm is damaged, there is no secondary threat to the public, such as those that can come from nuclear plants (radioactive releases) and conventional power plants/infrastructure (explosions).

Finally, the proposed improvements to local transportation infrastructure in the Project Area, as described in Section 2.8, would bolster road safety and enhance the type of vehicle traffic local roadways could accommodate.

(2) STIMULATING SUSTAINABLE ECONOMIC GROWTH, TECHNOLOGICAL INNOVATION AND JOB GROWTH IN THE ENERGY SECTOR: As stated in Section 2.9, the proposed Project will result in sustainable economic growth throughout the area. Short-term benefits would include a temporary increase in local employment, income from wages and contractual construction, and Project-related local purchases of construction goods and services. Long-term benefits of operating the Project would

include generation of significant additional local revenue for the towns of Bellmont and Chateaugay, Franklin County and for the Chateaugay School District through a Payment in Lieu of Taxes (PILOT) agreement, for the towns of Bellmont and Chateaugay through a Host Community/Mitigation Agreement, revenues for local fire districts through special district taxes, purchases of goods and services, payments to host landowners and their neighbors, and some minor economic benefits through increased tourism. Some of this economic growth could then be invested into more efficient technologies and better amenities such as schools, roads, and hospitals in the community. Host landowners and their neighbors may likely invest their income in capital projects that increase the value of their homes or farms and as such their property values. They may also likely increase purchases from local businesses (e.g., farm equipment vendors), which multiplies the value of each dollar they receive from the Project. The Project would involve temporary job growth during the construction phase (approximately 150 jobs) and long-term job growth to fill the 10 to 15 positions during Project operation.

(3) INCREASING ENERGY DIVERSITY, INCLUDING RENEWABLE BASED ENERGY: The proposed Project would facilitate compliance with the PSC "Order Approving Renewable Portfolio Standard Policy," issued on the 24th of September 2004. This Order calls for an increase in renewable energy used in the state from a then-level of 19 percent to 25 percent by the year 2013. The Project's nameplate capacity will be a maximum of 87.45 MW. Assuming that the average house in northern New York consumes approximately 9 MWh of electric energy per year, and assuming the Project averages approximately 30 percent of its nameplate generating capacity, this is enough energy to support approximately 25,000 to 30,000 homes in New York State (on an average annual basis). The Project will add to and diversify the state's sources of power generation, accommodate growing power demand through the use of a renewable resource (wind), and will displace some of the state's older, less efficient, and dirtier sources of power.

Because in New York State the prevailing price for electricity depends on the cost of running the most expensive power plant needed to meet demand—often plants burning natural gas—higher prices for natural gas translate into higher prices for electricity as well. Wind can displace the use of natural gas for power generation, suppressing spot prices. While these price suppression benefits are most significant during peak demand periods in the summer, wind generation also accrues benefits to consumers in the winter. Reduced demand for natural gas to generate electricity in the winter benefits heating customers using natural gas.

The heavy reliance on natural gas for both heating and generating electricity leaves both systems susceptible to volatility due to any number of unpredictable events that affect natural gas prices or supplies. This was most recently seen in 2005 when hurricanes

Katrina and Rita damaged natural gas production facilities in the Gulf Coast. The New York State Department of Public Service predicted as much as a 35 percent increase in the price of delivered electricity, on top of 30 to 45 percent heating bill increases. An unusually mild winter that suppressed heating demand kept bills lower than predicted.

But the competition for the use of natural gas to meet heating demands, as well as electric generation, continues to grow. The NYISO anticipates winter peak demand for electricity to increase by more than 800 MW by 2013. Increased wind generation to meet that demand can preserve gas supplies for heating and limit both electric and heating price volatility.

(4) PROMOTING AND ACHIEVING A CLEANER AND HEALTHIER ENVIRONMENT: Wind power offsets energy from other polluting sources. That is important because electric generation is the largest industrial source of air emissions in New York State. When wind projects generate electricity, fuel at other power plants is not burned. NYSERDA found that if wind energy supplied 10 percent (3,300 MW) of the state’s peak electricity demand, 65 percent of the energy it displaced would come from natural gas, 15 percent from coal, 10 percent from oil, and 10 percent from electricity imports. This equates to an annual displacement of 4.1 million tons of carbon dioxide, 9,900 tons of sulfur dioxide, and 3,800 tons of nitrogen oxides.

Wind energy requires no mining, drilling, or transportation of fuel, and does not generate radioactive or other hazardous or polluting wastes. To generate the same amount of electricity as a single 1.5-MW wind turbine for 20 years would require burning 79,830 pounds of coal or 125,580 barrels of oil. Assuming an installed nameplate capacity of 87.45, the Project can offset the equivalent of 4.65 million pounds of coal or 7.32 million barrels of oil over 20 years.

According to the New York State Renewable Portfolio Standard Performance Report (NYSERDA 2007), the total new renewable capacity planned to be installed in New York by the end of 2008 is 1,184 MW. These renewable sources (including two biomass facilities) will provide potential reductions of 2,200 tons of nitrogen oxides, 4,900 tons of sulfur oxides, and 1.5 million tons of carbon dioxide per year[5].

(5) ENSURING EQUITY, FAIRNESS, and CONSUMER PROTECTIONS: Wind is a good hedge against energy inflation, which is important to energy consumers. Once a wind generating facility is built, the cost of energy is known and not subject to the extreme volatility of fossil fuel markets. Adding wind power in New York will reduce demand for and therefore the price of natural gas. Because natural gas plants generally set the market price for electricity in New York, lower gas prices lead to lower electricity prices. The New York State PSC estimates that the addition of this level of wind power to New

York's electric grid can save approximately $540 million per year in wholesale energy costs by lowering the market-clearing price for electricity. Another analysis performed by the Union of Concerned Scientists found that switching 10 percent of our electricity to clean energy sources by 2020 could save consumers as much as $13 to 18 billion over 20 years, due to lower natural gas prices and higher renewable electricity consumption.

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[5] The estimates for emissions come from NYSERDA and are based on the planned capacity additions.

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Appendix A
Agency Correspondence and SEQRA Documentation

Towns of Bellmont/Chateaugay
SEQR Correspondence

Jericho Rise Wind Farm LLC
3 Columbia Place, Albany, New York 12207, (518) 426-1650

JERICHO RISE
WIND FARM

June 22, 2007

Town of Bellmont Town Board
Attn. Judylane M. Nason
Town of Bellmont
County Route 24
Malone, NY 12953.

RE: Jericho Rise Wind Farm
Application for Wind Energy Permits for Wind Energy Conversion Systems (WECS)

Dear Ms. Lemay:

Jericho Rise Wind Farm LLC (Applicant), formerly Burke Wind Power LLC, respectfully submits six copies of the enclosed application for a Wind Energy Permit for the proposed Jericho Rise Wind Farm (Project). This application is in accordance with the requirements of Article II, §10 of the Wind Energy Facilities Law (Local Law No. 2 of 2006) of the Town of Bellmont, New York. The information required by the Local Law is presented in Section 1 of the enclosed application in the order (and according to the numbering) listed in Article II, §10 of the Local Law. The applicant will adhere to all Standards for WECS and required safety measures as outlined in Article II, §12 and §13, respectively.

Pursuant to Article V, § 28 of the Local Law, Applicant requests certain waivers from 600 foot site boundary line setback requirements of Article II § 15. Details of these waiver requests are included in Section 2 of the enclosed application.

The application fee of $7,980 ($200/MW) was previously submitted to the town on March 5, 2007. A separate waiver fee of $750 has been sent under separate cover. In addition, a check for $50,000 for the escrow account will be hand delivered during the week of June 25th.

Sincerely,

Patrick Doyle
Director of Development
Horizon Wind Energy

Enclosures

cc: C.J. Madonna, Esq.
P.A. Lemay, Town of Chateaugay
R. Cogen, Nixon Peabody LLP
J. Dowd, Northern Energy Group
T. Levy, Conestoga-Rovers & Associates, Inc.
B. Smith, Conestoga-Rovers & Associates, Inc.
R.G. Adams, Conestoga-Rovers & Associates, Inc.
L. Kearns, Tetra Tech EC, Inc.

Jericho Rise Wind Farm LLC
3 Columbia Place, Albany, New York 12207, (518) 426-1650

JERICHO RISE
WIND FARM

June 22, 2007

Town of Chateaugay Town Board
Attn. Phyllis A. Lemay
Town of Chateaugay
P.O. Box 9
191 East Main Street
Chateaugay, New York 12920

RE: Jericho Rise Wind Farm
Application for Wind Energy Permits for Wind Energy Conversion Systems (WECS)

Dear Ms. Lemay:

Jericho Rise Wind Farm LLC (Applicant), formerly Burke Wind Power LLC, respectfully submits six copies of the enclosed application for a Wind Energy Permit for the proposed Jericho Rise Wind Farm (Project). This application is in accordance with the requirements of Article II, §10 of the Wind Energy Facilities Law (Local Law No. 7 of 2006) of the Town of Chateaugay, New York. The information required by the Local Law is presented in Section 1 of the enclosed application in the order (and according to the numbering) listed in Article II, §10 of the Local Law. The applicant will adhere to all Standards for WECS and required safety measures as outlined in Article II, §12 and §13, respectively.

Pursuant to Article V, § 28 of the Local Law, Applicant requests certain waivers from 600 foot site boundary line setback requirements of Article II § 15. Details of these waiver requests are included in Section 2 of the enclosed application.

The application fee of $14,700 ($200/MW) was previously submitted to the town on March 5, 2007. A separate waiver fee of $3,000 has been sent under separate cover. In addition, a check for $50,000 for the escrow account will be hand delivered during the week of June 25th.

Sincerely,

Patrick Doyle
Director of Development
Horizon Wind Energy

Enclosures

cc: C.J. Madonna, Esq.
J.M. Nason, Town of Bellmont
R. Cogen, Nixon Peabody LLP
J. Dowd, Northern Energy Group
T. Levy, Conestoga-Rovers & Associates, Inc.
B. Smith, Conestoga-Rovers & Associates, Inc.
R.G. Adams, Conestoga-Rovers & Associates, Inc.
L. Kearns, Tetra Tech EC, Inc.

file – Jericho Rise

RECD AUG - 9 2007

TETRA TECH EC, INC.

133 Federal Street
6th Floor
Boston, MA 02210

TEL: (617) 457-8200
FAX: (617) 457-8498

LETTER OF TRANSMITTAL

DATE	JOB NO.
8/7/07	3335.0002.0008.00001

ATTENTION:
CJ Madonna

RE:
Jericho Rise Wind Farm LLC
Wind Energy Permit Application (copies)

TO: CJ Madonna
10 Oak Street
Plattsburgh, NY 12907
518-561-6800

WE ARE SENDING YOU: [✓ Enclosed] Under separate cover via __________ the following items:

Shop Drawings Prints Plans Samples Specifications

Copy of letter Change order ____________________

No of Copies	DESCRIPTION
20	Jericho Rise Wind Farm Town of Bellmont Wind Energy Permit Application
20	Jericho Rise Wind Farm Town of Chateaugay Wind Energy Permit Application
20	Jericho Rise Wind Farm DEIS Draft Scope
20	Jericho Rise Wind Farm Environmental Assessment Form (EAF) (Part I)

REMARKS:

Enclosed please find copies of the WEP application and associated documents for Jericho Rise Wind Farm. Please contact me at: 617-457-8205 if you have any questions or need additional information.

COPY TO:

Patrick Doyle, Horizon Wind Energy

Rich Cogen, Nixon Peabody LLP

SIGNED Lucia Kearns, Tetra Tech EC

If enclosures are not as noted, kindly notify us at once.

Proposed Jericho Rise Wind Farm
Draft Scope: SEQR DEIS Focus and Content
Towns of Bellmont and Chateaugay
SEQR Co-Lead Agencies

August 2007

INTRODUCTION AND BACKGROUND

The Towns of Chateaugay and Bellmont have proposed to serve as the Co-Lead Agencies for purposes of conducting a coordinated environmental review of the proposed Jericho Rise Wind Farm (the Project) pursuant to the New York State Environmental Quality Review Act (SEQRA) and the implementing regulations found in 6 NYCRR Part 617. The proposed Project is located within the Towns of Chateaugay and Bellmont in Franklin County, New York. The proposed Project will consist of up to 53 1.65 megawatt (MW) Vestas V82 Wind Generating Turbines (WTG) and their associated access road and interconnection facilities, a substation, and proposed construction laydown area. Additional details regarding the proposed Project are provided in the Environmental Assessment Form (EAF).

It is expected that preparation of an Environmental Impact Statement (EIS) will be required under SEQRA. This Draft Scoping Document ("Draft Scope"), prepared by Jericho Rise Wind Farm LLC ("the Applicant"), outlines the proposed focus of the Draft Environmental Impact Statement (DEIS).

The purpose of the Draft Scope is to identify the Project-related impacts to be focused upon in the DEIS and to identify the information to be included in the DEIS concerning the proposed Project. Comments on this Draft Scope can shape the way the DEIS analysis is conducted.

After comments on this Draft Scope are received, a Final Scope will be published, which will guide the creation of the DEIS.

DRAFT SCOPE FOR PROPOSED BURKE WIND POWER PROJECT DEIS

The DEIS should include all elements required by 6 NYCRR 617.9. The following sections will be included in the DEIS.

i. DEIS Cover Sheet:

All draft and final EISs must be preceded by a cover sheet stating the following:

- whether it is a draft or final EIS;
- name or descriptive title of the action;
- location (county and town, village or city) and street address, if applicable, of the action;
- name and address of the lead agency and the name and telephone number of a person at the agency who can provide further information;
- names of individuals or organizations that prepared any portion of the statement;
- date of its acceptance by the lead agency; and
- in the case of a DEIS, date by which comments must be submitted.

ii. DEIS Table of Contents:

The Table of Contents will list all sections within the DEIS, all tables, figures, maps, appendices/attachments, and acronyms. This Draft Scope includes a copy of the draft Table of Contents.

1.0 EXECUTIVE SUMMARY

The Executive Summary will include a brief description of the proposed action and a listing of anticipated environmental impacts and anticipated mitigation measures. A summary will be provided of the approvals and permits required, and the alternatives to the proposed action that are evaluated in the DEIS.

2.0 DESCRIPTION OF THE PROPOSED ACTION

This section of the DEIS will provide a comprehensive description of the site in a regional and local context and provide a detailed discussion of the proposed action.

The proposed Project is located within the Towns of Chateaugay and Bellmont in Franklin County, New York. The proposed Project will consist of up to 53 1.65 MW Vestas V82 WTGs and their associated road and interconnection facilities, a substation and two proposed construction laydown areas. The attached EAF and figures provide additional details regarding the proposed Project.

2.1 Site Description

This section will provide a general summary description of the Project area. A more detailed discussion of various aspects of the environment within the Project area will follow in the body of the DEIS. This section will depict the regional and local context of the Project area, and define the properties owned, leased or under option by the Applicant. It will summarize the size, geographic boundaries, and physiographic characteristics of the Project area. This section will generally discuss the dominant land use within and adjacent to the Project area. It will describe other significant pending developments (including wind power projects) within or adjacent to the Project area. It will also generally and briefly discuss the relationship of the Project area to wetland areas, streams courses, residential areas, schools, parklands, historic properties, or other recognized or protected natural or man-made features.

2.2 Detailed Description of the Proposed Action

The purpose of this section is to define the action that will be studied in subsequent portions of the DEIS. This section will explain what the Project will entail throughout construction, operation and decommissioning. It will describe the size, generating capacity and layout of the proposed Project. Maps and graphics showing the location of the components of the proposed Project, including the turbines, access roads, electrical collection system, transmission line, substation, meteorological (met) towers, operations and maintenance (O&M) facilities, construction parking areas, storage/laydown areas and other Project components, will be provided. The process for selecting the Project layout and components will also be described in this section.

Descriptions and typical drawings of the Project components will be provided. The figures will include typical drawings that show turbine dimensions and typical drawings of access roads and collection lines. Relevant technical maps, figures, exhibits, project plans, and specifications will be included as appendices to the DEIS.

2.3 Project Purpose, Public Need and Benefits

This section will provide the background and history of the proposed Project, and a statement of the objectives of the Applicant. This section will also describe the public need for the Project on local, regional, and national levels, including a brief overview of the environmental, social and/or economic benefits anticipated due to the proposed action. A brief summary of the alternatives discussion in section 5.0 will be presented here as well.

2.4 Construction and Operation

This section will describe the planned construction process for the proposed Project, including construction schedule/duration, anticipated construction employment, construction sequencing, construction and delivery vehicle weights and heights, and routing of construction traffic to and within the Project. It will provide a summary description of construction activities, including mobilization and staging, surveying and staking, clearing and grubbing, treatment of natural products to be removed during construction (e.g. removal of brush, disposal of cut material, etc.), civil work (roads, foundations, underground and overhead cable, substation, O&M building, etc.), tower/turbine installation, turbine commissioning, and site restoration.

This section will describe general safeguards to be taken to protect local citizens and protected resources from construction-related hazards. The Applicant will comply with all applicable laws, regulations, and permit conditions, and will employ an environmental inspector to oversee construction and post-construction restoration activities. The Applicant will also establish complaint resolution procedures to address concerns related to construction of the Project. Additional project plans, specifications, and other construction information will be included as an appendix to the DEIS.

This section will also describe the intended long-term ownership, operation, inspection, and maintenance requirements of all Project components/improvements, both on-site and off-site. It will provide information on annual rate of power generation, routine maintenance requirements, long-term employment, lease/easement arrangements with landowners, effect on local electric rates, and useful life of the Project. Finally, this section will describe the decommissioning plans for the Project, which will include the anticipated life of the project, estimated decommissioning costs and salvage values, an explanation of cost estimation, plans for decommissioning financial assurance, and removal and restoration procedures. The decommissioning plan will be included as an appendix to the DEIS.

2.5 Reviews, Approvals and Other Compliance Determinations

This section will list the local, state, and federal governmental entities having approval authority over or the requirement to consult with decision-makers regarding the Project, including the nature of their jurisdiction and the approvals or consultations required from each entity. The section will provide a table of all required approvals and permits, which will include a Wind Energy Permit for the towns of Chateaugay and Bellmont, a Franklin County Highway Work Permit, and approval under the Federal Water Pollution Control Act Section 404. Relevant agency correspondence will be appended to the DEIS. Relevant agency correspondence will be appended to the DEIS.

3.0 EXISTING CONDITIONS, ANTICIPATED IMPACTS AND ANTICIPATED MITIGATION MEASURES

For each resource within the affected environment, this section of the DEIS will identify the existing environmental conditions, anticipated impacts of the proposed action on the affected environment, and anticipated mitigation measures to avoid or reduce the significance of Project-related negative impacts. The format or organization of this section will include the following subsection headings for each area of the affected environment:

- Existing Conditions
- Anticipated Impacts:
    - Construction (short-term)
    - Operation (long-term)
- Anticipated Mitigation Measures:
    - Construction
    - Operation

This format provides for an easy-to-read and meaningful presentation of the environmental issues associated with the proposed Project.

The text of this section will be supplemented as needed with maps, graphics, photographs, agency correspondence, Geographic Information System (GIS) data analyses, and completed support studies.

3.1 Soils, Geology and Topography

3.1.1 Existing Conditions

This section of the DEIS will describe the existing conditions of geology, soils and topography in the Project area. Soil types, characteristics and limitations relating to soil texture, soil-bearing capacity, depth to water table, hydric and non-hydric soils will be evaluated. Any prime agricultural soils within the Project area will be identified. A description of prominent and/or unique features including large boulders, ledges, and rock outcroppings will be provided.

Geologic and topographic existing conditions and limitations will be identified in a desktop geotechnical study. It is expected that continued consultation with agencies and landowners will result in minor adjustments to the exact locations of the proposed turbines. Therefore, geotechnical borings will not be completed until the micro-siting process has been finalized (likely after SEQR is complete). For the SEQR evaluation, a thorough analysis of available information will be utilized to assess existing conditions and potential impacts. This desktop geotechnical study will include a review and evaluation of geological and water resources publications, aerial photos, topography, and geological hazard maps of the project area. These resources are available through National Resources Conservation Service (NRCS) Soil Survey Reports, U.S. Geological Services (USGS) Water Resources Publications, New York State Geological Survey (NYSGS), electronic GIS Resources, and web research. This analysis is anticipated to reveal the following information:

- subsurface conditions;
- groundwater conditions;
- range of depth to bedrock;
- variability of site conditions;
- percent slope;
- issues related to the suitability of site soils for support of roadways, foundations, and underground collection and transmission lines;
- corrosion potential;
- potential frost action;
- erodibility, infiltration;
- seismicity designations; and
- other geologic hazards.

3.1.2 Anticipated Impacts

Anticipated impacts to surface and subsurface soils and bedrock will be identified including total area of disturbance (temporary and permanent), sediment and soil erosion, disturbance of steep slopes, and other impacts to shallow bedrock. Although blasting is not anticipated at this time, any potential need for blasting and likely seismic impacts will be discussed and analyzed in this section including associated risks to wildlife, habitat, underground facilities, including water supply wells, and structures or other property.

This section will identify the anticipated temporary impacts to agricultural lands (such as soil compaction due to passage of vehicles, equipment or loads and removal of topsoil during excavation). This section will map, quantify and characterize by soil type all land now in agricultural production that will no longer be available for agricultural use as a consequence of the proposed Project. The DEIS will clarify the anticipated depth of any improvements or equipment proposed to be installed beneath the surface of tilled lands and the potential for agricultural implements to come into contact with such improvements or equipment.

3.1.3 Anticipated Mitigation Measures

This section will describe how the anticipated impacts to geology, soils and topography from the Project are proposed to be mitigated. Mitigation may include, but is not limited to the following measures.

Project impacts will be avoided and minimized by conducting geotechnical investigations during the planning stage and by siting project components such that steep slopes, sensitive soils, and areas of shallow bedrock are minimized. The project will also be sited based on the information gathered during site investigations. The Applicant will employ Best Management Practices during construction and operations and will also develop and implement a detailed Stormwater Pollution Prevention Plan (SWPPP), which will include an erosion and sediment control plan. If needed, the Applicant will also develop and implement a blasting plan. To the extent practicable, the Applicant will follow the New York State Department of Agriculture and Markets (Ag & Markets) siting, construction and restoration guidelines and will communicate with Ag & Markets during all phases of the project to further minimize agricultural impacts. The Applicant will also employ at least one environmental inspector to oversee construction of the Project and subsequent restoration.

Mitigation for impacts will be presented, including proposed mitigation for blasting, an erosion and sediment control plan, and a plan to protect and restore agricultural soils in accordance with Ag & Markets guidelines. This section will describe plans for working with landowners, the County Soil Conservation District, and the US Dept. of Agriculture's NRCS to determine the likelihood of any subsurface drainage that may be affected by wind turbine siting and construction. This section will describe how construction plans and specifications will provide measures for the protection, repair and replacement of any subsurface drainage affected by siting and construction. This section will also describe plans for avoiding impacts to agricultural soils or for restoration should impacts be found to be unavoidable. Restoration plans will be consistent with policies of the Ag & Markets to the extent practicable. The Agricultural Protection Measures will be included as an appendix to the DEIS.

3.2 Water Resources

3.2.1 Existing Conditions

This section will identify and describe all surface waters within the Project area, including wetlands, streams, rivers, lakes, and ponds, including state and federal classification. It will use available information from US Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) maps, NRCS Soil maps, USGS topographical maps, recent aerial photography and the NYSDEC's database that lists state-regulated wetlands and classified streams to illustrate where state or federally-regulated wetlands and streams occur within the Project area. The applicant will also conduct field surveys to inventory and delineate the boundaries of state and federal jurisdictional wetlands and streams occurring within the Project area. The Applicant will follow the delineation standards and procedures provided in the United States Army Corps of Engineers' *Wetland Delineation Manual* (Environmental Laboratories, 1987) and the NYSDEC *Freshwater Wetland Delineation Manual* (1995). The Applicant will consult with the NRCS office in Malone, NY to identify any prior converted wetlands within agricultural land. This section will include a wetland inventory (visual observations of hydrology and vegetation in the area of proposed disturbance). A formal delineation report will be included as an appendix to the DEIS. In addition to maps, a summary table will be included that provides type, size, special designations, and other characteristics for each wetland and water body. This section will also identify any Federal Emergency Management Act (FEMA)-regulated floodplain areas.

Based on existing data, and/or site-specific studies, this section will describe groundwater resources within the Project area, including depth to groundwater, known aquifers, and existing water supply wells/springs. Information on groundwater resources will be determined from published New York State Department of Conservation (NYSDEC) and USGS studies as well as published local reports and references for the area. The US Environmental Protection Act sole source aquifer maps and groundwater protection area databases will also be reviewed. Field surveys will be performed to verify the location of known locations, and identify any additional, public and private water supply wells prior to the FEIS.

3.2.2 Anticipated Impacts

The estimated anticipated temporary and permanent impacts to surface waterbodies and wetlands resulting from installation of all Project components and Project operation will be identified and described. Anticipated impacts to waterbodies include temporary disturbance to the streambed and streambanks during trenching; siltation/sedimentation, and the placement of fill in wetlands will be discussed in this section. The estimated acreage of temporary and permanent impacts to wetlands and waterbodies as well as the type of each water resource will be provided. This section will also provide an assessment of anticipated Project-related impacts to floodplains and stormwater management within the Project area.

This section will evaluate the potential for impacts to groundwater resources that may be caused by installation of subsurface facilities, including tower foundations and buried electrical lines (e.g. blasting, sedimentation, stormwater runoff, chemical spills, etc). Prior to the FEIS, the Applicant will identify active wells near proposed turbine and collection system installations and analyze the possible impacts to water supplies sourced from groundwater or springs.

3.2.3 Anticipated Mitigation Measures

This section will describe anticipated mitigation measures designed to protect, repair and/or restore the anticipated impacts to water resources. The mitigation measures that the Applicant anticipates evaluating during the development of a Wetland Mitigation Plan will include following:

- Project siting and/or operational measures to minimize and/or avoid ecological impacts;
- Development of a Soil Erosion and Sedimentation Control Plan as part of the SWPPP;
- A field delineation of sensitive areas to avoid during siting and/or construction phase to the greatest extent possible;
- Low impact crossing methods for streams & wetlands;
- Compensatory mitigation project(s); and
- NYSDEC and Corps prescribed Best Management Practices, including:
    - No Equipment Access Areas
    - Restricted Activities Areas
    - Access Through Wetlands
- Use of an environmental inspector to oversee compliance with imposed conditions and monitor the success of site restoration activities.

This section will identify the need for any Article 24 Freshwater Wetlands permits, US Army Corps of Engineers (Corps) Section 404 Permit, Clean Water Act Section 401 Water Quality Certifications and/or Article 15 Stream Disturbance Permits (DEC). The Applicant will also employ at least one environmental inspector to oversee compliance with imposed conditions throughout construction activities and monitor the future success of any site restoration activities required by the Project permits.

3.3 Biological, Terrestrial and Aquatic Ecology

3.3.1 Existing Conditions

This section will describe the general wildlife community, including vegetation, wildlife/wildlife habitat, and threatened and endangered species, and the associated habitat of each within the Project area, based on existing data and field observations. The existing conditions of vegetation, ecological communities, and significant natural communities, including threatened and/or endangered vegetative species, will be described and mapped based on available data through the NYSDEC Natural Heritage Program (NHP) database and from a field survey to be conducted prior to the FEIS. The presence of invasive and/or noxious weeds will also be addressed here.

The existing conditions of the wildlife and wildlife habitat will be identified based on information included in the New York State Breeding Bird Atlas (BBA), the New York State Reptile and Amphibian Atlas (NYSDEC website), and other existing data sources. This information will be supplemented through correspondence with the NHP and the USFWS. Additional field observation and assessment will be performed in consultation with state and federal wildlife agency staff prior to the FEIS. Avian and bat studies designed to characterize existing conditions within the Project area and assess operational risk will be conducted prior to the FEIS. The Avian and Bat Study will be appended to the DEIS.

3.3.2 Anticipated Impacts

The Applicant will address the anticipated construction-related impacts to vegetation due to excavation, cutting/clearing, removal of stumps and root systems, and increased exposure/disturbance of soil as well as permanent impacts during operation. This section will quantify the impact and/or disturbance as well as the type of vegetation impacted. This section will also describe the anticipated impact to fish and wildlife, including avian communities during construction and operation.

In general, temporary impacts to wildlife will be minimal as a result of siting project components away from sensitive habitats such as streams, wetlands, and mature forest. This section will include a detailed description of anticipated temporary impacts to wildlife including incidental injury and mortality due to construction activity and vehicular movement (including avian nest destruction), construction-related silt and sedimentation impacts on aquatic organisms, habitat disturbance associated with clearing and earth moving activities and displacement due to increased noise and human activities.

The anticipated impacts to wildlife associated with operation of the Project are generally limited to minor loss of habitat, possible forest fragmentation (only at access road and wind turbine sites proposed in large contiguous woodlots), wildlife displacement due to the presence of the wind turbines, and avian and bat mortality as a result of collisions with the wind turbines. These types of anticipated impacts will be discussed in detail in this section in association with the identified wildlife communities within the project area.

This section will also describe any anticipated impacts to threatened and endangered species and associated habitat within the Project area.

3.3.3 Anticipated Mitigation Measures

This section will describe anticipated mitigation measures designed to protect, repair and/or restore the anticipated impacts to vegetation, wildlife and wildlife habitat resources. The mitigation measures that the Applicant anticipates evaluating include the following:

- Project siting and/or operational measures to minimize and/or avoid ecological impacts;
- Soil Erosion and Sedimentation Control Plan as part of our SWPPP;
- A field delineation of sensitive areas to avoid during siting and/or construction phase to the greatest extent possible;
- An invasive species/noxious weed control plan; and

- NYSDEC and Corps prescribed Best Management Practices, including:
    - No Equipment Access Areas
    - Restricted Activities Areas
    - Access Through Wetlands.
- Implementation of a Post Construction Avian and Bat Fatality Monitoring Program to be designed by the Applicant in consultation with the NYSDEC.

3.4 Climate and Air Quality

3.4.1 Existing conditions

This section will utilize data available through the NRCS National Water and Climate Center in Chasm Falls, NY to describe the existing climatic conditions within the region of the proposed action. This section will also address the existing conditions and long term trends with respect to air quality within the region of the proposed action based on available data through the NYSDEC's 2005 New York State Air Quality Report: Data Tables.

3.4.2 Anticipated Impacts

This section will describe anticipated impacts to air quality during the site preparation and construction phases of the Project. These anticipated impacts are primarily associated with the operation of construction equipment and vehicles as a result of both emissions from engine exhaust and from the generation of fugitive dust during earth moving activities and travel on unpaved roads.

This section will also describe the anticipated positive impacts during operation by producing electricity with zero emissions resulting in long-term reduced air pollutants and greenhouse gases associated with energy generation from fossil-fuel sources. This section will quantify the anticipated positive impacts associated with zero-emission energy production specific to this Project and Project area. The analysis will include a comparison to emission levels from fossil fuel-powered electricity sources, including emissions of nitrogen oxides, sulfur dioxide, carbon dioxide, particulates, and mercury.

3.4.3 Anticipated Mitigation Measures

This section will describe anticipated mitigation measures designed to reduce the anticipated temporary impacts to air quality associated with vehicle emissions and fugitive dust generation during construction. Mitigation measures that the Applicant anticipates evaluating includes the following:

- The development and implementation of a dust control plan to be implemented during construction;
- The development and implementation of an O&M Plan to include specific measures to reduce dust and vehicular emissions; and
- Adherence to controlled speed during construction and O&M.

This section will also describe the mitigation value that operation of the wind farm may provide through the long-term air quality benefits of the Project.

3.5 Aesthetic and Visual Resources

3.5.1 Existing Conditions

This section will describe the visual character of the area within a five-mile radius of the Project area (the visual study area) and will identify visual/aesthetic resources within this area that are considered sensitive from a statewide and local perspective.

The Applicant will consult published and online data sources, contact state and local agency representatives, and conduct a reconnaissance-level field review to define visual/aesthetic character and identify visually sensitive areas within a 7.5-mile radius of the Project. Significant visual resources (such as historic sites) within ten miles of the project will also be identified and located on the USGS maps. Viewshed maps based on topography, vegetation, and existing cultural and historical landmarks will be prepared from this analysis.

A professional photographer will document assorted existing views within a five-mile radius of the facility location, including representative views for each landscape unit within five miles of the facility, as well as significant public or historic vantage points within ten miles of the proposed project. All viewpoints will be documented with field notes, photographs, and GPS coordinates. These photographs will be used to characterize existing visual conditions within the project area and to provide the basis for the visual simulations.

The Applicant will also conduct a survey to accurately identify the location of residences within the viewshed (within 1,500 meters of the Project site). These locations will be identified and mapped to assess for the anticipated visual impact by project facilities. The results of this study will be further utilized during the shadow flicker analysis.

3.5.2 Anticipated Impacts

Anticipated impacts that will be discussed in this section include visual changes to the landscape and anticipated visual impacts of the Project from sensitive sites or viewers during operation. Also described in this section are the impacts associated with anticipated shadow flicker impacts on nearby residences.

A Visual Impact Assessment (VIA) will be conducted to accurately determine the anticipated visual and aesthetic impacts. This assessment will evaluate:

- Proposed land uses, or project components obviously different from, or in sharp contrast to, current surrounding land use patterns, whether man-made or natural;
- Proposed land uses, or project components visible to users of aesthetic resources which will eliminate or significantly reduce their enjoyment of the aesthetic qualities of that resource;
- Project components that will result in the elimination or significant screening of scenic views known to be important to that area; and
- Cumulative visual impacts associated with other proposed wind facilities near the Project area.

The Applicant will use the VIA to estimate the level and locations of anticipated impacts of the project facilities on the surrounding community. Viewshed maps based on topography, vegetation, and the proposed project layout will be prepared to indicate the potential visibility of turbines within respective portions of the visual study area. Using a three-dimensional computer model of the site terrain and proposed facility, color visual simulations will be prepared to show proposed Project facilities from representative viewpoints. Once the results of the VIA are reviewed, visual simulations will be prepared and will include proposed viewing conditions during both daylight and/or night time conditions. The VIA will be included as an appendix to the DEIS.

To consistently evaluate all anticipated impacts, the Applicant will employ a systematic method to develop ratings of both existing visual quality and the magnitude of expected visual impacts. For each defined landscape similarity zone and key viewpoint within the study area, the Applicant will develop a rating of existing visual quality on a scale of high, moderate and low. These ratings will be a composite of scores for vividness, intactness and unity of the view at each location. These ratings will explicitly factor into the analysis viewer exposure, based on the number of expected viewers and their viewing distance; viewer sensitivity, based on the viewers' activities and assumed level of awareness of visual changes; and changes to vividness, intactness and unity evident in the with-project simulations. Visual impact levels will then be characterized as high, moderate or low based on the degree of calculated change from the existing visual quality rating for each viewpoint. This visual impact methodology reflects an approach that has been commonly employed and accepted to evaluate the visual impacts of wind energy projects, transmission lines and other developments in environmental reviews and will be consistent with NYSDEC's existing VIA policy *Assessing and Mitigating Visual Impacts (DEP-00-2, July 31, 2001).*

A separate viewshed analysis for the anticipated visibility of FAA obstruction lighting will also be prepared, based on turbine height and a lighting plan for the project, to determine the anticipated visibility of aviation safety lighting on the proposed turbines.

Shadow flicker caused by wind turbines is attributed to alternating changes in light intensity caused by the moving blade casting shadows on the ground and stationary objects, such as a window at a dwelling. Shadow flicker is not the sun seen through a rotating wind turbine rotor nor what an individual might view moving through the shadows of a wind farm. The Shadow Flicker Analysis will also be appended to the DEIS.

The anticipated impact to residences due to shadow flicker will be assessed through a shadow flicker study using WindPro software to calculate the annual hours of shadow impact for sensitive locations surrounding the project within 1,500 meters of the Project site that have been identified by field and desktop surveys. This will include the number of anticipated receptors and predicted annual hours of shadow flicker at each.

3.5.3 Anticipated Mitigation Measures

To mitigate anticipated impacts to visual and aesthetic resources, the Applicant will carefully consider potential impacts during the planning process. Using reference information, site survey photographs and computer-generated models, the Applicant has carefully selected sites during the planning process to avoid impacts to the greatest extent possible.

The Applicant will enter into development agreements with landowners, and will consult with local and state agencies including the State Historic Preservation Office (SHPO) and NYSDEC to further develop a specific mitigation plan for the project.

The Project will develop the mitigation plan consistent with NYSDEC Program Policy for mitigation of aesthetic impacts. The policy requires consideration of a specific range of mitigation types including screening, relocation, camouflage, reduced facility profile, project downsizing, lighting measures, maintenance actions and offsets. The Applicant will carefully evaluate the applicability, feasibility and anticipated benefits (reduced visual impact) of all mitigation options and will propose to implement those options that are viable and can provide a meaningful reduction in project impact. The mitigation assessment and plan will specifically include consideration of off-sets for anticipated visual impacts to historic structures.

3.6 Historic, Cultural and Archaeological Resources

3.6.1 Existing Conditions

This section will provide a brief history of the Project area and surrounding region as well as identify and describe sites, structures, and districts with significant historic and archaeological value within a five-mile radius of the Project area. The applicant shall conduct a Phase IA Cultural Resources Survey of the Project area to determine if any previously recorded or documented cultural resources (i.e., archaeological or historic sites) are present within the Project area and to determine potential for the presence of cultural resources. The cultural resources investigation will include archival and historic map research, a site file and literature search, a review of the prehistoric and historic background of the Project area, the examination of properties listed in the New York State and National Registers of Historic Places (S/NRHP), assessments of cultural resource sensitivity and past disturbances within the Project area, a Project area walkover reconnaissance, and photographic documentation of conditions within the Project area. The Applicant will consult with the State Historic Preservation Officer (SHPO) of the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) throughout the assessment process.

As part of the Phase IA investigation, a preliminary architectural reconnaissance survey of the Project footprint and the five-mile visual area of potential effect (APE) will be conducted to 1) assess the presence or absence of potentially significant architectural resources, namely historic buildings, districts, or landscapes, which may be affected by the proposed undertaking; 2) begin a preliminary reconnaissance survey; and 3) estimate the level of effort for the Phase IB reconnaissance survey area described below in Section 3.6.3.

3.6.2 Anticipated Impacts

This section will discuss the anticipated impacts to historic and cultural resources. No historically significant structures will be demolished or physically altered in connection with the construction and/or operation of the Project. Anticipated impacts to this resource include disturbance to archaeologically significant areas during earthmoving activities during construction as well as visual impacts to historically significant architectural resources during operation. This section will utilize simulations developed during the visual impact analysis to determine the anticipated impact to these resources.

3.6.3 Anticipated Mitigation Measures

This section will describe anticipated mitigation measures designed to reduce the anticipated impacts to historic and cultural resources. To mitigate anticipated impacts the Applicant will carefully consider impacts during the planning process. Using the information gathered during the Phase 1A survey, the Applicant will conduct additional micrositing to minimize the anticipated impact to these sensitive areas. The Applicant will also conduct additional studies as part of a Phase IB Cultural Resource Survey with field investigation including shovel testing and surface inspection. This study will be conducted in sensitive areas in proximity to construction activities within the APE. The testing locations and protocol will be developed in consultation with the SHPO. Additionally, the Applicant will consult with SHPO to develop a Mitigation Plan and Memorandum of Agreement (MOA) to address the needs of local communities and focus mitigation efforts on those resources, communities, and individuals that may be impacted by the Project. The Applicant will also prepare an Unanticipated Discovery

Plan to ensure proper handling of any discovery of potential culturally or historically sensitive resources during construction or operation. Cultural resource plans, reports, and correspondence will be included as appendices to the DEIS.

3.7 Noise and Odor

3.7.1 Existing Conditions

This section will describe the existing noise and odor levels within the project area. The Applicant has conducted an ambient noise analysis to obtain the existing information. The data collected through this analysis will be described in detail in this section. This study involved an assessment of potential noise impacts from the project using the CadnaA software package developed by DataKustik GmBH in Munich, Germany. Noise sensitive areas (NSA) surrounding the project area were identified during a field survey and background noise levels were recorded at three representative locations over a continuous four-week period. The Sound Study and Noise Impact Analysis will also be included as an appendix to the DEIS.

This study consisted of two types of measurements. The first is the A-weighted sound level which is the overall sound level, weighted on a frequency basis, to correspond to the sensitivity of the human auditory system at different frequencies. This is used for comparison with any noise standards or ordinance levels. The A-weighted measurements were performed at all three locations.

The second type of measurement will be the standard 10 octave bands covering the frequency range from 20 Hz to 20,000 Hz, the range of audible sounds for humans. Additionally, two lower bands (sub-octave) covering the infrasonic range from 4 Hz to 20 Hz will be measured to provide a basis for comparison to low frequency noise from the turbines. The 10 octave bands and two sub-octave band measurements were performed at one of the three locations.

This section will also discuss the existing odors generally associated with agricultural practices (e.g. spreading manure).

3.7.2 Anticipated Impacts

This section will describe any anticipated impacts to the noise level within the project area during construction and operation. Though assessing and quantifying temporary construction related impacts is difficult as the activity is constantly moving throughout the site, this section will address estimated average known noise levels for the various components of construction activity including truck traffic, heavy equipment operation, and blasting.

Additionally, this section will assess the anticipated operational noise impacts from the Project during operation. Wind turbine specific noise emission data from the turbine manufacturer or similar machine will be entered into the CadnaA noise model to calculate expected noise levels at the NSAs. A map showing the predicted noise level contour lines will also be generated to show the distribution of sound throughout the project area. The predicted levels at NSAs will be evaluated relative to local and state noise ordinance/standards requirements. The expected increases above background levels will also be determined as another method of predicting the likelihood of complaints. Procedures found in NYSDEC Program Policy *Assessing and Mitigating Noise Impacts* will be followed (DEP-00-1, February 2, 2001). This data will be quantified and displayed in both tabular and map format in this section.

No additional odors are anticipated to be introduced into the Project area as a result of the construction and operation of the Project.

3.7.3 Anticipated Mitigation Measures

This section will describe the anticipated mitigation measures to avoid or minimize noise impacts within the Project area.

The results of the noise analysis will also be used to determine the need to relocate any turbines to avoid noise impacts. The noise model will be used as a tool in this situation to determine the minimum distance that any particular turbine would have to be moved to reduce noise to an acceptable level.

In addition to avoidance the Applicant will also evaluate the following mitigation measures:

- Implementation of Best Management Practices;
- Adherence to setback requirements in accordance with the applicable Local Laws for the Towns of Chateaugay and Bellmont;
- Pursuit of development agreements with neighbors whose residence is located within 2,500 of a Project turbine;
- Notifying landowners of certain construction noise impacts in advance (e.g., if blasting becomes necessary);
- Implementation of a complaint resolution procedure to assure that any complaints regarding construction or operational noise are adequately investigated and resolved;
- Limiting the cutting/clearing of vegetation surrounding the proposed substation; and
- Keeping turbines in good running order throughout the operational life of the Project to reduce noise impacts.

3.8 Traffic and Transportation

3.8.1 Existing Conditions

This section will describe the existing road system and identify those roads that are anticipated to be used for construction of the proposed Project. It will also describe the transportation requirements of the Project (e.g., turning radii, vehicle widths, vehicle weight). This section will discuss any limitations/deficiencies that affected roads, culverts and bridges may have. In order to assess the existing traffic and road conditions within the Project area, a transportation study will be conducted to evaluate roadway safety, traffic capacity, structure inventory, and roadway geometry. The study will include a site visit to evaluate the anticipated delivery path(s) from Interstate I90 to the construction site,] lateral clearances, vertical clearances, intersecting roadway control, speed limits, posted truck size and weight restrictions, major roadway intersection configurations, and primary and alternate route selections. This will also include consultation with the New York State Department of Transportation (NYSDOT) and the local municipalities as well as a field visit to assess the road structures in the project area. The Transportation Study will be appended to the DEIS.

3.8.2 Anticipated Impacts

This section will address impacts anticipated to occur during the construction period, including temporary damage to road surfaces, temporary traffic delays due to slow-moving or parked vehicles, and widening/upgrades to existing roads and intersections to accommodate construction vehicles. Impacts to public utilities and public services (i.e., police, fire, medical, and school) from traffic due to construction will also be discussed. The Applicant will conduct a Delivery Route Assessment to identify anticipated off-site delivery routes for bringing turbine delivery vehicles into the Project area and the anticipated impact each route may have. This evaluation will also identify and describe improvements that may be required to ensure delivery of project components.

The applicant will also conduct a traffic analysis to identify and describe the anticipated traffic congestion/delays during construction due to road improvements and component delivery.

This section will also describe the impacts to traffic and transportation during operation, including a discussion of the anticipated increase in traffic due to tourism to view the operating wind farm. Additionally, this section will describe the anticipated impact to air traffic and airports.

This section will identify and describe any anticipated long-term improvements to roads within the project area and the associated maintenance.

3.8.3 Anticipated Mitigation Measures

This section will discuss the anticipated mitigation measures to be conducted to remediate any anticipated damage to local roads that result from the proposed action. Such anticipated mitigation measures include a final delivery and road improvement plan to be developed prior to construction. This will include obtaining all necessary permits from the town and county highway departments and the NYSDOT to obtain new access points, improve existing roadways, cross highways with buried electrical interconnects and to operate oversize vehicles on the highways.

Additionally, transportation improvement plans will be developed prior to construction to address the bridges, pipes, and culverts that will not accommodate the construction-related traffic. The Applicant will consult with the towns to determine the conditions under which local roads may be used and improved by the Project, including measures to avoid/mitigate for excessive damage and post-construction restoration criteria for local roads. The negotiation often also includes the requirement for posting a road bond or some other assurance that the negotiated restoration criteria will be met. Through these negotiations the Applicant will likely develop Road Use Agreements with the towns.

Prior to construction, the Applicant will document the existing condition of roadways (for example, the Applicant may video tape the existing roadways to document the pre-construction roadway conditions). Upon completion of the construction activities, the Applicant will return the roadway to a minimum of pre-construction conditions.

This section will also describe proposed protocol for responding to traffic/transportation issues that arise during project construction. Such measures may include, but are not limited to, the following:

- Development of a detailed construction signage plan, including posting recommended speeds in the vicinity of the construction staging areas to improve safety of vehicular movement in the area;
- Identification of one or more construction managers prior to construction to act as the primary traffic contact(s) for traffic/transportation concerns that may arise during the construction of the Project; and
- Consultation with all town, county, and state highway departments prior to construction to develop a notification plan for any traffic issues that may arise during construction, and to identify potential traffic congestion areas, develop potential detours, and develop construction schedules to avoid public transportation or school bus conflicts.

3.9 Socioeconomics

3.9.1 Existing Conditions

This section will describe the existing socioeconomic conditions within the Towns of Chateaugay and Bellmont and the surrounding communities. Thus, this section will describe specific information regarding the labor force, including population and housing; the economy, in particular employment rates and opportunities; and municipal budgets and taxes, including the local school budgets and taxes. An inventory from the local assessor records identifying all affected properties within the defined view shed or within two miles of the project will be created and transfers of ownership (sales) of those parcels since project announcement will be documented. Resales or subsequent sales of like properties will be looked for to see what extent changes in price can be attributed to the project announcement. This information will be obtained through online resources such as the US Census Bureau and consultation with the towns and Franklin County. The Applicant has also conducted a study to identify and maintain a database of all houses in the Project area. This House Study will be included as an appendix to the DEIS.

3.9.2 Anticipated Impacts

This section will discuss the anticipated temporary and long-term socioeconomic impacts to the local community due to the construction and operation of the Project within the categories identified above. Considerations regarding impacts to low-income or minority communities will also be addressed in this section.

Socioeconomic impacts to the host community to be discussed are generally positive and will include the following:

- Payment-in-lieu of tax (PILOT) revenues to local municipalities;
- Host Community agreement with host communities;
- Lease revenues to participating landowners;
- Expenditures on goods and services;
- Anticipated tourism revenue;
- Reduced wholesale electricity prices statewide; and
- Short-term (up to 250 jobs) and long-term (up to 25 jobs) employment.

Each of these potential benefits will be discussed in detail in this section.

Additionally, anticipated impacts associated with property values, as well as the developability and insurability of land within the project area, will be discussed in this section. This section will also discuss the findings of studies conducted at similar wind power projects to assess these issues. No negative impacts associated with these resources are anticipated. The Property Values Analysis will be appended to the DEIS.

3.9.3 Anticipated Mitigation Measures

As most anticipated socioeconomic impacts associated with the Project are positive, minimal mitigation techniques are anticipated to be discussed in the section.

Anticipated mitigation measures for impacts associated with decommissioning in the event that the Project is not completed, proves economically unviable, or reaches the end of its operational life span will be discussed in this section. Mitigation for the anticipated economic impact to the host community due to decommissioning will be proposed in the form of a decommissioning fund. This fund will include a financial structure for funding the cost of removal, a decommissioning prioritization schedule, and specific removal procedures.

Additionally, the Applicant will describe plans to negotiate a PILOT agreement with the Franklin County Industrial Development Authority through which all affected taxing jurisdictions will receive revenue.

3.10 Public Safety

3.10.1 Existing Conditions

This section will identify and describe any safety concerns that are known at the project location. Currently, there are no known safety issues or concerns at the present location related to the presence of a wind farm.

3.10.2 Anticipated Impacts

This section will identify and describe the safety concerns in relation to the construction and operation of the Project.

Public safety concerns related to construction activity generally include the potential for injuries to workers and the general public from 1) the movement of construction vehicles, equipment and materials, 2) falling overhead objects, 3) falls into open excavations and/or from heights, and 4) electrocution.

This section will also describe in detail unique public safety concerns associated with operation of a wind power project including stray voltage, blade failure, ice shedding, the lightening strikes, electromagnetic fields and the potential for fire. The study will also note benefits including homeland security benefits, public health benefits and electrical system benefits.

The anticipated need for increased or more technical responses by local emergency service providers will be discussed in this section. The discussion will include a description of any specialized expertise or training necessary in a community wherein a wind energy Project has been developed, a description of any additional risks to service providers, and a description of the costs associated with additional training.

3.10.3 Anticipated Mitigation Measures

This section will describe proposed mitigation measures and siting, construction, and operational techniques to be employed by the Applicant to minimize/avoid potential impacts to public safety. As an initial avoidance measure, setbacks will be adhered to throughout the planning and construction phases of the Project to protect the public and electrical systems will be grounded to minimize the potential for stray voltage. Additional mitigation techniques to be evaluated include the following:

- Adherence to a Safety Compliance Program Protocol during construction and operation;
- Development of complaint resolution plan methods to ensure any complaints and safety concerns are adequately investigated and resolved;
- Development of a Construction Routing Plan;
- Installation of ice detectors to allow for appropriate actions to safeguard from ice throws;
- Installation of a Turbine Lightning Protection System to adhere to FAA regulations;
- Development of a Fire/Emergency Response Plan and employee safety program for both construction and operation activities; and

- Installation of fencing where required to protect the public or livestock from areas where the risk of injury is a concern.

Public safety and emergency planning considerations will be developed into a Fire Protection and Emergency Response Plan, which will be appended to the DEIS.

3.11 Community Facilities and Services

3.11.1 Existing Conditions

This section will describe the existing community facilities and services, including public utilities; police and fire protection services, medical services and facilities; education facilities; and recreational facilities (both formal and informal).

The Applicant will gather information on these services and facilities by interviewing State, County, and local officials. Additionally, the Applicant will review available information such as projected population growth; existing plans, goals, or municipal budgets; land use and zoning maps; open space and key recreational areas (parks, snow mobile trails etc) and other recreational facilities.

The adequacy of existing services and facilities will be evaluated, along with the anticipated economic benefits to these services and facilities resulting from Project implementation.

3.11.2 Anticipated Impacts

This section will describe anticipated construction and operation impacts. Anticipated impacts that will be considered include construction-induced increase in energy usage, modification to existing electrical distribution facilities, temporary road obstructions, disruption to recreational facilities, demand for school district services or facilities, and the anticipated increased demands on police and emergency services. This section will also address the possible telecommunication interference and need for creation of utility distribution lines and poles, bulk power system upgrades. This section will also demonstrate the Applicant's compliance with Town Local Laws as they pertain to setbacks from existing utilities and other facilities.

This section will also discuss the benefit this project provides by preserving existing recreation areas and creating a new source of clean renewable energy with zero-emissions.

3.11.3 Anticipated Mitigation Measures

Anticipated impacts to recreational, educational, and medical facilities will be primarily avoided by carefully planning and siting the Project. The Applicant will coordinate with local emergency service personnel and develop a coordinated emergency response plan, including alternate roads and routes for emergency response. A safety compliance program will be outlined in this section and will include the procedures that will be followed during construction of the Project. To minimize impacts during the Project planning phase, the Applicant will coordinate with corresponding utility entities and will institute protection of underground facility procedures. Jericho Rise will comply with all applicable local, state, and Federal regulations regarding impacts to utilities and community facilities and services.

3.12 Communication Facilities

3.12.1 Existing Conditions

This section will identify existing public, private, or government wireless communication facilities within and adjacent to the Project area, including television, AM/FM radio, land mobile radio, satellite, and cellular phone reception and transmission. A list of these facilities will be provided, which will include information such as location, frequency, operating status, and elevation.

To identify these resources, the Applicant will conduct a microwave systems study and television reception analysis. This analysis will include a search of any licensed non-Federal Government microwave paths that intersect the coordinate block of the proposed wind energy facility. This analysis will also determine the Worst Case Fresnel Zone (WCFZ) boundaries for each path. The WCFZ is a swath along the microwave path where wind turbines could obstruct the path. The study will be included as an appendix to the DEIS.

The Applicant will identify and map any off-air TV stations in a 100-mile radius of the proposed wind turbine facility. This section will include information on the communities served, and detailed technical data will be provided for each station. Baseline reception quality measurements of off air stations will also be mapped. This analysis will also be included as an appendix to the DEIS.

This information will be gathered by obtaining measurements at various locations in population centers and at locations where the potential for signal blockage, multipath and electromagnetic noise degradation is probable. Reception quality will be measured using a spectrum analyzer and calibrated conventional TV antenna to determine the television signal strength. The signal strength measured will be compared to Class A and B contour levels for television stations and the levels established by the Federal Communication Commission (FCC) for community standards. In addition, a TV monitor and video recorder will be used to observe and record the video and audio of the television channels to determine their video quality and to determine if any degradation effects are present and attributable to the presence of the wind turbines. One-minute recordings of each received television channel will be made.

3.12.2 Anticipated Impacts

The section will describe any anticipated impacts with respect to interference with public, private or government communication facilities during project construction or operation. Construction impacts would be temporary and limited to equipment that would be used (typically involving cranes).

3.12.3 Anticipated Mitigation Measures

Anticipated impacts to communication facilities will be avoided by carefully planning and siting the Project based on the identification of the locations of existing communication facilities and beam paths. The project will conduct a clearance calculations study and commit to complaint resolution plan methods.

3.13 Land Use and Zoning

3.13.1 Existing Conditions

This section will describe the land use and zoning within the Project area. Land use and zoning in the Project area will be determined through review of local town codes, tax parcel maps, aerial photographs, and field review. Land use and zoning will be discussed in terms of regional land use patterns, local and Project area land use and zoning, agricultural land use, and future land use.

Regional land use patterns will include a general description of Franklin County and its land use types. Local and Project area land use and zoning will include a percentage of each land use within the Project area. A summary of the Towns of Chateaugay and Bellmont local laws as they apply to the regulation of wind energy conversion systems will be identified and discussed. Agricultural land will be identified and discussed through review of the USDA National Agriculture Statistics Service website. Future land use and other planned major development (including wind projects) will be identified and reviewed through local land use plans, if available, and follow up with staff.

3.13.2 Anticipated Impacts

This section will include a discussion on short-term (construction-related) and long-term (operational) anticipated impacts related to each land use in the Project area. Such impacts include: damage to growing crops from the movement of equipment and material during construction, damage to due to construction forest access roads, damage to fences and gates, damage to subsurface drainage systems (tile lines), and temporary blockage of farmers' access to agricultural fields. Anticipated impacts during operation could also result in a change to community character and perceived land use throughout the area. Additionally, this section will also include a discussion of the anticipated positive impacts to agricultural land use within the Project area by providing a sustainable approach to farming and agricultural enterprises through revenue augmentation for Project participants through lease agreements.

No impact on property values is anticipated as a result of construction or operation of the project, although real estate transactions will be tracked and monitored to identify whether any such patterns develop. This section also will discuss the prospect for inducement of growth within the community as a consequence of new road development or improvement of existing roads.

3.13.3 Anticipated Mitigation Measures

This section will describe proposed mitigation measures to avoid or minimize negative impacts to the existing land use and character of the Project area. To mitigate anticipated impacts to land use and zoning (specifically forest land, agricultural land and farming operations), the Project will adhere to setback requirements and will comply, to the extent practicable, with the Ag & Markets guidelines. Other anticipated mitigation measures that will be included in the discussion are full compliance with the local laws regulating the development of wind power facilities in the Towns of Chateaugay and Bellmont, alteration to Project layout, and timing construction so as not to interfere with agricultural activities. This section will also include a discussion of the benefits to landowners from the compatibility of wind energy facilities with agricultural activities.

4.0 UNAVOIDABLE ADVERSE IMPACTS

Using information addressed in Section 3.0 above, this section of the DEIS will identify impacts that are likely to occur despite anticipated mitigation measures, and will compare the beneficial and adverse implications of these unavoidable impacts. An impact and mitigation table will be provided in this section.

5.0 ALTERNATIVES ANALYSIS

The section will include a description and evaluation of the range of reasonable alternatives to the proposed action. Alternatives in this section to be considered will include alternate Project size; alternate Project location; alternate Project layout; alternate turbine output, height, and color; and a "no action" alternative. This section will also describe the methodology and criteria for deciding among the alternatives.

The assessment of available mitigation for identified project impacts will include an assessment of a range of reasonable mitigation alternatives such as, alternative system communication technologies, relocation of individual wind energy installations and alternative delivery routes. Mitigation strategies such as relocation and reduction of Project scale will be considered and discussed where applicable. The alternative mitigation strategies will be assessed based on their effects on the anticipated impacts described in Section 3.0.

6.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Using the information from Section 3.0 above, this section of the DEIS will identify those natural and man-made resources consumed, converted or otherwise made unavailable for future use as a consequence of the proposed action.

7.0 CUMULATIVE IMPACTS

Using the information from Section 3.0 above, this section will evaluate the potential cumulative impact of the proposed Project, along with other wind power projects and significant development projects that have been proposed within the region and with which the project could create cumulative impacts. The cumulative analysis will address the resources areas discussed in Section 3.0. It will also focus on the potential for, and impact of future proposed wind power projects, or possible expansion of the proposed Project, along with other likely future development within the Project area.

8.0 GROWTH-INDUCING ASPECTS

Using the information from Section 3.0 above, this section of the DEIS will describe potential growth-inducing aspects the proposed action may have, including the potential for additional development of wind power projects in the vicinity of the Project area. This section will also speak to the likelihood of an increase in tourism to the local area resulting from construction of the wind farm and the preservation of agricultural land by reducing the chances of farmers having to sell their land for the development of residential neighborhoods.

This section will review the potential for the currently proposed Project to enhance the likelihood, scale or extent of any subsequent wind energy projects that might be developed within the community. It will include a review to include a discussion of any plans, the feasibility and the likelihood of future re-powering (turbine replacement) that would increase anticipated visual, noise or other impacts.

9.0 EFFECTS ON THE USE AND CONSERVATION OF ENERGY RESOURCES

Using the information from Section 3.0 above, this section of the DEIS will describe the effect of the proposed action on the use and conservation of energy resources.

10.0 REFERENCES

This section of the DEIS will list any sources of relevant information cited directly in the report text.

APPENDICES TO ACCOMPANY DEIS

A summary of all SEQRA related agency consultation, including a copy of the Final Scope, will be included as an Appendix to the DEIS.

To supplement the information required in each topic section, the following will be included as appendices to the DEIS where appropriate:

- Relevant Technical Maps, Figures and Exhibits
- Project Plans, Specifications, or Construction Information
- Decommissioning Plan
- Relevant Agency Correspondence
- Agricultural Protection Measures
- Wetland and Stream Inventory Report
- Avian and Bat Studies
- Visual Impact Analysis
- Shadow Flicker Analysis
- Phase 1A Cultural Resources Investigation
- Unanticipated Discovery Plan
- Cultural Resources Correspondence
- Environmental Sound Survey and Noise Impact Assessment
- Transportation Study
- House Study
- Property Values Analysis
- Fire Protection and Emergency Response Plan
- Licensed Microwave Search & Worst Case Fresnel Zone
- TV Broadcast Off-Air Reception Analysis

LIST OF PREPARERS: List of firms and persons responsible for both overall preparation of the DEIS and the underlying plans and other exhibits relied upon.

List of Acronyms and Abbreviations

Ag & Markets	New York State Department of Agriculture and Markets
APE	area of potential affect
Applicant	Jericho Rise Wind Farm LLC
BBA	New York State Breeding Bird Atlas
BTU	British thermal units
Corps	US Army Corps of Engineers
DEIS	Draft Environmental Impact Statement
EAF	Environmental Assessment Form
EIS	Environmental Impact Statement
FCC	Federal Communications Commission
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Act
GIS	Geographic Information System
MOA	Memorandum of Agreement
NHP	Natural Heritage Program
NRCS	National Resources Conservation Service
NSA	Noise sensitive area
NWI	National Wetland Inventory
NYSDEC	New York State Department of Conservation
NYSDOT	New York State Department of Transportation
NYSGS	New York State Geological Survey
O&M	Operations and Maintenance
PILOT	payment-in-lieu of tax
Project	Jericho Rise Wind Farmt
S/NRHP	New York State and National Registers of Historic Places
SEQRA	New York State Environmental Quality Review Act
SHPO	State Historic Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VIA	Visual Impact Assessment
WCFZ	Worst Case Fresnel Zone
WTG	Wind Generating Turbine

Proposed Jericho Rise Wind Farm
Draft Scope: SEQR DEIS Draft Table of Contents

TABLE OF CONTENTS

LIST OF APPENDICES

Appendix A	Relevant Technical Maps, Figures and Exhibits
Appendix B	Project Plans, Specifications, or Construction Information
Appendix C	Decommissioning Plan
Appendix D	Relevant Agency Correspondence
Appendix E	Agricultural Protection Measures
Appendix F	Wetland and Stream Inventory Report
Appendix G	Avian and Bat Studies
Appendix H	Visual Impact Analysis
Appendix I	Shadow Flicker Analysis
Appendix J	Phase 1A Cultural Resources Investigation
Appendix K	Unanticipated Discovery Plan
Appendix L	Cultural Resources Correspondence
Appendix M	Environmental Sound Survey and Noise Impact Assessment
Appendix N	Transportation Study
Appendix O	House Study
Appendix P	Property Values Analysis
Appendix Q	Fire Protection and Emergency Response Plan
Appendix R	Licensed Microwave Search & Worst Case Fresnel Zone
Appendix S	TV Broadcast Off-Air Reception Analysis

COMMONLY USED ACRONYMS AND ABBREVIATIONS

Ag & Markets	New York State Department of Agriculture and Markets
amsl	above mean sea level
APE	Area of potential effect
Applicant	Jericho Rise Wind Farm LLC
BBA	New York State Breeding Bird Atlas
BTU	British Thermal Units
Corps	U.S. Army Corps of Engineers
CFR	Code of Federal Regulations
dBA	decibels, A-rated
DEIS	Draft Environmental Impact Statement
DPW	Department of Public Works

EAF	Environmental Assessment Form
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Act
GIS	geographic information system
GPS	Global Positioning System
kV	kilovolt kW kilowatt
LSZ	Landscape Similarity Zones
MOA	Memorandum of Agreement
MW	megawatts
NAAQS	National Ambient Air Quality Standards
NHP	National Heritage Program
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	Noise sensitive area
NWI	National Wetlands Inventory
NYCRR	Official Compilation of Codes, Rules, and Regulations of the State of New York
NYISO	New York Independent System Operator
NYSA&M	New York State Department of Agriculture and Markets
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
NYSDPS	New York State Department of Public Service
NYSEG	New York State Electric & Gas
NYSERDA	New York State Energy Research and Development Authority
NYSGS	New York State Geological Survey
NYSOPRHP	New York State Office of Parks, Recreation and Historic Places
O&M	Operation and Maintenance
OPRHP	Office of Parks, Recreation & Historic Preservation (New York State)
OSHA	Occupational Safety and Health Administration
PILOT	Payment in lieu of tax
POI	Point of interconnection station

S/NRHP	New York State and National Registers of Historic Places
SEQRA	State Environmental Quality Review Act
SHPO	State Historic Preservation Office
SPDES	State Pollutant Discharge Elimination System
SWPPP	Stormwater Pollution Prevention Plan
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish & Wildlife Service
USGS	U.S. Geological Survey
VIA	Visual Impact Assessment
WCFZ	Worst Case Fresnel Zone
WMA	Wildlife Management Area
WTG	Wind Generating Turbine

CARL J. MADONNA, ESQ.
ATTORNEY AT LAW
10 OAK STREET
PLATTSBURGH, NEW YORK 12901

TELEPHONE: 518-561-6800
FACSIMILE: 518-563-1196
EMAIL: MADONNA@NORTHNET.ORG

August 9, 2007

Town of Bellmont
County Route 24
Brainardsville, New York 12915

Attention: Hon. Kip Cassavaw, Supervisor

Re: Application to the Towns of Chateaugay and Bellmont, Franklin County, New York for the "Jericho Rise Wind Farm LLC -Project"
Notice of Intent to Act as Co-Lead Agency with the Town of Bellmont

Dear Mr. Cassavaw:

I represent the Town of Chateaugay and the Town of Bellmont, both in Franklin County, New York. Jericho Rise Wind Farm LLC has submitted an application to each town to construct and operate a total of 53 wind energy conversion systems (34 in the Town of Chateaugay and 19 in the Town of Bellmont). The Town Boards have determined that the Project is a Type I action requiring coordinated review. Your agency has been identified as a potentially involved/interested agency for this application.

The purpose of this letter is to notify you of the intent of the Chateaugay and Bellmont Town Boards to act as co-lead agencies. If you consent to the designation of the Town Boards as co-lead agencies, please sign the enclosed copy of the Towns' Notice of Intent to Act as Co-lead Agencies and return it to the Town Boards at the address provided on or before **September 14, 2007**. In the absence of written objections from any involved agencies within thirty (30) days from the date of this notice, the Town Boards will assume the lead agency role for this action pursuant to 6 NYCRR §617.6(b)(3)(i).

Please note that both Towns recently enacted comprehensive Local Laws to regulate the placement of wind energy facilities, establishing minimum setbacks and maximum height and noise levels and creating a review process which requires in-depth analysis of the project's potential impacts, including noise studies, wetlands delineation and mitigation, aesthetic/visual assessment, impacts on farm lands, drainage issue and traffic impacts. The Towns have undertaken to hire consultants to assist in their environmental review. Further, presently the Town Boards are serving as Co-Lead Agencies for another proposed utility scale wind energy project to be located in both Towns.

Further, Jericho Rise has consented to the preparation of a Draft Environmental Impact Statement ("DEIS"). We are therefore providing you with a copy of the application, Part I of the FEAF, and a draft scope for your review and comment. The draft scope will also be available for public comment. We ask that all comments on the scope be written and received at my office no later than **September 14, 2007.**

Very truly yours,

C.J. Madonna, Esq.

STATE ENVIRONMENTAL QUALITY REVIEW ACT

NOTICE OF INTENT TO ACT AS SEQRA CO-LEAD AGENCIES

Dated: August 8, 2007

This notice is issued pursuant to 6 NYCRR Part 617, implementing Article 8 of the Environmental Conservation Law, together known as the State Environmental Quality Review Act ("SEQRA").

The Town Boards of the Town of Bellmont and Chateuagay (the "Town Boards") have determined that the action described below is subject to SEQRA and may involve one or more other involved or interested agencies. The Town Boards wish to serve as co-lead agencies for the review of the action. To expedite their designation as co-lead agencies, the Town Boards have enclosed a stamped, self addressed envelope for your prompt reply. If you consent to the designation of the Town Boards as co-lead agencies, please sign the enclosed copy of this notice and return it to the Town Boards at the address listed below on or before **September 10, 2007.** In the absence of written objections from your agency or other involved agencies within thirty (30) days from the date of this notice, the Town Boards will assume the lead agency role for this action pursuant to 6 NYCRR §617.6(b)(3)(i).

The Town Boards have made a preliminary determination that this is a Type I action in accordance with 6 NYCRR §617.6(a)(1)(iv). The application, plans and full Environmental Assessment Form are attached for your information. The project sponsor has also indicated that it plans to prepare a Draft Environmental Impact Statement ("DEIS") to examine all significant adverse environmental impacts that might arise from its proposed Project and has supplied a draft scoping outline for the review and comment of the lead and involved agencies and the public. A copy of the draft scoping outline is also attached for your information. All written comments must be received no later than **September 10, 2007.**

Name of Action:

Jericho Rise Wind Farm LLC

SEQRA Status:

Type I Action

Description of Action:

Construction, operation and maintenance of an up to 87.45 MW wind energy facility containing up to 53 1.65 MW wind turbines, associated infrastructure including but not limited to access roads, collection and transmission lines, and substation(s). Of the 53 turbines, 34 will be located in the Town of Chateaugay and 19 in the Town of Bellmont. Each turbine will be approximately 397 feet tall when the blade is at its highest point.

Location:

The Project is located in portions of the Towns of Chateaugay and Bellmont, Franklin County, New York The Project area is located approximately five miles south of the Canadian border, approximately one mile southwest of the Village of Chateaugay, and two miles east of the Village of Burke. The Project area is roughly bordered by Flynn Road to the west, State Highway 374 to the east, the Malone Chateaugay Road to the north and Brainardsville Road to the south.

Other Agencies:

Involved and/or Interested:	Chateaugay Town Board Bellmont Town Board New York State Department of Environmental Conservation New York State Public Service Commission New York State Department of Transportation Franklin County Health Department Franklin County Highway Department Franklin County Industrial Development Agency New York State Office of Parks, Recreation and Historic Preservation New York State Department of Agriculture and Markets Town Highway Dept. Bellmont and Chateaugay F. A. A. U. S. Army Corps of Engineers.

For Further Information:

Contact Person:	C. J. Madonna, Special Counsel Town of Bellmont and Chateaugay
Address:	10 Oak Street Plattsburgh, New York 12901

Date of Mailing: August 9, 2007

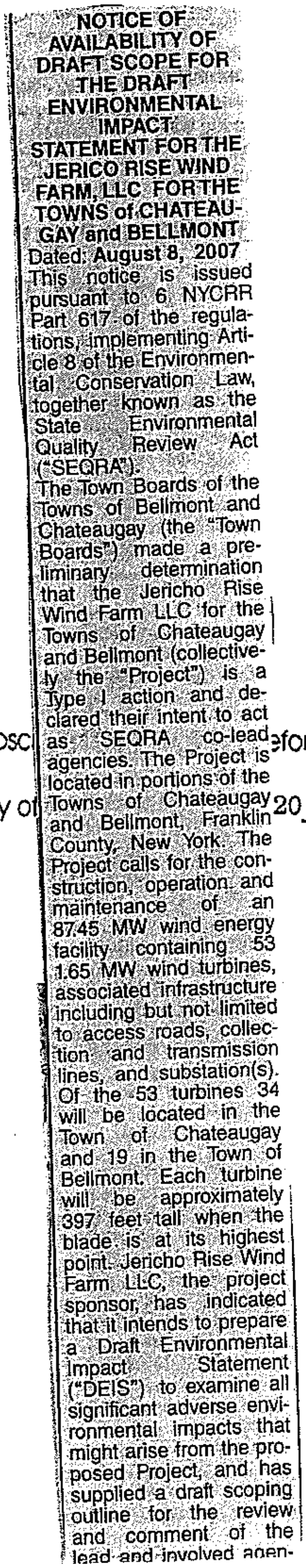
CONSENT TO LEAD AGENCY DESIGNATION

__________________, as an involved agency in this action, hereby consents to the designation of the Town Board as lead agency for Project described herein.

Dated: ____________________________

____
(AGENCY)

By: ________________________
Name: ________________________
Title: ________________________



NOTICE OF AVAILABILITY OF DRAFT SCOPE FOR THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE JERICO RISE WIND FARM, LLC FOR THE TOWNS of CHATEAUGAY and BELLMONT

Dated: **August 8, 2007**

This notice is issued pursuant to 6 NYCRR Part 617 of the regulations, implementing Article 8 of the Environmental Conservation Law, together known as the State Environmental Quality Review Act ("SEQRA").

The Town Boards of the Towns of Bellmont and Chateaugay (the "Town Boards") made a preliminary determination that the Jericho Rise Wind Farm LLC for the Towns of Chateaugay and Bellmont (collectively the "Project") is a Type I action and declared their intent to act as SEQRA co-lead agencies. The Project is located in portions of the Towns of Chateaugay and Bellmont, Franklin County, New York. The Project calls for the construction, operation and maintenance of an 87.45 MW wind energy facility containing 53 1.65 MW wind turbines, associated infrastructure including but not limited to access roads, collection and transmission lines, and substation(s). Of the 53 turbines 34 will be located in the Town of Chateaugay and 19 in the Town of Bellmont. Each turbine will be approximately 397 feet tall when the blade is at its highest point. Jericho Rise Wind Farm LLC, the project sponsor, has indicated that it intends to prepare a Draft Environmental Impact Statement ("DEIS") to examine all significant adverse environmental impacts that might arise from the proposed Project, and has supplied a draft scoping outline for the review and comment of the lead and involved agen-

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STATE OF NEW YORK,

ss:

Franklin County

Betsy J. McGivney

being duly sworn, says that she is Business Manager of The Malone Telegram, a daily newspaper of general circulation published in Malone, in said county, and that notice, of which a true copy cut from said newspaper, is hereunto annexed, was published in said newspaper ~~once a week~~

for One day weeks ~~consecutively, the first publication~~

~~being on the ___ day of __________, 20___, and the~~ last publication

being on the 21 day of Aug, 2007

Subsc efore me, this 21

day of 20 07

Betsy J McGivney

GEORGE McLAUGHLIN
Notary Public, State of New York
Franklin County No. 4731734
My Commission Expires March 30 2011

Notary Public

cies and the public. The Town Boards are making that draft scope available for public comment. The draft scope the Project is available for public inspection at the following locations:

1. the Town of Bellmont Town Offices located at County Route 24, Brainardsville, New York,
2. the Town of Chateaugay Town Hall located at 191 East Main Street, Chateaugay, New York,
3. the Jericho Rise Wind Farm LLC office located at 3 Columbia Place, Albany, New York 12901, and
4. on the Jericho Rise Website (www.jerichorisewind.com).

All comments must be written and received no later than **September 14, 2007** at the office of C.J. Madonna, Esq., Special Counsel to the Towns of Chateaugay and Bellmont or in the Town Clerks' offices for either the Town of Chateaugay or Bellmont at the addresses listed below. **For Further Information:**

Contact Person(s):

Town of Chateaugay
Hon. Donald Bilow, Town Supervisor Chateaugay Town Hall 191 East Main Street, Chateaugay, New York 12920.(518) 497-3126

Town of Bellmont
Hon. Kip Cassavaw, Town Supervisor
Bellmont Town Offices
County Route 24
Brainardsville, New York 12915. (518) 425- 3461

C.J. Madonna, Esq.
10 Oak Street, Plattsburgh, New York 12901
(518) 561-6800

REC'D JUL 23 2007

Jericho Rise Wind Farm LLC
3 Columbia Place, Albany, New York 12207, (518) 426-1650

JERICHO RISE
WIND FARM

July 20, 2007

Town of Chateaugay Town Board
Attn. Phyllis A. Lemay
Town of Chateaugay
P.O. Box 9
191 East Main Street
Chateaugay, New York 12920

RE: Response to comments on Jericho Rise Wind Farm, LLC's Application for Wind Energy Permits for Wind Energy Conversion Systems (WECS)

Dear Ms. Lemay:

Jericho Rise Wind Farm LLC (Applicant), formerly Burke Wind Power LLC, respectfully responds to comments by Bellmont Town Board member Mr. Russell received at the Town of Bellmont Board meeting on July 16, 2007.

- *Comment:* The above-referenced application includes as Exhibit 2 letters of permission from participating land owners. There are four such letters that refer to the "Wind Energy Facility Law of the Town of Burke, New York." In view of the fact that the Town of Burke does not have wind energy facility laws, Mr. Russell requested that these four letters be removed from the application package.
  Response: Please remove and discard letters in Exhibit 2 from the following land owners:
  1. Arlend M. Cook & Judith M. Cook, SBL #87.-3-5;
  2. John Roulston & Caron A. Roulston, SBL #102.-1-3;
  3. Hamilton Wood & William Wood, SBL #73.-2-4, 73.-3-4, 73.-3-7;
  4. Hamilton Wood, SBL #88.-9, 87.-3-4, 73.-3-9, 73.-3-2, 73.-3-8.

- *Comment:* Mr. Russell interpreted references to Burke Wind Power LLC in the Exhibit 2 letters of permission as an indication that the Town of Burke has wind energy facility laws.
  Response: The former name of the Applicant was Burke Wind Power LLC. Some of the letters in Exhibit 2 were signed prior to the change of the Applicant's name to its current name, Jericho Rise Wind Farm LLC. Regardless of the name change, these letters remain valid letters of permission. Use of the Applicant's former name in no way refers to the Town of Burke's laws or regulations.

Thank you for this opportunity to address issues raised at the Town of Bellmont Board meeting. We trust the resolution of these issues renders the application complete. Please contact me at 518-426-1650 should you have any additional questions or comments regarding this application.

Sincerely,

Patrick Doyle

Patrick Doyle
Director of Development
Horizon Wind Energy

cc: C.J. Madonna, Esq.
J.M. Nason, Town of Bellmont
R. Cogen, Nixon Peabody LLP
J. Dowd, Northern Energy Group
T. Levy, Conestoga-Rovers & Associates, Inc.
B. Smith, Conestoga-Rovers & Associates, Inc.
R.G. Adams, Conestoga-Rovers & Associates, Inc.
L. Kearns, Tetra Tech EC, Inc.

Jericho Rise Wind Farm LLC
3 Columbia Place, Albany, New York 12207, (518) 426-1650

JERICHO RISE
WIND FARM

August 6, 2007

Town of Chateaugay Town Board
Attn. Phyllis A. Lemay
Town of Chateaugay
P.O. Box 9
191 East Main Street
Chateaugay, New York 12920

RE: Response to comments from Conestoga-Rovers & Associates (CRA)
Application for Wind Energy Permit for Wind Energy Conversion Systems (WECS) dated June 22, 2007 by Jericho Rise Wind Farm, LLC

Dear Ms. Lemay:

Jericho Rise Wind Farm LLC (Applicant), formerly Burke Wind Power LLC, respectfully responds to comments by CRA on behalf of the Town of Chateaugay received on July 21, 2007.

Section: Comparison of Jericho Rise Application with the Town of Chateaugay Local Wind Law

- ***Item 1 Comment***: The name, address, and telephone number of the Applicant are provided.
  Response: Comment does not require a response.

- ***Item 2 Comment:*** Easements required by Jericho Rise are provided in Exhibit 2. Two issues with these letters are presented.
  Response: Response provided in parts 2a through 2b.
    - ***Item 2a Comment:*** All letters refer to Burke Wind Power, LLC or Horizon Wind Energy, LLC instead of to Jericho Rise.
      Response: The former name of the Applicant was Burke Wind Power LLC. Some of the landowner consent letters included in Exhibit 2 or the WEP application refer to Burke Wind Power LLC, or Horizon Wind Energy. Jericho Rise Wind Farm LLC is a successor company to both of these entities.
    - ***Item 2b Comment:*** Most of the letters are undated.
      Response: *N/A*

- ***Item 3 Comment:*** Each proposed WECS for the Town of Chateaugay is identified in Exhibit 3.
  Response: Comment does not require a response.

- ***Item 4 Comment:*** A Project description is provided in Section 1.
  Response: Comment does not require a response.

- ***Item 5 Comment:*** Jericho Rise provided a plot plan in Exhibits 4 and 5.
  Response: Response provided in parts 5a through 5i.
    - ***Item 5a Comment:*** The plot plan includes all property boundaries and was drawn to scale. Each WECS site is identified and symbolized. Residences are identified and symbolized.
      Response: Comment does not require a response.

- ○ ***Item 5b Comment:*** Jericho Rise has located and labeled roads, property owners, and dwellings. Non-WECS structures are identified on Exhibit 4; however, no details are provided from those structures.
  Response: These structures are non-dwelling structures including, barns, offices, sheds, sugar houses, etc. The revised Exhibits 4 and 5 enclosed with this letter, refer to these structures as "non-dwelling structures".
- ○ ***Item 5c Comment:*** The location of each WECS is graphically represented on the Project Map. The easting and northing, as well as the base elevation of each WECS are listed in the table in Exhibit 3.
  Response: Comment does not require a response.
- ○ ***Item 5d Comment:*** The locations of all overhead and underground utility lines and of both substations are graphically represented.
  Response: Comment does not require a response.
- ○ ***Item 5e Comment:*** Other than the WECS and the associated transmission lines required for the project, only houses are graphically represented on the Project Map. Non-WECS structures are also provided. However, specific information on the nature of these structures is not included.
  Response:. These structures are non-dwelling structures including, barns, offices, sheds, sugar houses, etc. The revised Exhibits 4 and 5 enclosed with this letter, refer to these structures as "non-dwelling structures".
- ○ ***Item 5f Comment:*** Concentric circles have been drawn around each WECS at the radii required.
  Response: Comment does not require a response.
- ○ ***Item 5g Comment:*** All dwelling units in the area are graphically represented on the Project Map.
  Response: Comment does not require a response.
- ○ ***Item 5h Comment:*** All dwelling units within 1, 320 feet of the proposed WECS are graphically represented on the Project Map.
  Response: Comment does not require a response.
- ○ ***Item 5i Comment:*** All access roads, collection corridors, WECS, and substations are provided on the Project Map. There is no graphic representation of storage/maintenance units on the Project Map.
  Response: The location of the storage and maintenance building has not yet been determined, but will be located within the footprint of the construction laydown area.

- ***Item 6 Comment:*** A simplified vertical drawing of the Vestas V82 WECS is provided, but there is no graphical representation regarding the tower and turbine colors, ladders, distance between ground and lowest point of any blade, location of climbing pegs, and access doors.
  Response: A revised version of Exhibit 6 is enclosed. This includes a to-scale drawing of the V82 as well as a figure displaying the internal ladder system and other features.

- ***Item 7 Comment:*** Jericho Rise provided a statement that a landscaping plan for the substation will be prepared, if applicable, for the DEIS.
  Response: Comment does not require a response.

- ***Item 8 Comment:*** Jericho Rise has not provided a draft of a lighting plan, which would provide information regarding which WECS will be illuminated at night.
  Response: A preliminary lighting plan will be presented in the DEIS based upon published FAA requirements, but will remain subject to change until approved by the FAA.

- ***Item 9 Comment:*** A list of all property owners within 500 feet of the Wind Farm, including their names, Parcel ID, mailing addresses, and property acreage has been provided by Jericho Rise in Exhibit 7 of the application.
  Response: Comment does not require a response.

- ***Item 10 Comment:*** A decommissioning plan has been provided in Exhibit 8 of the Application.
  Response: Comment does not require a response.

- ***Item 11 Comment:*** The Complaint Resolution procedure does not indicate the length of time it may take to verify that a positive determination of a problem exists.
  Response: The Complaint Resolution Process (Exhibit 9) has been revised to reflect a 60 day resolution period and is enclosed with this letter response.

- ***Item 12 Comment:*** Construction information was provided in Exhibit 10.
  Response: Comment does not require a response.

- ***Item 13 Comment:*** Jericho Rise states in Part I of the EAF that wetland figures will be determined based on a wetland delineation to be conducted in 2007; however, the total Project Area given in the EAF is based on all forms of land use, with the exception of wetlands. In addition, Part B of the EAF does not appear to be consistent with Part A of the EAF, specifically relating to acreage figures. This information should be clarified.
  Response: The revised EAF (Exhibit 11) is enclosed with this letter response.

- ***Item 14 Comment:*** A statement is provided by Jericho Rise in Section 1, #14 that an application has been previously submitted separately for a Wind Measurement Tower in May 2007. It is also stated that two additional applications will be submitted in the future for wind measurement towers.
- ***Response:*** Please disregard the second statement that "two additional applications will be submitted in the future for wind measurement towers".

- ***Item 15 Comment:*** Sound level data are provided in the Vestas report in Exhibit 6. However, it is not clear whether the noise data is applicable for the wind turbines specified in the Application, as the hub height is listed as 93.6m (Report Identification) and 78m (sound pressure level at distances from turbine). MSDS were not provided in the Application. Jericho does, however, state that these well be provided in the DEIS.
  Response: The sound power level provided in Exhibit 6 is independent of hub height. The modeling and analysis conducted will be representative of the as-built operational acoustic condition. By definition, the IEC 61400 sound power (Lw) data is the amount of sound energy radiated from an idealized 1 m2 point source, independent of height above ground, distance from source to receptor, or any source directivity factors, i.e. Lw = 100 dBA re 1 pico-watt.

- ***Item 16 Comment:*** Exhibit 12 includes the Final Minutes of the NYISO Operating Committee Meeting, dated February 27, 2007, which includes approval of the SRIS for the Jericho Rise Wind Farm.
  Response: Comment does not require a response.

- ***Item 17 Comment:*** Section 1 of the Jericho Rise Application is signed by Patrick Doyle, authorized representative of Jericho Rise, stating that the Application is true and accurate to the best of his knowledge.
  Response: Comment does not require a response.

Section: Jericho Rise Application Review and Conclusions

In addition to the comment responses above, the responses to the following comments have been requested in order to deem the WEP complete.

- ***Comment:*** As per Section 10, #5(e), additional structures above 35 feet, and within 500 feet of the proposed WECS location shall be provided. If no structures exist, a statement to that effect should be provided. It is noted that a gray square is provided indicating a structure above 35 feet; however, no additional details are provided.
  Response: The following sentence should be added to Section 10, #5(e): There are no structures of greater than 35' in height within 500 feet of the proposed turbines.

- ***Comment:*** A complete vertical drawing shall be provided, to scale, indicating the total height, turbine dimension, tower and turbine colors, ladders, distance between ground and lowest point of any blade, climbing pegs, and access doors. The generic Vestas graphical representation does not satisfy all of the above requirements.
  Response: A to-scale drawing of the Vestas V-82 has been included in Exhibit 6 of the original WEP application. A separate figure has also been included showing the interior climbing rungs and other features. The revised Exhibit 6 is enclosed with this letter response.
- ***Comment:*** A more accurate construction schedule shall be provided, including actual years and months of construction activities. It is noted that this could change based on actual field conditions, and, therefore, it is acceptable to qualify such schedules with a statement indicating that actual dates could vary, and that Jericho Rise shall maintain up-to-date schedules on their website.
  Response: Enclosed with this letter response is a revised version of Exhibit 10 which includes a more detailed account of the estimated construction schedule.

- ***Comment:*** Prior to issuance of the permit the Applicant must adequately certify to the Town that:
  a. Jericho Rise Wind Farm LLC is a successor company to Burke and Horizon;
  b. All easements are properly filed and recorded; and
  c. The Applicant needs to verify and confirm that the persons granting the easements are authorized to do so.

  Response: The requested certifications will be provided prior to permit issuance.

Thank you for this opportunity to address CRA's comments on Jericho Rise Wind Farm's application for a Wind Energy Permit. We trust the resolution of these issues renders the application complete. Please contact me at 518-426-1650 should you have any additional questions or comments regarding this application.

Sincerely,

Patrick Doyle
Director of Development
Horizon Wind Energy

Enclosures

cc: C.J. Madonna, Esq.
J.M. Nason, Town of Bellmont
R. Cogen, Nixon Peabody LLP
J. Dowd, Northern Energy Group
T. Levy, Conestoga-Rovers & Associates, Inc.
B. Smith, Conestoga-Rovers & Associates, Inc.
R.G. Adams, Conestoga-Rovers & Associates, Inc.
L. Kearns, Tetra Tech EC, Inc.

REC'D JUL 23 2007

Jericho Rise Wind Farm LLC
3 Columbia Place, Albany, New York 12207, (518) 426-1650

JERICHO RISE
WIND FARM

July 20, 2007

Town of Bellmont Town Board
Attn. Judylane M. Nason
Town of Bellmont
County Route 24
Malone, NY 12953

RE: Response to comments on Jericho Rise Wind Farm, LLC's Application for Wind Energy Permits for Wind Energy Conversion Systems (WECS)

Dear Ms. Lemay:

Jericho Rise Wind Farm LLC (Applicant), formerly Burke Wind Power LLC, respectfully responds to comments by Bellmont Town Board member Mr. Russell received at the Town of Bellmont Board meeting on July 16, 2007.

- *Comment:* The above-referenced application includes as Exhibit 2 letters of permission from participating land owners. There are four such letters that refer to the "Wind Energy Facility Law of the Town of Burke, New York." In view of the fact that the Town of Burke does not have wind energy facility laws, Mr. Russell requested that these four letters be removed from the application package.
  Response: Please remove and discard letters in Exhibit 2 from the following land owners:
    1. Arlend M. Cook & Judith M. Cook, SBL #87.-3-5;
    2. John Roulston & Caron A. Roulston, SBL #102.-1-3;
    3. Hamilton Wood & William Wood, SBL #73.-2-4, 73.-3-4, 73.-3-7;
    4. Hamilton Wood, SBL #88.-9, 87.-3-4, 73.-3-9, 73.-3-2, 73.-3-8.

- *Comment:* Mr. Russell interpreted references to Burke Wind Power LLC in the Exhibit 2 letters of permission as an indication that the Town of Burke has wind energy facility laws.
  Response: The former name of the Applicant was Burke Wind Power LLC. Some of the letters in Exhibit 2 were signed prior to the change of the Applicant's name to its current name, Jericho Rise Wind Farm LLC. Regardless of the name change, these letters remain valid letters of permission. Use of the Applicant's former name in no way refers to the Town of Burke's laws or regulations.

Thank you for this opportunity to address issues raised at the Town of Bellmont Board meeting. We trust the resolution of these issues renders the application complete. Please contact me at 518-426-1650 should you have any additional questions or comments regarding this application.

Sincerely,

Patrick Doyle
Director of Development
Horizon Wind Energy

cc:
C.J. Madonna, Esq.
P. Lemay, Town of Chateaugay
R. Cogen, Nixon Peabody LLP
J. Dowd, Northern Energy Group
T. Levy, Conestoga-Rovers & Associates, Inc.
B. Smith, Conestoga-Rovers & Associates, Inc.
R.G. Adams, Conestoga-Rovers & Associates, Inc.
L. Kearns, Tetra Tech EC, Inc.

Jericho Rise Wind Farm LLC
3 Columbia Place, Albany, New York 12207, (518) 426-1650
JERICHO RISE
WIND FARM

August 6, 2007

Town of Bellmont Town Board
Attn. Judylane M. Nason
Town of Bellmont
County Route 24
Malone, NY 12953

RE: Response to comments from Conestoga-Rovers & Associates (CRA)
Application for Wind Energy Permit for Wind Energy Conversion Systems (WECS) dated June 22, 2007 by Jericho Rise Wind Farm, LLC

Dear Ms. Nason:

Jericho Rise Wind Farm LLC (Applicant), formerly Burke Wind Power LLC, respectfully responds to comments by CRA on behalf of the Town of Bellmont received on July 21, 2007.

Section: Comparison of Jericho Rise Application with the Town of Bellmont Local Wind Law

- ***Item 1 Comment***: The name, address, and telephone number of the Applicant are provided.
  Response: Comment does not require a response.

- ***Item 2 Comment:*** Property owner information and letters are provided in Exhibits 1 and 2. Three issues with these letters are presented.
  Response: Response provided in parts 2a through 2c.
    - ***Item 2a Comment:*** All letters refer to Burke Wind Power, LLC or Horizon Wind Energy, LLC instead of to Jericho Rise.
      Response: The former name of the Applicant was Burke Wind Power LLC. Some of the landowner consent letters included in Exhibit 2 or the WEP application refer to Burke Wind Power LLC, or Horizon Wind Energy. Jericho Rise Wind Farm LLC is a successor company to both of these entities.
    - ***Item 2b Comment:*** Most of the letters are undated.
      Response: *N/A*
    - ***Item 2c Comment:*** Letters from Elsa Berenberg and Bruce Martell refer to the same property.
      Response: These landowners are co-owners of the property.

- ***Item 3 Comment:*** Each proposed WECS is identified in a table entitled *Turbine Location Data* in Exhibit 3.
  Response: Comment does not require a response.

- ***Item 4 Comment:*** A Project description is provided in Section 1 (4).
  Response: Comment does not require a response.

- ***Item 5 Comment:*** Jericho Rise provided a plot plan in Exhibits 4 and 5.
  Response: Response provided in parts 5a through 5i.
    - ***Item 5a Comment:*** The plot plan includes all property boundaries and was drawn to scale.

Response: Comment does not require a response.

  - ***Item 5b Comment:*** Jericho Rise has located and labeled roads, property owners, and dwellings. Non-WECS structures are identified on Exhibit 4; however, no details are provided from those structures.
    Response: These structures are non-dwelling structures including, barns, offices, sheds, sugar houses, etc. The revised Exhibits 4 and 5 enclosed with this letter, refer to these structures as "non-dwelling structures".
  - ***Item 5c Comment:*** Exhibit 3 provides location, base elevation, and ID for each WECS. Turbine ID numbers and symbols are provided on Exhibit 4, but are missing from Exhibit 5.
    Response: A revised Exhibit 5 has been enclosed including the turbine ID numbers and symbols.
  - ***Item 5d Comment:*** Project facilities are graphically represented on Project Maps, but the O&M building is not included.
    Response: The location of the O&M building has not yet been determined, but will be located within the footprint of the construction laydown area.
  - ***Item 5e Comment:*** No structures above 35 feet are identified within 500 feet of the proposed WECS. If no structures meet these criteria, it should be specifically noted.
    Response: No structures above 35 feet are located within 500 feet of any WECS.
  - ***Item 5f Comment:*** Concentric circles have been drawn around each WECS at the radii required.
    Response: Comment does not require a response.
  - ***Item 5g Comment:*** All dwelling units in the area are graphically represented on the Project Map.
    Response: Comment does not require a response.
  - ***Item 5h Comment:*** All dwelling units within 1,000 feet of the proposed WECS are graphically represented on the Project Map.
    Response: Comment does not require a response.
  - ***Item 5i Comment:*** All access roads, collection corridors, WECS, and substations are provided on the Project Map. There is no graphic representation of storage/maintenance units on the Project Map.
    Response: The location of the storage and maintenance building has not yet been determined, but will be located within the footprint of the construction laydown area.

- ***Item 6 Comment:*** A simplified vertical drawing of the Vestas V82 WECS is provided, but there is no graphical representation regarding the tower and turbine colors, ladders, distance between ground and lowest point of any blade, location of climbing pegs, and access doors.
  Response: A revised version of Exhibit 6 is enclosed. This includes a to-scale drawing of the V82 as well as a figure displaying the internal ladder system and other features.

- ***Item 7 Comment:*** Jericho Rise provided a statement that a landscaping plan for the substation will be prepared, if applicable, for the DEIS.
  Response: Comment does not require a response.

- ***Item 8 Comment:*** Jericho Rise has not provided information regarding which WECS will be illuminated at night.
  Response: A preliminary lighting plan will be presented in the DEIS based upon published FAA requirements, but will remain subject to change until approved by the FAA.

- ***Item 9 Comment:*** Several properties shown on the maps to be within the 500-foot boundary do not have a name or parcel ID associated with them.
  Response: A revised version of Exhibit 5 is included which includes the names of all landowners within 500 feet of the Site boundary. These landowners were included in the original list in Exhibit 7 of Landowners within 500 feet.

- ***Item 10 Comment:*** A decommissioning plan has been provided in Exhibit 8 of the Application.
  Response: Comment does not require a response.

- ***Item 11 Comment:*** The Complaint Resolution procedure does not indicate the length of time it may take to verify that a positive determination of a problem exists.
  Response: The Complaint Resolution Process (Exhibit 9) has been revised to reflect a 60 day resolution period and is enclosed with this letter response.

- ***Item 12 Comment:*** Construction information was provided in Exhibit 10.
  Response: Comment does not require a response.

- ***Item 13 Comment:*** Jericho Rise states in Part I of the EAF that wetland figures will be determined based on a wetland delineation to be conducted in 2007; however, the total Project Area given in the EAF is based on all forms of land use, with the exception of wetlands. In addition, Part B of the EAF does not appear to be consistent with Part A of the EAF, specifically relating to acreage figures. This information should be clarified.
  Response: The revised EAF (Exhibit 11) is enclosed with this letter response.

- ***Item 14 Comment:*** A statement is provided by Jericho Rise in Section 1, #14 that an application has been previously submitted separately for a Wind Measurement Tower in May 2007. It is also stated that two additional applications will be submitted in the future for wind measurement towers.
- ***Response:*** Please disregard the second statement that "two additional applications will be submitted in the future for wind measurement towers".

- ***Item 15 Comment:*** Sound level data are provided in the Vestas report in Exhibit 6. However, it is not clear whether the noise data is applicable for the wind turbines specified in the Application, as the hub height is listed as 93.6m (Report Identification) and 78m (sound pressure level at distances from turbine). MSDS were not provided in the Application. Jericho does, however, state that these well be provided in the DEIS.
  Response: The sound power level provided in Exhibit 6 is independent of hub height. The modeling and analysis conducted will be representative of the as-built operational acoustic condition. By definition, the IEC 61400 sound power (Lw) data is the amount of sound energy radiated from an idealized 1 m2 point source, independent of height above ground, distance from source to receptor, or any source directivity factors, i.e. Lw = 100 dBA re 1 pico-watt.

- ***Item 16 Comment:*** The Applicant acknowledges that a positive declaration is expected.
  Response: Comment does not require a response.

- ***Item 17 Comment:*** The Applicant states that the studies required under Article II, §10 (17) of the Local Law will be included in the DEIS.
  Response: Comment does not require a response.

- ***Item 18 Comment:*** Exhibit 12 includes the Final Minutes of the NYISO Operating Committee Meeting, dated February 27, 2007, which includes approval of the SRIS for the Jericho Rise Wind Farm.
  Response: Comment does not require a response.

- ***Item 19 Comment:*** Section 1 of the Jericho Rise Application is signed by Patrick Doyle, authorized representative of Jericho Rise, stating that the Application is true and accurate to the best of his knowledge.
  Response: Comment does not require a response.

Section: Jericho Rise Application Review and Conclusions

In addition to the comment responses above, the responses to the following comments have been requested in order to deem the WEP complete.

- ***Comment:*** As per Section 10, #5(e), additional structures above 35 feet, and within 500 feet of the proposed WECS location shall be provided. If no structures exist, a statement to that effect should be provided. It is noted that a gray square is provided indicating a structure above 35 feet; however, no additional details are provided.
  Response: The following sentence should be added to Section 10, #5(e): There are no structures of greater than 35' in height within 500 feet of the proposed turbines.

- ***Comment:*** A complete vertical drawing shall be provided, to scale, indicating the total height, turbine dimension, tower and turbine colors, ladders, distance between ground and lowest point of any blade, climbing pegs, and access doors. The generic Vestas graphical representation does not satisfy all of the above requirements.
  Response: A to-scale drawing of the Vestas V-82 has been included in Exhibit 6 of the original WEP application. A separate figure has also been included showing the interior climbing rungs and other features. The revised Exhibit 6 is enclosed with this letter response.
- ***Comment:*** A more accurate construction schedule shall be provided, including actual years and months of construction activities. It is noted that this could change based on actual field conditions, and, therefore, it is acceptable to qualify such schedules with a statement indicating that actual dates could vary, and that Jericho Rise shall maintain up-to-date schedules on their website.
  Response: Enclosed with this letter response is a revised version of Exhibit 10 which includes a more detailed account of the estimated construction schedule.

- ***Comment:*** Prior to issuance of the permit the Applicant must adequately certify to the Town that:
  a. Jericho Rise Wind Farm LLC is a successor company to Burke and Horizon;
  b. All easements are properly filed and recorded; and
  c. The Applicant needs to verify and confirm that the persons granting the easements are authorized to do so.

  Response: The requested certifications will be provided prior to permit issuance.

Thank you for this opportunity to address CRA's comments on Jericho Rise Wind Farm's application for a Wind Energy Permit. We trust the resolution of these issues renders the application complete. Please contact me at 518-426-1650 should you have any additional questions or comments regarding this application.

Sincerely,

Patrick Doyle
Director of Development
Horizon Wind Energy

Enclosures

cc: C.J. Madonna, Esq.
P. Lemay, Town of Chateaugay
R. Cogen, Nixon Peabody LLP
J. Dowd, Northern Energy Group
T. Levy, Conestoga-Rovers & Associates, Inc.
B. Smith, Conestoga-Rovers & Associates, Inc.
R.G. Adams, Conestoga-Rovers & Associates, Inc.
L. Kearns, Tetra Tech EC, Inc.

Jericho Rise Wind Farm LLC
3 Columbia Place, Albany, New York 12207, (518) 426-1650

JERICHO RISE
WIND FARM

February 21, 2007

Town of Bellmont Town Board
Attn. Kip Cassavaw
Town Supervisor
Town of Bellmont
Town Hall
P.O. Box 35
Brainardsville, New York, 12915

RE: Jericho Rise Wind Farm LLC
Notice of Intent to submit a Wind Energy Permit application to the Town of Bellmont for the Jericho Rise Wind Farm Project

Dear Mr. Cassavaw,

The following constitutes a notice of intent for Jericho Rise Wind Farm LLC (Jericho Rise) to file an application for a Wind Energy Permit under Article II, §10 of the Wind Energy Facilities Law (Local Law No. 2 of 2006) of the Town of Bellmont, New York for the proposed Jericho Rise Wind Farm (Project). Notice of intent has also been made to the Towns of Chateaugay and Burke for proposed Project facilities located in those jurisdictions.

This notice also includes the completed part one of the Full Environmental Assessment Form (EAF) (Exhibit 1). This submission serves as a means of commencing the formal environmental impact review for the Project mandated under the State Environmental Quality Review Act (SEQR).

We ask that the Town of Chateaugay and the Town of Bellmont seek to serve as co-lead agencies under SEQR and, thereafter, make a determination of significance. Jericho Rise would like to express its openness to a requirement to prepare a Draft Environmental Impact Statement (DEIS) and to the SEQR scoping process. If the towns determine to require that a DEIS be prepared, Jericho Rise requests that they establish a 30-day expedited scoping period to address topics and analyses to be addressed in the draft environmental impact statement (DEIS). A draft scoping document has been prepared by Jericho Rise to help guide this process and is included as Exhibit 2.

Sincerely,

Patrick Doyle

Authorized Representative of Jericho Rise Wind Farm LLC
By Patrick Doyle

cc Town of Chateaugay
Town of Burke
C.J. Madonna

Exhibit 1	EAF Form
Exhibit 2	Draft Scoping Document
Exhibit 3	Correspondence to other Towns

Jericho Rise Wind Farm LLC
3 Columbia Place, Albany, New York 12207, (518) 426-1650

JERICHO RISE
WIND FARM

February 21, 2007

Town of Chateaugay Town Board
Attn. Donald Bilow
Town Supervisor
Town of Chateaugay
P.O. Box 9
191 East Main Street
Chateaugay, New York, 12920

RE: Jericho Rise Wind Farm LLC
Notice of Intent to submit a Wind Energy Permit application to the Town of Chateaugay for the Jericho Rise Wind Farm Project

Dear Mr. Bilow,

The following constitutes a notice of intent for Jericho Rise Wind Farm LLC (Jericho Rise) to file an application for a Wind Energy Permit under Article II, §10 of the Wind Energy Facilities Law (Local Law No. 7 of 2006) of the Town of Chateaugay, New York for the proposed Jericho Rise Wind Farm (Project) proposed to be located in the towns of Burke, Bellmont and Chateaugay. Notice of intent has also been made to the Towns of Bellmont and Burke for proposed Project facilities located in those jurisdictions.

This notice also includes the completed part one of the Full Environmental Assessment Form (EAF) (Exhibit 1). This submission serves as a means of commencing the formal environmental impact review for the Project mandated under the State Environmental Quality Review Act (SEQR).

We ask that the Town of Chateaugay and the Town of Bellmont seek to serve as co-lead agencies under SEQR and, thereafter, make a determination of significance. Jericho Rise would like to express its openness to a requirement to prepare a Draft Environmental Impact Statement (DEIS) and to the SEQR scoping process. If the towns determine to require that a DEIS be prepared, Jericho Rise requests that they establish a 30-day expedited scoping period to address topics and analyses to be addressed in the draft environmental impact statement (DEIS). A draft scoping document has been prepared by Jericho Rise to help guide this process and is included as Exhibit 2.

Sincerely,

Patrick Doyle

Authorized Representative of Jericho Rise Wind Farm LLC
By Patrick Doyle

cc Town of Bellmont
Town of Burke
C.J. Madonna

Exhibit 1	EAF Form
Exhibit 2	Draft Scoping Document
Exhibit 3	Correspondence to other Towns

COUNTY OF FRANKLIN
INDUSTRIAL DEVELOPMENT AGENCY
10 ELM STREET - SUITE 2
MALONE, NEW YORK 12953
TEL: 518-483-9472
FAX: 518-483-2900

September 14, 2007

Carl J. Madonna, Esquire
10 Oak Street
Plattsburgh, New York 12901

RE: Notice of Intent for the Towns of Bellmont and Chateaugay to Act as Co-Lead Agency for the "Jerico Rise Wind Farm LLC Project."

Dear Sir:

Please note that the County of Franklin Industrial Development Agency will be an involved Agency in the "Jerico Rise Wind Farm LLC Project." This Agency's involvement will stem from the project applicant's (Horizon/EFP) intent to use the powers granted by this public benefit corporation to obtain a sales and use tax exemption letter and a payment-in-lieu-of-tax structure. New York State law requires this Agency to conduct both a cost-benefit analysis and SEQR review in its administrative review of this project.

It would be this Agency's intention not to compartmentalize the cost-benefit analysis with the SEQR review – that they are concurrent activities. Therefore the Agency would like to review, comment and mitigate on the following aspects of this project as part of its cost-benefit and SEQR review:

- Impact on infrastructure: The Agency's focus will be on public utility and transportation infrastructure;
- Impact on community services: The Agency would like to ensure that the affected taxing jurisdictions are not substantially harmed by the loss of revenue vis-à-vis the project's impact on the community;
- Impact on growth and character of community: The Agency will consider the regional and local implications of this project on the Communities and County's ability to attract subsequent investment.

Therefore please note that this Agency supports the municipalities of Bellmont and Chateaugay in their desire to be co-lead agency and has signed the enclosed notice of intent as requested. Please coordinate your review with this Agency on the matters above.

Thank you for your cooperation and support on this matter.

Very Respectfully,

Brad Jackson
Executive Director

Enc.
CC: Mr. Joseph D. Perry

STATE OF NEW YORK
DEPARTMENT OF AGRICULTURE AND MARKETS
10B Airline Drive
Albany, New York 12235

*Division of Agricultural Protection
and Development Services
518-457-7076
Fax 518-457-2716*

August 22, 2007

Mr. Carl J. Madonna, Esq.
10 Oak Street
Plattsburgh, New York 12901

RE: Jericho Rise Wind Farm

Dear Mr. Madonna:

I received a copy of your letter concerning the lead agency and State Environmental Quality Review (SEQR) for the above mentioned project. The Department has been involved in the planning and construction of numerous wind farm projects in New York and has identified several impacts to the agricultural resources that can occur as the result of such projects. Below are the Department's comments concerning the agricultural impacts that should be addressed in the Draft Environmental Impact Statement (DEIS).

There are two types of agricultural impacts that result from the construction of wind farms on agricultural land. One impact is the permanent loss of productive land as a result of the installation of the access roads, turbine towers, and facilities needed for the interconnection between the wind farm and an existing electric transmission line. The other impact is the damage to the soil resources in areas disturbed during construction. Both of these impacts can be minimized with proper planning and communication.

The proper siting of the access roads and towers can significantly reduce the amount of land permanently lost from production as a result of this type of project. Constructing a permanent access road through the center of the field can significantly reduce the efficiency of the farm tillage and harvest operations. Generally, locating the roads and towers along the edge of fields results in the least amount of productive land being lost.

Another permanent impact to farming operations is the placement of overhead interconnect and transmission lines across agricultural fields. The overhead interconnect and electric transmission lines for some of the wind farm projects have been poorly designed and sited, which will result in significant impacts to agricultural resources and farming operations in the future. The structures to support such lines create obstacles for farming equipment and can significantly reduce the efficiency of the farm tillage and harvest operations. The 34.5 kV power lines generally have shorter spanning distances between poles, resulting in a number of poles being placed in farm fields. Both types of power lines can create long term interference with agricultural land use. As a result, the Department recommends that the 34.5 kV lines be buried in agricultural fields. If the lines must be installed overhead, they should be located outside field boundaries wherever possible. When these lines must cross farmland, the spanning distances should be no less than 400 feet and the line location and pole placements should be reviewed with the Department prior to final design.

Loss of productive farmland can also occur at the point of connection between the wind farm and the electric transmission line. Good communication is critical between the Department, the project sponsor, the landowner, and the utility company concerning the location of all overhead lines and the transmission line interconnection. All parties need to fully understand the type and location of all electric lines required for the projects.

Another concern is the potential for permanent damage to the soil resource in areas disturbed during construction. Below are a few comments concerning the protection of the soil resource in agricultural fields.

1. Since the depth of the topsoil layer is relatively shallow in New York, it is critical to protect this layer in order to achieve maximum crop production. The Department recommends stripping and stockpiling the topsoil from any areas disturbed by construction including along access roads, around tower sites, and any other areas where excavation is necessary. Following construction, the topsoil must be graded to the original depth. It is important for the project sponsor to negotiate adequate work space with the landowner in order to allow for proper protection of the topsoil resource.

2. The Department has observed that projects of this nature cause considerable compaction to the topsoil and subsoil layers. If not properly mitigated, the compaction can significantly reduce crop production for a number of years. The Department recommends deep soil tillage in agricultural areas during restoration.

3. May of the soils in the areas where wind farms have been constructed or are proposed, are shallow to bedrock and/or have a high concentration of rock in the subsoil. Extensive excavation in these types of soils can result in a higher than normal concentration of rock in the upper subsoil and topsoil layer. If not properly removed, this rock concentration can create difficulties for the farm operator for many years.

4. Changes in the natural surface and subsurface drainage patterns have also been observed at the existing wind farms. These changes can occur as a result of the construction of the access roads, as well as from other excavation. Drainage impacts need to be considered during the planning and construction phases and need to be properly mitigated during the restoration phase.

I have enclosed a copy of the Department's ***Guidelines for Agricultural Mitigation for Windpower Projects*** for your information. Proper implementation of these guidelines will help to minimize the impacts to the agricultural resources. The Towns should consider requiring the applicant to follow these guidelines as a condition of any permits issued by the Towns. If you have any questions, feel free to contact me at (518) 457-2713.

Sincerely,

Matthew J Brower

Matthew J. Brower
Agricultural Resource Specialist

Enclosure
cc: Patrick Doyle, Director of Development, Horizon Wind Energy
Jack Nasca, NYS DEC
Andrew Davis, NYS Dept. Public Service

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
REGION SEVEN
317 WASHINGTON STREET
WATERTOWN, N.Y. 13601
www.nysdot.gov

R. Carey Babyak, P.E.
REGIONAL DIRECTOR

Astrid C. Glynn
COMMISSIONER

August 14, 2007

Mr. Carl J. Madonna, Esq.
Attorney At law
10 Oak Street
Plattsburgh, NY 12901

RE: LEAD AGENCY STATUS FOR JERICHO RISE WIND FARM LLC.

Dear Mr. Madonna:

Thank you for sending Part 1 of the Full Environmental Assessment Form (EAF) for the above referenced project.

After reviewing the form, the New York State Department of Transportation (NYSDOT) concurs that the Chateaugay and Bellmont Town Boards should serve as co-lead agencies for the project.

Enclosed for your records is the Department's concurrence in lead agency status.

If the project comes to life, NYSDOT will need to review the final design plans and engineering report for the project. The purpose of this review is to evaluate the need for permits and identify the requirements necessary for construction on the State's right-of-way.

It is imperative that you contact Mr. Martin C. Percy, Regional Transportation System Operations Engineer, at (315)785-2321 and Mr. Tim Vreatt, Regional Utilities Engineer, at (315)785-2340 to discuss the requirements for work on the State's right-of-way and the need to obtain a highway work permit prior to construction.

Please keep NYSDOT informed of your progress on this project. If you have any questions regarding the enclosed, please contact Michael Zimmermann of the Regional Planning & Program Management Office at (315)785-2531.

Sincerely,

fo Scott A. Docteur, PE
Director, Regional Planning and Program Management

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
REGION SEVEN
317 WASHINGTON STREET
WATERTOWN, N.Y. 13601
www.nysdot.gov

R. Carey Babyak, P.E.
REGIONAL DIRECTOR

Astrid C. Glynn
COMMISSIONER

August 14, 2007

Mr. Carl J. Madonna, Esq.
Attorney At law
10 Oak Street
Plattsburgh, NY 12901

RE: LEAD AGENCY STATUS FOR JERICHO RISE WIND FARM LLC.

Dear Sirs:

I have received Part 1 of the Full Environmental Assessment Form for the above referenced project.

The New York State Department of Transportation concurs that the Chateaugay and Bellmont Town Boards should serve as co-lead agencies under the State Environmental Quality Review Act (SEQRA) for the proposed project.

By: for Scott A. Docteur, P.E.

Director, Regional Planning & Program Management Group

(Signature)

New York State Department of Environmental Conservation
Division of Environmental Permits, 4th Floor
625 Broadway, Albany, New York 12233-1750
Phone: (518) 402-9167 • **FAX:** (518) 402-9168
Website: www.dec.state.ny.us

Alexander B. Grannis
Commissioner

September 10, 2007

Mr. Carl J. Madonna, Special Counsel
Towns of Bellmont and Chateaugay
10 Oak Street
Plattsburgh, New York 12901

Re: State Environmental Quality Review (SEQR)
Jericho Rise Wind Farm LLC
Towns of Chateaugay and Bellmont, Franklin County

Dear Mr. Madonna:

The New York State Department of Environmental Conservation (DEC) has performed an initial review of the Full Environmental Assessment Form (EAF) and Draft Scoping Document for the project identified above, provided with the Notice of Intent by the Towns of Chateaugay and Bellmont to act as Co-Lead Agencies, dated August 9, 2007. The project is described as an 87.45 megawatt (MW) wind energy facility consisting of up to 53 1.65 MW wind turbines, with 34 wind turbines in the Town of Chateaugay and 19 wind turbines in the Town of Bellmont. The project is proposed to be developed on 5,040 acres of leased private land. Associated infrastructure includes a system of gravel access roads, electrical collection and communication cable networks, an operation and maintenance (O&M) building, an on-site project step-up substation, and an interconnect substation. Additionally, applications for two permanent meteorological (met) towers are anticipated to be submitted under separate cover.

1) <u>Lead Agency</u>. DEC does not object to the designation of either town as Lead Agency, but recommends that a single town be designated Lead Agency and one environmental impact statement (EIS) be prepared to address potential impacts related to the entire 53 turbine proposal in the two towns. It is important to note that SEQR relies on the Lead Agency to manage the environmental review process but does not change existing jurisdictions or limit the independent decision-making authority of any involved agencies. The designation of a single Lead Agency and preparation of a single EIS addresses concerns regarding segmentation that could occur if applications to each town are reviewed separately under SEQR. Establishment of a single Lead Agency can be accomplished through the use of an inter-municipal agreement that formally assigns responsibilities for completing the steps of the SEQR process, and has recently been used successfully with other wind energy project reviews, including the Flat Rock (Maple Ridge) Wind Power project in Lewis County, and the Dairy Hills project in Wyoming County.

2) **Department Jurisdiction**. DEC authorizations for construction of wind energy facilities typically include an Article 24 Freshwater Wetlands permit, Article 15 stream disturbance permit, and a Clean Water Act Section 401 Water Quality Certification. In addition, if the project will have an impact on endangered and/or threatened species, the Department will have jurisdiction under Article 11 of the Environmental Conservation Law. However, the actual breadth of DEC's jurisdiction can not be determined definitively until the location of the turbines, access roads, electrical interconnection lines, construction laydown areas, etc., are fully described. Approval is also required to discharge stormwater during the construction of the facility. This approval is administered as a general permit under the State Pollutant Discharge Elimination System (SPDES) program (SPDES General Permit for Stormwater Discharges from Construction Activities, GP-02-01).

3) **DEIS Draft Scope**. Based on experience with existing and proposed wind farms, DEC recommends that the DEIS Draft Scope be expanded to include detailed discussion of the following issues of primary concern to the agency.

Section i., DEIS Cover Sheet.

This section indicates that the cover sheet will include details regarding the lead agency, date of acceptance and deadlines for comments. Please note that SEQR milestones such as determining DEIS completeness, scheduling public hearings, and establishing the deadline for comments are subject to preparation, filing, publication and distribution requirements of SEQR regulations at 6 NYCRR 617.12.[1]

Section 2.1, Site Description.

This section should include a general discussion of state and federal wetlands, waterbodies, drainage, local weather patterns, and a summary of the wind resource within the project development area. Maps with vegetation types, soils/bedrock, land use, significant archeological sites, and other relevant information should also be included. A description of geographical, topographical and other physical features within 10 miles of the project development area that may factor into bird and bat migration patterns should also be included.

Section 2.2, Detailed Description of the Proposed Action.

This section should include discussion of all project components, including but not limited to existing and proposed access roads, underground and overhead transmission line routes (including any new transmission lines required for connection to the grid), temporary and permanent meteorological (met) towers, temporary and permanent laydown/construction staging areas, project office, operation & maintenance (O&M) facility, substations, and any other project development components that will potentially affect existing conditions in the project development area (e.g., wetland mitigation sites). These should be described conceptually if specific locations for particular components have not been identified, and criteria that will be used to determine specific locations described.

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[1] 617: State Environmental Quality Review, Available: http://www.dec.ny.gov/regs/4490.html#18098

Section 2.4, Construction and Operation.

It is stated in the Draft Scope that the planned construction process will be described, including scheduling, sequencing, routing of construction vehicles, land clearing, decommissioning, and site restoration. This discussion should also identify the potential source and anticipated quantity of aggregate materials required for road construction, and the location and capacity of the concrete batch plant to be used for foundation installation. Specifications to ensure that concrete is handled properly during construction of turbine pads to limit impacts to surface waters, wetlands and underground waters should be detailed.

This section states that an environmental monitor will be employed to oversee construction and post-construction restoration activities. DEC recommends that the DEIS include an environmental monitoring plan that provides for an independent monitor to oversee the various mitigation activities expected to be identified during the course of the environmental review. The monitor must possess a working knowledge of state and federal regulations, natural resources (wetlands, streams, and any other unique local natural features), and be familiar with construction activities. The role of the monitor is to ensure adherence to all permits, permit conditions, construction design plans and specifications, and have the authority to stop construction activities when non-compliance is observed and make on the spot corrections. The plan should anticipate monitoring staff coverage of extended construction work schedules that may extend into evening and weekend hours during the construction season.

The DEIS should include an environmental restoration plan that discusses anticipated measures to conduct re-grading and stabilization of temporary impacts to wetlands, streams, and other important habitat areas. The plan should describe activities to re-establish wetland hydrology (if disrupted), restore disturbed habitat, including re-planting suitable species in wetlands, adjacent areas and streams, construct wetland compensatory mitigation project(s), stabilize disturbed areas subject to the SPDES Stormwater General Permit, remove and properly dispose of temporary road materials, and re-grade soil in agricultural and other impacted areas in accordance with NYS Department of Agriculture and Markets guidelines or other Best Management Practices.

The operations and maintenance (O&M) plan should include environmental management components incorporating environmental considerations to be included in the ongoing maintenance of the facility, a contingency plan to assess and minimize environmental impacts during major repairs, and assessment and mitigation of environmental impacts during the decommissioning process. Specific considerations to be included, at a minimum, are wetland mitigation project maintenance, on-going monitoring and management to ensure that restoration activities are successful and maintenance activities avoid future wetland impacts, i.e., limits on tree clearing in sensitive wetland areas, invasive species control, both in wetland and upland areas, general maintenance and repair of roads, right-of-way management of overhead and underground electrical interconnects, contingency plans for access to project components that require major repair (major turbine service, overhead line loss), and an adaptive management component to respond to environmental impacts that arise during project operation (such as potential impacts to birds and bats). The plan should also seek opportunities for creation of environmental enhancements through cooperative partnerships with landowners, local governments, educational and conservation organizations.

Section 3.2, Water Resources.

This section of the Draft Scope states that existing available information will be used to describe surface waters/wetlands and groundwater resources within the project development area, and a formal wetland delineation report will be included as an appendix to the DEIS. Estimated impacts and anticipated mitigation measures will be described. In addition, wetland delineation reports should be prepared for wetland areas along public roads where improvements are necessary to deliver project materials (road widening, increasing turning radii, modifications to culverts).

Estimated areas of impacts should be described on a wetland-by-wetland basis, and according to expected agency jurisdiction (DEC or USACE). DEC wetlands also include a 100-foot adjacent area that must be considered in the determination of wetland boundaries and potential for impacts. A clear distinction must be made between "temporary" and "permanent" wetland impacts, keeping in mind that simple re-grading to pre-construction contours following excavation in a wetland area may not be enough to restore the full function of the existing wetland area, and therefore may be a permanent rather than a temporary impact. Additionally, DEC considers the clearing of a forested wetland to be maintained as a non-forested wetland (such as the corridor of an overhead or underground interconnect line) to be a permanent impact, even if there is no fill, drainage or other physical disturbance of the wetland. All permanent impacts, including those described above, must be factored into the total area of wetland impacts for which permits and mitigation are required.

It is important that the DEIS discuss how the proposed project will avoid, minimize or reduce potential wetland impacts to the maximum extent. This is required for DEC consideration of wetland permits. Included in this discussion would be alternative project designs that were examined to avoid and reduce impacts to wetlands. The project must also demonstrate overriding economic and social needs for the project that outweigh the environmental costs of impacts on the wetlands. If unavoidable wetland impacts are expected to result from project construction activities, a discussion of compensatory mitigation being considered must be included. Proposed mitigation must conform to DEC wetland mitigation guidelines.[2]

For any proposed wetland compensatory mitigation sites, a legal mechanism to secure long term access and management of the property should be discussed (e.g., ownership, permanent easement, transfer to third-party conservancy organization). For DEC permits, the structure of this agreement will be required to be in a form acceptable to the Department.

An Invasive Species Control Plan (ISCP) to minimize the spread of invasive propagules throughout the project development area, and particularly in regulated wetland and stream areas, should be included in the DEIS. The ISCP will be a requirement of any permits issued by DEC. The goal of the ISCP is an overall 0% net increase in the areal coverage of invasive species in the project development area. Post-construction monitoring and periodic management, including invasives control and re-planting of preferred indigenous species to ensure survival, is a necessary component of the ISCP to ensure the success of the plan.

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[2] New York State Department of Environmental Conservation. *Freshwater Wetlands Regulation Guidelines on Compensatory Mitigation.* ONLINE. 29 Oct. 1993. Available: http://www.dec.ny.gov/docs/wildlife_pdf/wetlmit.pdf [15 Jun. 2007].

A detailed map of streams within the project development area, with the DEC stream classification, should be included in the DEIS. Access roads, overhead and underground interconnects, or other project components that cross or are located in close proximity to any classified stream should be included. Determinations should be made regarding the navigability of streams to be crossed or impacted pursuant to the definition of "Navigable Waters of the State" found in 6 NYCRR Part 608 (l). If a "navigable" determination is made, an Article 15 Title 5 Permit for the "Excavation and Fill of Navigable Waters" may be required. Provide specifications for culvert sizing, installation, tree clearing or other activities that affect a stream for which a DEC permit is required.

The DEIS should include a draft Stormwater Pollution Prevention Plan (SWPPP) prepared in accordance with requirements of the SPDES Stormwater General Permit for Construction Activities (GP-02-01). DEC reserves the right to conduct an extended review of the SWPPP following submission of the Notice of Intent (NOI) to ensure that the plan adequately addresses DEC concerns. The SWPPP should include detailed construction plans to incorporate stringent containment of construction materials, particularly concrete slurry, machinery fuel and oil, and other chemicals. Best Management Practices may include the use of watertight forms, silt/stormwater fencing, controlled concrete truck washout areas, and covered storage of equipment and construction chemicals. Engineering specifications to describe these proposed practices need to be detailed in this plan.

Section 3.3, Biological, Terrestrial and Aquatic Ecology.

This section proposes to describe the general wildlife community, including vegetation, wildlife, habitat, and threatened and endangered species in the project development area, including the presence of invasive species. Existing information and an avian/bat study will be used for this analysis. Construction and operational impacts will be discussed. In addition to existing resources identified in this section, the DEIS should include Breeding Bird Surveys (BBS), Christmas Bird Counts (CBC), local birding groups, Audubon and Nature Conservancy chapters, and regional DEC biologists as sources of information on birds and bats.

DEC is concerned about both construction-related and operational impacts to avian and bat species. DEC has been involved in consultation with the project sponsor to develop methodologies for ongoing pre-construction avian/bat studies being conducted in the project area. DEC encourages the project sponsor to set up a meeting with DEC in the near future to discuss the results of the current studies and recommendations for possible additional studies that may be warranted for inclusion in the DEIS.

A habitat and nest site survey of any listed endangered, threatened or species concern fish & wildlife species identified by the Natural Heritage Program that exists or may be affected by proposed activities in the project development area should be included in the DEIS. A habitat survey to identify threatened or endangered plants and associated ecological communities located within the project area should also be included, with a discussion of potential impacts to these resources that may result from construction of the project.

If the project results in impacts to threatened or endangered species, the Department will have jurisdiction under Article 11 of the Environmental Conservation Law. Measures to avoid adverse impacts to these species should be described, including avoidance of construction in critical habitat areas, scheduling construction to avoid interruption of breeding and nesting activities, and re-location or elimination of specific project components (turbines, access roads, interconnect routes) if any of these are determined to result in an actual or potential adverse impacts. Construction specifications for minimization of displacement of these species or disturbance of critical habitat need to be described in the DEIS.

Where impacts to birds, bats, or other endangered or threatened species cannot be avoided, mitigation measures may include an adaptive management strategy that identifies options that may be considered during project operation if adverse impacts are identified by post-construction monitoring. These mitigation options might include, but are not limited to, removal or re-location of specific turbines, short-term shutdown during peak migration or other identified high-risk periods, and feathering blades at slow wind speeds to reduce risk of bat mortality.

The DEIS should also describe plans for post-construction collision mortality monitoring to collect data on the estimated mortality rate of birds and bats that pass through and use the project site during project operation. DEC will require a post-construction study and mitigation for any permits that may be required from the agency for construction of the project. DEC recommends that the project sponsor consult with the Department and the U.S. Fish and Wildlife Service in developing protocols for the post-construction monitoring plan.

Section 3.5, Aesthetic and Visual Resources.

The Draft Scope includes a proposal to conduct a visual impact assessment according to DEC visual policy.[3] In addition to the five-mile impact area described the Draft Scope, the DEC Visual Policy recommends that the assessment examine an area greater than 5 miles from the turbines if there are any potential sensitive receptors as described in section V (B).

To clearly show which sensitive receptors will be affected by views of the project, the DEIS must include graphic representations that show the locations of identified sensitive visual receptors together with a viewshed analysis. Recognizing that wind power projects are likely to become unique and prominent visible features of the landscape from many locations, a complete analysis of visual impacts to specific affected resources is necessary. The Draft Scope indicates that mitigation options to be explored will include screening, turbine re-location, camouflage, reduced facility profile, project downsizing, lighting measures, maintenance actions, and offsets. DEC agrees with this hierarchy of mitigation considerations, and recommends that the DEIS describe how mitigation determinations will be made at specific identified sensitive resources in accordance with this hierarchy. Where it is determined that direct mitigation is not practicable, DEC visual policy recommends consideration of visual offsets. This process is most appropriately conducted in concert with the cultural resources review prepared in accordance with state or federal historic preservation review processes (see below).

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[3] New York State Department of Environmental Conservation. *Assessing and Mitigating Visual Impacts.* ONLINE. 31 Jul. 200. DEP-00-2. Available: http://www.dec.ny.gov/docs/permits_ej_operations_pdf/visual2000.pdf

Section 3.6, Historic, Cultural and Archaeological Resources.

This section describes studies to be undertaken in accordance with the New York State Historic Preservation Act (SHPA) of 1980, Section 14.09, or with Section 106 of the National Historic Preservation Act (NHPA). The project sponsor will consult with the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) in the assessment process.

The DEIS should identify the extent of any state or federal agency involvement in the project. If any state agency approvals or permits are needed for this project, compliance with the SHPA will be required. In addition, should federal agency approval or permitting be needed, compliance with Section 106 of the NHPA will be required. No review under state Section 14.09 is required when OPRHP is acting in its role of State Historic Preservation Officer (SHPO), and reviewing a project under federal Section 106 (14.09 State Regulations, Section 428.2(a)).

The DEIS should include the completed Phase IA Cultural Resources Survey referenced in the Draft Scope. DEC recommends that this study be conducted so that it complements the visual assessment prepared in accordance with the DEC visual policy (see above). Discussion of the consultation process with OPRHP should also be included in the DEIS. Ideally, the DEIS should contain correspondence from OPRHP that results in an impact or effect determination, and the basis for making this determination, according to the state or national historic review processes identified above.

Section 3.8, Traffic and Transportation.

This section will include discussion of limitations/deficiencies that affected roads and bridges along potential transmission routes may have. As stated previously in Section 3.2, this section should also include any wetland/stream/stormwater impacts that may result from necessary improvements to public roads, such as culvert replacement, widening, or increasing the turning radius at an intersection. Necessary permits to make these modifications should also be identified, and mitigation measures described.

Section 7.0, Cumulative Impacts.

The cumulative impact analysis should include consideration of impacts from all wind projects known to be under development or review in the region, including Noble projects in the Towns of Chateaugay, Bellmont, Clinton, Ellenburg and Altona, the Marble River project in the Towns of Clinton and Ellenburg, the Windhorse project in the Town of Beekmantown, and any other proposals for wind energy facilities in the general project area. Specific resources of primary concern to DEC that warrant cumulative analysis are bird/bat/wildlife impacts (including impacts to endangered, threatened and special concern species), wetland/watershed impacts, and visual/historic impacts.

In conclusion, DEC appreciates the opportunity to comment on the DEIS Draft Scope at this stage and looks forward to working with the Towns of Chateaugay and Bellmont throughout the remainder of the SEQR and permit review process. If you have any questions, you may contact me by phone at (518) 486-9955, or by email at smtomasi@gw.dec.state.ny.us.

Sincerely,

/s/

Stephen Tomasik
Project Manager

cc:
P. Doyle, Horizon Wind Energy
D. Bilow, Town of Chateaugay Supervisor
K. Cassavaw, Town of Bellmont Supervisor
D. May, NYS DPS
A. Davis, NYS DPS
M. Brower, Ag. & Mkts.
C. Delorier, USACE
T. Sullivan, USFWS
J. Bonafide, OPRHP
B. Ford, APA
T. Hall, DEC Region 5
DEC Review Team

Faxed 9/13/07

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

September 13, 2007

Carl Madonna, Esq.
Attorney at Law
10 Oak Street
Plattsburgh, NY 12901

Dear Mr. Madonna:

This responds to your letter of August 9, 2007, requesting comments on the Draft Scoping Document (DSD) and Notice of Intent to prepare an Environmental Impact Statement (EIS) for the proposed Jericho Rise Wind Farm LLC Project in the Towns of Bellmont and Chateaugay, Franklin County, New York. The Towns of Bellmont and Chateaugay, as co-lead agencies, are considering what studies are appropriate to prepare an EIS as required under the State Environmental Quality Review Process.

The project would consist of constructing up to 53 wind turbines which would generate approximately 87 megawatts of power. Project information indicates that turbines would have a hub height approximately 262 feet above the ground. Each turbine blade would be 131 feet long with the rotor diameter equal to 269 feet. The total height of the structure with the blade tip at the highest position would be 397 feet above ground level. Structures such as substations, an operations building, 21 miles of underground electric cable, and at least 14 miles of gravel access roads are proposed to be built in the project area. It is unknown at this time the length of overhead power lines needed to connect the project to the electric grid.

It appears that the proposed project may affect species under the U.S. Fish and Wildlife Service's (Service) jurisdiction under the Migratory Bird Treaty Act (MBTA). However, further information is necessary to adequately make any determinations. This additional information includes a more detailed project description (*e.g.*, amount of overhead power lines, presence of stream and wetlands, information on bird and bat use within the project area, etc.). We are providing the following comments pursuant to the MBTA (40 Stat. 755; 16 U.S.C. 703-712) and the New York State Environmental Quality Review Act. In addition to these comments, we may provide additional future comments under other legislation, such as, but not limited to, the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq) and the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Migratory birds, such as waterfowl, passerines, and raptors are Federal trust resources and are protected by provisions of the MBTA. The Service is the primary Federal agency responsible for administering and enforcing the MBTA. This Act prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests except when specifically authorized by the Service. The word "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect." The unauthorized taking of birds is legally considered a "take" under the MBTA and is a violation of the law. Neither the MBTA nor its implementing regulations, 50 CFR Part 21, provide for permitting of "incidental take" of migratory birds that may be killed or injured by wind projects. However, we recognize that some birds may be killed at structures such as wind turbines even if all reasonable measures to avoid it are implemented. Depending on the circumstances, the Service's Office of Law Enforcement may exercise enforcement discretion. The Service focuses on those individuals, companies, or agencies that take migratory birds with disregard for their actions and the law, including when conservation measures have been developed but are not properly implemented.

Operational wind turbines can adversely affect wildlife in a variety of ways. Foremost, the potential exists for bird and bat collision within the rotor-swept area of each turbine. It has been documented that wind turbines cause bat and bird mortality in a variety of species (Erickson et al. 2001). Research to date indicates that raptors can be prone to wind turbine collisions. Songbirds, particularly those individuals migrating at night under poor visibility conditions, are even more susceptible. Recently, it has been reported that large numbers of bats have also been killed by structures located on ridges (Arnett 2005, Jain 2007). The National Research Council has called for more intensive study of wind energy projects and the potential impacts to wildlife (National Research Council 2007).

In addition, the physical disturbance, direct loss, and fragmentation of grassland and forest habitat may be a detriment to wildlife. Cumulative effects of collision mortality from tall structures, automobiles, transmission wires, and glass windows can be significant. Other sources of mortality include predators, domestic pets, and contaminants. Many species of forest and grassland birds are in decline (Rosenburg 2000), warranting consideration of additive impacts.

Recognizing the potential impacts to wildlife due to development of wind power projects, the Service developed *Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines* (Guidelines) in May 2003. A copy of this document may be obtained from our office or found on the Internet at www.fws.gov/r9dhcbfa/WindTurbineGuidelines.pdf. These Guidelines include recommendations for: 1) proper evaluation of wind resource areas; 2) proper siting and design of turbines within development areas; and, 3) pre- and post-construction research and monitoring to identify and/or assess impacts to wildlife. We suggest that project sponsors of wind energy projects review this information during the development of the project design. The potential for bat and bird mortality from these types of projects appears to be dependent on factors such as wildlife abundance, avoidance behavior, presence of a migration corridor, geographic location, and particular landscape features. As specified in the Guidelines, the project site should be evaluated for habitat features, such as the presence of breeding, feeding, and roosting areas.

Our current Guidelines are interim and voluntary for the wind industry to follow. But, these Guidelines are in the process of being reviewed, and a stakeholder committee was formed, to determine if changes should be made to the document. This review may take up to 18 months to complete, and the Guidelines will probably not be revised prior to that review. However, the Guidelines and recommendations in the document are still applicable for projects currently undergoing review.

Section 3.3.1 of the DSD indicates that the vegetation, ecological communities, and significant natural communities, including threatened and endangered species will be described and mapped based on available data form the Natural Heritage Program database and from a field survey to be conducted prior to the preparation of the Final EIS. However, it is not clear what types of field surveys will be completed. We recommend all important habitat types in the project area be mapped through field investigation.

For a wind energy project such as this one, we recommend that a bat and bird assessment be conducted by the project sponsor. This assessment should include a review of all available data and literature relevant to bat and bird use of this site. In addition, the assessment should identify potential impacts as a result of collisions with turbines, including the potential effects on, but not limited to, raptors, passerines, and bats, as well as cumulative effects of collision mortality from the proposed turbines. The physical disturbance, direct loss, and fragmentation of grassland and forest habitat should also be included in the evaluation. This information should be incorporated into the project EIS for review.

Pre-construction studies of birds and bats for this location <u>are</u> recommended. These studies should be of sufficient rigor to determine the temporal and spatial distribution of resident and migrating bat and bird species in and adjacent to the project area during various weather conditions (*e.g.*, fog, rain, low cloud ceilings, clear skies, etc.). Information on monitoring the project site for bird species can be obtained from "Studying Wind Energy/Bird Interactions: A Guidance Document. Metrics and Methods for Determining or Monitoring Potential Impacts on Birds at Existing and Proposed Wind Energy Sites" (National Wind Coordinating Committee 1999).

We recommend site-specific bird and bat studies be conducted and include, but not be limited to, remote sensing technologies, such as radar and acoustic monitoring. In order to determine the potential collision-hazard for a particular site, the spatial and temporal uses of the airspace by birds and bats needs to be defined during a multi-year period. This can best be accomplished by using remote sensing technology (radar, acoustic, and infrared) to collect data in various spatial and temporal scales (day and night, season to season, and year to year). See Cooper (1996) and Gauthreaux and Belser (2003) for more information.

Information collected during radar studies should include flight direction, altitude, and migration passage rates. This technology will give more accurate data on the flight altitudes than acoustic monitoring, and will determine if individuals are moving through the rotor swept area of the proposed turbines. We also recommend field surveys (such as point counts) be conducted to gather information regarding breeding bird use of the project site. These surveys should be conducted during the months of May, June, and July.

Traditional sampling protocols (*e.g.*, visual observation and/or mist netting) are appropriate to supplement the remote sensing work and would likely be necessary to ground truth the data for individual species. Further, we recommend that information on climatic conditions during these surveys be included with this analysis. This weather information will provide migratory flight conditions during the surveys and include temperature, wind direction and speed, cloud cover and ceiling height, the passage of fronts, etc. We request that all data collected be provided to us for review. We note that the DSD did not provide a discussion of how avian and bat risk would be determined. We recommend that this information be included in the DSD. We also recommend that all pre-construction studies be completed and data analyzed prior to the release of a Final EIS and the issuance of project approvals.

Finally, the Service recommends that all wind power projects that proceed to construction be monitored for impacts to wildlife following construction and during turbine operation. Post-construction bat and bird mortality monitoring should occur for a minimum of 3 years. Monitoring methods should be coordinated with both the Service and the New York State Department of Environmental Conservation. Information gained from post-construction monitoring will continue to aid the Service and project sponsors as we learn more about the potential impacts, or lack thereof, to wildlife in the project area.

Unique habitats, such as wetlands, must also be considered. The DSD indicates that a wetland delineation will be performed. We recommend all measures to avoid and minimize wetland impacts be implemented in the project design, as required by the Clean Water Act. Work in waters of the United States, including wetlands, may require a permit from the U.S. Army Corps of Engineers (Corps). The need for a Corps permit may be determined by contacting the appropriate Corps office(s).

We request that the avian and bat study protocols for this project be provided to our office as well as any future data and results from wildlife studies conducted in the project area. We appreciate the opportunity to comment on this document and look forward to working with you in the future. If you require additional information or assistance please contact Timothy Sullivan at 607-753-9334.

Sincerely,

David A. Stilwell
Field Supervisor

References:

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U.S. Fish and Wildlife Service. 2003. Interim guidelines to avoid and minimize wildlife impacts from wind turbines. Internet site address: http://www.fws.gov/r9dhcbfa/WindTurbineGuidelines.pdf

cc: NYSDEC, Albany, NY (S. Tomasik; B. Gary)

STATE OF NEW YORK DEPARTMENT OF PUBLIC SERVICE
THREE EMPIRE STATE PLAZA, ALBANY, NY 12223-1350
Internet Address: http://www.dps.state.ny.us

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Secretary

September 14, 2007

Mr. Carl J. Madonna
10 Oak Street
Plattsburgh, New York 12901

Via e-mail: Madonna@northnet.org

Re: SEQRA Lead Agency Request
Town of Chateaugay
Town of Bellmont
Franklin County Wind Energy Projects
Jericho Rise Wind Farm

Dear Mr. Madonna:

The Department of Public Service (DPS) has reviewed the request by the Town of Chateaugay and the Town of Bellmont for Lead Agency Status dated August 9, 2007 for the application by Jericho Rise Wind Farm LLC to develop a wind energy project in the towns.

DPS includes the Staff of the Public Service Commission (PSC) and will be an involved agency in the State Environmental Quality Review Act (SEQRA) review of the project. Pursuant to Public Service Law (PSL) §68, the facility owner would be required to obtain a Certificate of Public Convenience and Necessity (CPCN) for a wind generating project proposed to operate above 80 megawatts (MW). The §68 review would include consideration of the capability of the developer to function as an electric corporation and to provide safe and reliable service.

DPS has reviewed several wind energy development projects, and has experience and expertise in consideration of the environmental and electrical engineering effects of facility siting, construction and operation. DPS has participated as an involved agency in many SEQRA reviews of independent power production facilities, pursuant to its responsibility under PSL §68. The §68 review can only proceed following receipt of an application by the developer, including a verified statement by a responsible official of the company showing that it has received all legally required municipal consents giving it the right to use town property, such as the rights-of-way of public streets. Consideration of a §68 petition will also require that DPS coordinate review with the Office of Parks, Recreation and Historic Preservation (OPRHP) pursuant to §14.09 of the Parks, Recreation and Historic Preservation Law, unless there is federal agency review which implements §106 of the National Historic Preservation Act.

DPS has reviewed the Environmental Assessment Form (EAF) and the Draft Scope for a Draft Environmental Impact Statement (EIS) for the proposed facilities. DPS concurs with the lead agency in considering the scale of the wind energy development within both the host communities to be potentially significant, and agrees that it is appropriate to require additional information and analysis of impacts on the natural and cultural environment in an EIS. Attached are comments on the proposed scope of studies for the Draft EIS.

DPS seeks to actively participate in the SEQRA process, including review of scoping topics and methodologies, review of alternatives and mitigation measures appropriate to avoid adverse environmental and community impacts, and to minimize impacts on utility systems. Cultural resource evaluations must be included in the evaluation, including consideration of potentially eligible resources.

DPS consents to the Towns of Chateaugay and Bellmont proceeding as co-lead agencies, provided that the towns are able and willing to administer a comprehensive review of impacts, including assessment of cumulative impacts of the proposed wind project with other local development proposals, and other wind energy projects. The towns should require that the issues and regulatory requirements identified above be addressed in adequate detail to demonstrate a hard look at impacts, and to fully develop detailed findings. Findings should be specific to address the issues identified in the EAF and in this correspondence, to enable the PSC to adopt that environmental review and make requisite findings regarding the public interest, public convenience and necessity in its consideration of the developer's request pursuant to PSL §68.

The SEQRA review should consider appropriate mitigation of potential adverse impacts, which may include alternative system communication technologies, removal or relocation of individual wind energy structures, and alternative delivery routes. Mitigation strategies for visual and historic resource impacts may be appropriate based on results of visual studies and further consultations. Mitigation of impacts on visual, cultural or community – defining elements may include facility relocations, development of screening, or reduced project scale.

The revised scope of studies should be circulated to involved and interested agencies for timely consideration.

Please contact Andrew Davis at (518) 486-2853 regarding further project reviews and environmental assessment scoping. Thank you for your consideration of these comments.

Sincerely,

James Austin, Acting Chief
Environmental Certification
and Compliance

Attachments – Comments on SEQRA Scoping Document
Map of Chateaugay River & Lower Chateaugay Lake

cc:
J. Bonafide, OPRHP
S. Tomasik, NYS DEC
M. Brower, NYS Ag. & Mkts.
P. Doyle, Jericho Rise LLC
A. Davis, NYS DPS

New York State Department of Public Service
Comments on Town of Chateaugay and Belmont
SEQRA Scoping Document
Jericho Rise Wind Farm LLC- Project

September 14, 2007

Section 2.2 Detailed Description of the project should include description of dimensions and site requirements and setbacks from other facilities for the proposed substation facilities. Both of the sites identified, and any alternative locations developed in project planning should be addressed.

Section 3.1 Soils, Geology and Topography Resource analysis should be revised to specifically identify and analyze:

- specific constraints to underground placement of electric gathering lines, and provide cost-benefit type analysis where overhead placement is proposed; and
- remedial needs and methods due to construction disturbance of soils.

Section 3.2 Water Resources analysis should address intermittent resources and associated habitat characteristics of intermittent woodland pools, and intermittent tributary stream channels in natural settings.

The analysis should also address cumulative effects of construction erosion and runoff on the Chateaugay River which is recovering from recent significant sedimentation effects.

Section 3.3 Biological, Terrestrial and Aquatic Ecology analysis identifies potential forest fragmentation effects "only at access road and wind turbine sites proposed in large contiguous woodlots." The scope should require that electric line corridors be included in this assessment.

And assessment of construction effects on intermittent woodland pools and intermittent tributary stream channels in natural settings should also be included.

Section 3.5 Aesthetic and Visual Resources analysis should specifically address additional criteria and give consideration to the following:

1) Describe and analyze visual change and identify specific visual contrasts introduced by facility siting; Describe specific contrasting elements with specific landscape characteristics;

2) Describe the methodology for defining landscape similarity zones;

3) Specify a proposed list of viewpoints to be analyzed, and include:

   a) Foreground, middle ground and background distance viewpoints;

   b) A cumulative assessment of the project with other nearby projects in the project area;

   c) locations of historic importance; and

   d) locations of local importance, including those which define community character.

4) Visual resources analysis must be coordinated with the historic resources analysis; and

5) Analysis of mitigation measures or potential mitigation options should be provided to represent the adequacy of mitigation measures under consideration.

Section 3.6 Historic, Cultural and Archeological Resources analysis and consideration of mitigation measures for adverse effects should first assess direct mitigation measures such as turbine relocation, or project down-sizing; then assess indirect mitigation measures such as screening. Only after consideration of direct and indirect mitigation measures have been exhausted should development of offset measures be relied upon for adverse effect mitigation.

The historic resources inventory and analysis of potential impacts and potential mitigation measures should be included in the Draft EIS to enable timely consultation between state agencies and SHPO.

Historic structures analysis should consider the landscape setting of structures; potential change in setting due to project construction and operation should include consideration of facility components including wind turbines and overhead electric lines.

Section 3.8 Traffic and Transportation analysis should include an assessment of the integrity of local bridge structures within the project area, since project construction will include many heavy and oversized deliveries, as well as extensive construction related heavy equipment traffic. Limitations on delivery routes should be identified and considered in assessing the accessibility of proposed substation interconnections.

Section 3.11 Community Facilities and Services discussion is the only reference to "recreation areas" in the Draft Scoping document. The DEIS should include consideration of Public Fishing Rights (PFR) access areas along the

Chateaugay River, and assess direct intrusion on the area south of the NYPA electric transmission facilities by the proposed overhead crossing of the river for the electric line from turbine sites 13 and 14. Consideration of alternatives should include: locations not requiring new right-of-way such as at the existing NYPA crossing; and underground placement of the river crossing. Attached is a map published by the NYS DEC depicting "PFR Locations" along the Chateaugay River in the project vicinity.

Jericho Rise Wind Farm
DRAFT Scope

Proposed Jericho Rise Wind Farm
Draft Scope: SEQR DEIS Focus and Content
Towns of Bellmont and Chateaugay
SEQR Co-Lead Agencies

October 2007

INTRODUCTION AND BACKGROUND

The Towns of Chateaugay and Bellmont are serving as the Co-Lead Agencies for purposes of conducting a coordinated environmental review of the proposed Jericho Rise Wind Farm (the Project) pursuant to the New York State Environmental Quality Review Act (SEQRA) and the implementing regulations found in 6 NYCRR Part 617. The proposed Project is located within the Towns of Chateaugay and Bellmont in Franklin County, New York. The proposed Project will consist of up to 53 1.65 megawatt (MW) Vestas V82 Wind Generating Turbines (WTG) and their associated access road and interconnection facilities, a substation, and proposed construction laydown area. Additional details regarding the proposed Project are provided in the Environmental Assessment Form (EAF).

An Environmental Impact Statement (EIS) will be prepared with respect to the Project under SEQRA. This Draft Scoping Document ("Draft Scope"), prepared by Jericho Rise Wind Farm LLC ("the Applicant"), outlines the proposed focus of the Draft Environmental Impact Statement (DEIS).

The purpose of the Draft Scope is to identify the Project-related impacts to be focused upon in the DEIS and to identify the information to be included in the DEIS concerning the proposed Project. Comments on this Draft Scope can shape the way the DEIS analysis is conducted.

After comments on this Draft Scope are received, a Final Scope will be published, which will guide the creation of the DEIS.

DRAFT SCOPE FOR PROPOSED JERICHO RISE WIND FARM PROJECT DEIS

The DEIS will include all elements required by 6 NYCRR 617.9. The following sections will be included in the DEIS.

i. DEIS Cover Sheet:

All draft and final EISs must be preceded by a cover sheet stating the following:

- whether it is a draft or final EIS;
- name or descriptive title of the action;
- location (county and town, village or city) and street address, if applicable, of the action;
- name and address of the lead agency and the name and telephone number of a person at the agency who can provide further information;
- names of individuals or organizations that prepared any portion of the statement;
- date of its acceptance by the lead agency; and
- in the case of a DEIS, date by which comments must be submitted (in accordance with SEQR regulations at 6 NYCRR 617.12).

ii. DEIS Table of Contents:

The Table of Contents will list all sections within the DEIS, all tables, figures, maps, appendices/attachments, and acronyms. This Draft Scope includes a copy of the draft Table of Contents.

1.0 EXECUTIVE SUMMARY

The Executive Summary will include a brief description of the proposed action and a listing of anticipated environmental impacts and anticipated mitigation measures. A summary will be provided of the approvals and permits required, and the alternatives to the proposed action that are evaluated in the DEIS.

2.0 DESCRIPTION OF THE PROPOSED ACTION

This section of the DEIS will provide a comprehensive description of the site in a regional and local context and provide a detailed discussion of the proposed action.

The proposed Project is located within the Towns of Chateaugay and Bellmont in Franklin County, New York. The proposed Project will consist of up to 53 1.65 MW Vestas V82 WTGs and their associated road and interconnection facilities, a substation and two proposed construction laydown areas. The attached EAF and figures provide additional details regarding the proposed Project.

2.1 Site Description

This section will provide a general summary description of the Project area. It will summarize the size, geographic boundaries, and physiographic characteristics (including general characterization of the wind resources) of the Project area. It will generally and briefly discuss the relationship of the Project area to state and federal wetland areas, streams courses, residential areas, schools, parklands, historic properties, and other recognized or protected natural or man-made features within 10 miles of the project area. A more detailed discussion of various aspects of the environment within the Project area will follow in the body of the DEIS.

This section will also depict the regional and local context of the Project area and define the properties owned, leased or under option by the Applicant. This section will generally discuss the dominant land use within and adjacent to the Project area. It will describe other significant pending developments (including wind power projects) within or adjacent to the Project area.

Detailed discussion and maps of environmental site characteristics, including soils, wetlands, vegetation, land use, and archaeological sites, will be provided in section 3.0.

2.2 Detailed Description of the Proposed Action

The purpose of this section is to define the action that will be studied in subsequent portions of the DEIS. This section will explain what the Project will entail throughout construction, operation and decommissioning. It will describe the size, generating capacity and layout of the proposed Project. This description will include dimensions, site requirements, and setbacks from other facilities for the proposed substation facilities. The process for selecting the Project layout and components will also be described in this section. A brief summary of the alternatives discussion in section 5.0 will be presented here as well.

Maps and graphics showing the location of the components of the proposed Project, including the turbines, access roads, electrical collection system, transmission line, substation, meteorological (met) towers, operations and maintenance (O&M) facilities, construction parking areas, storage/laydown areas and other Project components, will be provided to the extent identified at the time the DEIS is prepared. Descriptions and typical drawings of the Project components will also be provided. The figures will include typical drawings that show turbine dimensions and typical drawings of access roads and collection lines. Relevant technical maps, figures, exhibits, project plans, and specifications will be included as appendices to the DEIS.

2.3 Project Purpose, Public Need and Benefits

This section will provide the background and history of the proposed Project, and a statement of the objectives of the Applicant. This section will also describe the public need for the Project on local, regional, and national levels, including a brief overview of the environmental, social and/or economic benefits anticipated due to the proposed action.

2.4 Construction and Operation

This section will describe the planned construction process for the proposed Project, including construction schedule/duration, anticipated construction employment, construction sequencing, construction and delivery vehicle weights and heights, and routing of construction traffic to and within the Project. It will provide a summary description of construction activities, including mobilization and staging, surveying and staking, clearing and grubbing, treatment of natural products to be removed during construction (e.g. removal of brush, disposal of cut material, etc.), civil work (roads, foundations, underground and overhead cable, substation, O&M building, etc.), tower/turbine installation, turbine commissioning, and site restoration. This discussion will also identify the potential source and anticipated quantity of aggregate materials required for road construction, and, if a concrete batch plant is contemplated to be necessary for foundation installation, the location and capacity of such batch plant.

This section will describe general safeguards to be taken to protect local citizens and protected resources from construction-related hazards, such as the method for handling concrete during construction of turbine pads to limit impacts to surface waters, wetlands, and underground waters. The Applicant will comply with all applicable laws, regulations, and permit conditions, and will employ an environmental monitor to oversee construction and post-construction restoration activities according to an environmental monitoring plan. The environmental monitor will possess working knowledge of state and federal regulations including New York State Department of Agriculture and Markets (Ag & Markets) Guidelines, natural resources, and be familiar with construction activities and will have stop work authority. The Applicant will also establish complaint resolution procedures to address concerns related to construction of the Project. Additional project plans, specifications, and other construction information will be included as an appendix to the DEIS.

This section will also describe the intended long-term ownership, operation, inspection, maintenance, and restoration requirements of all Project components/improvements, both on-site and off-site. It will describe the Project's operation and maintenance (O&M) plan, which will include environmental management components and will encourage opportunities for creation of environmental enhancements through cooperative partnerships with landowners, local governments, educational and conservation organizations. The O&M Plan will also include ongoing monitoring and management to ensure the success of mitigation and restoration measures, as well as an adaptive management plan designed to respond to potential environmental impacts as they may arise through the life of the project. This section will also provide information on annual rate of power generation, routine maintenance requirements, long-term employment, lease/easement arrangements with landowners, effect on local electric rates, and useful life of the Project. Finally, this section will describe the decommissioning plans for the Project, which will include the anticipated life of the project, estimated decommissioning costs and salvage values, an explanation of cost estimation, plans for decommissioning financial assurance, and removal and restoration procedures. The decommissioning plan will be included as an appendix to the DEIS.

2.5 Reviews, Approvals and Other Compliance Determinations

This section will list the local, state, and federal governmental entities having approval authority over or the requirement to consult with decision-makers regarding the Project, including the nature of their jurisdiction and the approvals or consultations required from each entity. The section will provide a table of all required approvals and permits, which will include a Wind Energy Permit for the towns of Chateaugay and Bellmont, a Franklin County Highway Work Permit, and approval under the Federal Water Pollution Control Act Section 404. Relevant agency correspondence will be appended to the DEIS. Relevant agency correspondence will be appended to the DEIS.

3.0 EXISTING CONDITIONS, ANTICIPATED IMPACTS AND ANTICIPATED MITIGATION MEASURES

For each resource within the affected environment, this section of the DEIS will identify the existing environmental conditions, anticipated impacts of the proposed action on the affected environment, and anticipated mitigation measures to avoid or reduce the significance of Project-related negative impacts. The format or organization of this section will include the following subsection headings for each area of the affected environment:

- Existing Conditions
- Anticipated Impacts:
    - Construction (short-term)
    - Operation (long-term)
- Anticipated Mitigation Measures:

  - Construction
  - Operation

This format provides for an easy-to-read and meaningful presentation of the environmental issues associated with the proposed Project.

The text of this section will be supplemented as needed with maps, graphics, photographs, agency correspondence, Geographic Information System (GIS) data analyses, and completed support studies.

3.1 Soils, Geology and Topography

3.1.1 Existing Conditions

This section of the DEIS will describe the existing conditions of geology, soils and topography in the Project area. Soil types, characteristics and limitations relating to soil texture, soil-bearing capacity, depth to water table, hydric and non-hydric soils will be evaluated. Any prime agricultural soils within the Project area will be identified. A description of prominent and/or unique features including large boulders, ledges, and rock outcroppings will be provided.

Geologic and topographic existing conditions and limitations will be identified in a desktop geotechnical study. It is expected that continued consultation with agencies and landowners will result in minor adjustments to the exact locations of the proposed turbines. Therefore, geotechnical borings will not be completed until the micro-siting process has been finalized (likely after SEQR is complete). For the SEQR evaluation, a thorough analysis of available information will be utilized to assess existing conditions and potential impacts and to describe the choice and placement of underground or overhead collection and transmission lines. This desktop geotechnical study will include a review and evaluation of geological and water resources publications, aerial photos, topography, and geological hazard maps of the project area. These resources are available through National Resources Conservation Service (NRCS) Soil Survey Reports, U.S. Geological Services (USGS) Water Resources Publications, New York State Geological Survey (NYSGS), electronic GIS Resources, and web research. This analysis is anticipated to reveal the following information:

- subsurface conditions;
- groundwater conditions;
- range of depth to bedrock;
- variability of site conditions;
- percent slope;
- specific constraints and issues related to the suitability of site soils for support of roadways, foundations, and underground collection and transmission lines;
- corrosion potential;
- potential frost action;
- erodibility, infiltration;
- seismicity designations; and
- other geologic hazards.

3.1.2 Anticipated Impacts

Anticipated impacts to surface and subsurface soils and bedrock will be identified including total area of disturbance (temporary and permanent), sediment and soil erosion, disturbance of steep slopes, and other impacts to shallow bedrock. Although blasting is not anticipated at this time, any potential need for blasting and likely seismic impacts will be discussed and analyzed in this section including associated risks to wildlife, habitat, underground facilities, including water supply wells, and structures or other property.

This section will identify the anticipated temporary impacts to agricultural lands including but not limited to the following;

- Impacts to topsoil due to removal during construction;
- Soil compaction due to passage of vehicles,
- Increased concentration of rock in upper subsoil and/or topsoil due to excavation;
- Draingage impacts due to changes in the natural surface and subsurface drainage patterns.

This section will map, quantify and characterize by soil type all land now in agricultural production that will no longer be available for agricultural use as a consequence of the proposed Project. The DEIS will clarify the anticipated depth of any improvements or equipment proposed to be installed beneath the surface of tilled lands and the potential for agricultural implements to come into contact with such improvements or equipment.

3.1.3 Anticipated Mitigation Measures

This section will describe how the anticipated impacts to geology, soils and topography from the Project are proposed to be mitigated. Mitigation may include, but is not limited to the following measures.

Project impacts will be avoided and minimized by conducting geotechnical investigations during the planning stage and by siting project components such that steep slopes, sensitive soils, and areas of shallow bedrock are minimized. The project will also be sited based on the information gathered during site investigations. The Applicant will employ Best Management Practices during construction and operations and will also develop and implement a detailed Stormwater Pollution Prevention Plan (SWPPP), which will include an erosion and sediment control plan. If needed, the Applicant will also develop and implement a blasting plan. To the extent practicable, the Applicant will follow the New York State Department of Agriculture and Markets (Ag & Markets) Guidelines for Agricultural Mitigation for Windpower Projects (Guidelines) and will communicate with Ag & Markets during all phases of the project to further minimize agricultural impacts. The Applicant will also employ at least one environmental inspector to oversee construction of the Project and subsequent restoration.

Mitigation for impacts will be presented, including proposed mitigation for blasting, an erosion and sediment control plan, and a plan to protect and restore agricultural soils in accordance with Ag & Markets Guidelines. This section will describe plans for working with landowners, the County Soil Conservation District, and the US Dept. of Agriculture's NRCS to determine the likelihood of any subsurface drainage that may be affected by wind turbine siting and construction. This section will describe how construction plans and specifications will provide measures for the protection, repair and replacement of any subsurface drainage affected by siting and construction. This section will also describe plans for avoiding impacts to agricultural soils or for restoration should impacts be found to be unavoidable such as stockpiling topsoil to be replaced during restoration, deep soil tillage to reduce compaction and removal of rock from topsoil. Restoration plans will be consistent with policies of the Ag & Markets to the extent practicable. The Agricultural Protection Measures will be included as an appendix to the DEIS.

3.2 Water Resources

3.2.1 Existing Conditions

This section will identify and describe all surface waters within the Project area, including wetlands, streams, rivers, lakes, ponds, intermittent woodland pools, intermittent tributary streams, and water resources with state and federal classification. It will use available information from US Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) maps, NRCS Soil maps, USGS topographical maps, recent aerial photography and the NYSDEC's database that lists state-regulated wetlands and classified streams to illustrate where state or federally-regulated wetlands and streams occur within the Project area. The Applicant will also conduct field surveys to inventory the boundaries of state and federal jurisdictional wetlands and streams occurring within the Project area. The Applicant will follow the delineation standards and procedures provided in the United States Army Corps of Engineers' *Wetland Delineation Manual* (Environmental Laboratories, 1987) and the NYSDEC *Freshwater Wetland Delineation Manual* (1995). The Applicant will consult with the NRCS office in Malone, NY to identify any prior converted wetlands within agricultural land. This section will include a wetland inventory (visual observations of hydrology and vegetation in the area of proposed disturbance). In addition to maps, a summary table will be included that provides type, size, special designations, and other characteristics for each wetland and water body. This section will also identify any Federal Emergency Management Act (FEMA)-regulated floodplain areas.

Based on existing data, and/or site-specific studies, this section will describe groundwater resources within the Project area, including depth to groundwater, known aquifers, and existing water supply wells/springs. Information on groundwater resources will be determined from published New York State Department of Conservation (NYSDEC) and USGS studies as well as published local reports and references for the area. The US Environmental Protection Act sole source aquifer maps and groundwater protection area databases will also be reviewed. Field surveys will be performed to verify the location of known locations, and identify any additional, public and private water supply wells prior to the FEIS.

3.2.2 Anticipated Impacts

The estimated anticipated temporary and permanent impacts to surface waterbodies and wetlands resulting from installation of all Project components and Project operation will be identified and described. Anticipated impacts to waterbodies include temporary disturbance to the streambed and streambanks during trenching; siltation/sedimentation, and the placement of fill in wetlands will be discussed in this section. The estimated acreage of temporary and permanent impacts to wetlands and waterbodies as well as the type of each water resource will be provided. This analysis will include a discussion of the effects from construction (e.g., erosion, runoff) on the Chateaugay River, which is recovering from recent sedimentation effects. This section will also provide an assessment of anticipated Project-related impacts to floodplains and stormwater management within the Project area.

Included in this discussion will be alternative project designs that were examined to avoid and reduce impacts to wetlands. Justification for activities that may impact wetlands will be provided.

This section will evaluate the potential for impacts to groundwater resources that may be caused by installation of subsurface facilities, including tower foundations and buried electrical lines (e.g. blasting, sedimentation, stormwater runoff, chemical spills, etc). Prior to the FEIS, the Applicant will identify active wells near proposed turbine and collection system installations and analyze the possible impacts to water supplies sourced from groundwater or springs.

3.2.3 Anticipated Mitigation Measures

This section will describe anticipated mitigation measures designed to avoid, minimize, reduce, and/or restore the anticipated impacts to water resources. The mitigation measures that the Applicant anticipates evaluating during the development of a Wetland Mitigation Plan will include following:

- Project siting and/or operational measures to minimize and/or avoid ecological impacts;
- Development of a Soil Erosion and Sedimentation Control Plan as part of the SWPPP;
- A field delineation of sensitive areas to avoid during siting and/or construction phase to the greatest extent possible;
- Low impact crossing methods for streams & wetlands;
- Compensatory mitigation project(s); and
- NYSDEC and Corps prescribed Best Management Practices, including:
    - No Equipment Access Areas
    - Restricted Activities Areas
    - Access Through Wetlands
- An Invasive Species Control Plan (ISCP), which will include specific mitigation measures to eliminate and prevent the spread of invasive species including invasives control and re-planting of preferred indigenous species, as well as an ongoing maintenance plan to ensure the protection of the native species throughout the life of the project;
- Use of an environmental inspector to oversee compliance with imposed conditions and monitor the success of site restoration activities.

For any proposed wetland compensatory mitigation sites, proposed mechanisms to secure long term access and management of the property will be discussed.

This section will identify the need for any Article 24 Freshwater Wetlands permits, US Army Corps of Engineers (Corps) Section 404 Permit, Clean Water Act Section 401 Water Quality Certifications and/or Article 15 Stream Disturbance Permits (DEC). The Applicant will also employ at least one environmental inspector to oversee compliance with imposed conditions throughout construction activities and monitor the future success of any site restoration activities required by the Project permits.

3.3 Biological Resources

3.3.1 Existing Conditions

This section will describe the general wildlife community, including vegetation, wildlife/wildlife habitat, and threatened and endangered species, and the associated habitat of each within the Project area, based on existing data and field observations. The existing conditions of vegetation, ecological communities, and significant natural communities, including threatened and/or endangered vegetative species, will be described and mapped based on available data through the NYSDEC Natural Heritage Program (NHP) database and from a field survey to be conducted prior to the FEIS. The presence of invasive and/or noxious weeds will also be addressed here.

The existing conditions of the wildlife and wildlife habitat will be identified based on information included in the New York State Breeding Bird Atlas (BBA), the New York State Reptile and Amphibian Atlas (NYSDEC website), and other existing data sources. This information will be supplemented through correspondence with the NHP and the USFWS. Additional field observation and assessment will be performed in consultation with state and federal wildlife agency staff prior to the FEIS.

This section will also provide a detailed description of the avian and bat community within the Project vicinity. This section will discuss information obtained through existing information and literature as well as the studies conducted to characterize existing conditions within the Project area and assess operational risk. The methodology for this analysis, as developed in coordination with the NYSDEC, is provided in Exhibit 1. The completed Avian and Bat Study will be appended to the DEIS.

3.3.2 Anticipated Impacts

The Applicant will address the anticipated construction-related impacts to vegetation (including to ecological communities at intermittent woodland pools and intermittent tributary stream channels in natural settings) due to excavation, cutting/clearing, removal of stumps and root systems, and increased exposure/disturbance of soil as well as permanent impacts during operation. This section will quantify the impact and/or disturbance as well as the type of vegetation impacted. This section will describe the potential impacts of the proposed action on the local state and privately owned fish hatcheries in the area.

This section will also describe the anticipated impact to fish and wildlife during construction and operation.

Potential impacts to avian and bat habitat and mortality risks will be evaluated on the basis of available data and literature, as well as pre-construction field studies as described in Exhibit A.

In general, temporary impacts to wildlife will be minimal as a result of siting project components away from sensitive habitats such as streams, wetlands, and mature forest. This section will include a detailed description of anticipated temporary impacts to wildlife including incidental injury and mortality due to construction activity and vehicular movement (including avian nest destruction), construction-related silt and sedimentation impacts on aquatic organisms, habitat disturbance associated with clearing and earth moving activities and displacement due to increased noise and human activities.

The anticipated impacts to wildlife associated with operation of the Project are generally limited to minor loss of habitat, possible forest fragmentation (mainly at access roads, at electric line corridors and wind turbine sites proposed in large contiguous woodlots), wildlife displacement due to the presence of the wind turbines, and avian and bat mortality as a result of collisions with the wind turbines. These types of anticipated impacts will be discussed in detail in this section in association with the identified wildlife communities within the project area.

This section will also describe any anticipated impacts to threatened and endangered species and associated habitat within the Project area.

3.3.3 Anticipated Mitigation Measures

This section will describe anticipated mitigation measures designed to protect, repair and/or restore the anticipated impacts to vegetation, wildlife and wildlife habitat resources. The applicant will continue to consult with the NYSDEC and other involved agencies to determine the appropriate mitigation measures to implement based on the impact or potential for impact. The mitigation measures that the Applicant anticipates evaluating include the following:

- Measures suggested by the USFWS 2003 Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines, to the extent hat such measures are applicable and relevant;
- Project siting and/or operational measures to minimize and/or avoid ecological impacts;
- Soil Erosion and Sedimentation Control Plan as part of our SWPPP;
- A field delineation of sensitive areas to avoid during siting and/or construction phase to the greatest extent possible;
- An ISCP (as described above);
- NYSDEC and Corps prescribed Best Management Practices, including:
    - No Equipment Access Areas
    - Restricted Activities Areas
    - Access Through Wetlands.

In addition to these mitigation strategies, a Post Construction Avian and Bat Fatality Monitoring Program to be designed by the Applicant in consultation with the NYSDEC will be implemented.

3.4 Climate and Air Quality

3.4.1 Existing conditions

This section will utilize data available through the NRCS National Water and Climate Center in Chasm Falls, NY to describe the existing climatic conditions within the region of the proposed action. This section will also address the existing conditions and long term trends with respect to air quality within the region of the proposed action based on available data through the NYSDEC's 2005 New York State Air Quality Report: Data Tables.

3.4.2 Anticipated Impacts

This section will describe anticipated impacts to air quality during the site preparation and construction phases of the Project. These anticipated impacts are primarily associated with the operation of construction equipment and vehicles as a result of both emissions from engine exhaust and from the generation of fugitive dust during earth moving activities and travel on unpaved roads.

This section will also describe the anticipated positive impacts during operation by producing electricity with zero emissions resulting in long-term reduced air pollutants and greenhouse gases associated with energy generation from fossil-fuel sources. This section will quantify the anticipated positive impacts associated with zero-emission energy production specific to this Project and Project area. The analysis will include a comparison to emission levels from fossil fuel-powered electricity sources, including emissions of nitrogen oxides, sulfur dioxide, carbon dioxide, particulates, and mercury.

3.4.3 Anticipated Mitigation Measures

This section will describe anticipated mitigation measures designed to reduce the anticipated temporary impacts to air quality associated with vehicle emissions and fugitive dust generation during construction. Mitigation measures that the Applicant anticipates evaluating includes the following:

- The development and implementation of a dust control plan to be implemented during construction;
- The development and implementation of an O&M Plan to include specific measures to reduce dust and vehicular emissions; and
- Adherence to controlled speed during construction and O&M.

This section will also describe the mitigation value that operation of the wind farm may provide through the long-term air quality benefits of the Project.

3.5 Aesthetic and Visual Resources

3.5.1 Existing Conditions

This section will describe the visual character of the area within a 7.5 mile radius of the Project area (the visual study area) and will identify visual/aesthetic resources within this area that are considered sensitive from a statewide and local perspective.

Per NYSDEC guidelines and the direction of the Co-Lead Agencies, The Applicant will consult published and online data sources, contact state and local agency representatives, and conduct a reconnaissance-level field review to define visual/aesthetic character and identify visually sensitive areas within a 7.5-mile radius of the Project. Significant visual resources (such as culturally or historically significant sites as identified through the cultural resources investigation (described further in Section 3.6), locations of local importance, and locations that define community character) within ten miles of the project will also be identified and located on the USGS maps. Viewshed maps based on topography, vegetation, and existing cultural and historical landmarks will be prepared from this analysis.

A professional photographer will document assorted existing views within a five-mile radius of the facility location, including representative views for each landscape unit within five miles of the facility, as well as significant public or historic vantage points within 7.5 miles of the proposed project. All viewpoints will be documented with field notes, photographs, and GPS coordinates. These photographs will be used to characterize existing visual conditions within the project area and to provide the basis for the visual simulations.

The Applicant will also conduct a survey to accurately identify the location of residences within the viewshed (within 1,500 meters of the Project site). These locations will be identified and mapped to assess for the anticipated visual impact by project facilities. The results of this study will be further utilized during the shadow flicker analysis.

3.5.2 Anticipated Impacts

This section will describe and analyze visual changes to the landscape and will identify specific visual contrasts introduced by the siting of the facility. Anticipated visual impacts from operation of the Project from sensitive sites or viewers identified in section 3.5.1 will be analyzed and discussed. Impacts associated with anticipated shadow flicker impacts on nearby residences will also be described in this section.

A Visual Impact Assessment (VIA) will be conducted to accurately determine the anticipated visual and aesthetic impacts. This assessment will evaluate:

- Proposed land uses, or project components obviously different from, or in sharp contrast to, current surrounding land use patterns, whether man-made or natural;

- Proposed land uses, or project components visible to users of aesthetic resources which will eliminate or significantly reduce their enjoyment of the aesthetic qualities of that resource;
- Project components that will result in the elimination or significant screening of scenic views known to be important to that area; and
- Cumulative visual impacts associated with other proposed wind facilities near the Project area.

The Applicant will use the VIA to estimate the level and locations of anticipated impacts of the project facilities on the surrounding community. Viewshed maps based on topography, vegetation, and the proposed project layout will be prepared to indicate the potential visibility of turbines within respective portions of the visual study area. Using a three-dimensional computer model of the site terrain and proposed facility, color visual simulations will be prepared to show proposed Project facilities from representative viewpoints. Once the results of the VIA are reviewed, visual simulations will be prepared and will include proposed viewing conditions during both daylight and/or night time conditions. The VIA will be included as an appendix to the DEIS.

To consistently evaluate all anticipated impacts, the Applicant will employ a systematic method to develop ratings of both existing visual quality and the magnitude of expected visual impacts. For each defined landscape similarity zone and key viewpoint within the study area, the Applicant will develop a rating of existing visual quality on a scale of high, moderate and low. These ratings will be a composite of scores for vividness, intactness and unity of the view at each location. These ratings will explicitly factor into the analysis viewer exposure, based on the number of expected viewers and their viewing distance; viewer sensitivity, based on the viewers' activities and assumed level of awareness of visual changes; and changes to vividness, intactness and unity evident in the with-project simulations. Visual impact levels will then be characterized as high, moderate or low based on the degree of calculated change from the existing visual quality rating for each viewpoint. This visual impact methodology reflects an approach that has been commonly employed and accepted to evaluate the visual impacts of wind energy projects, transmission lines and other developments in environmental reviews and will be consistent with NYSDEC's existing VIA policy *Assessing and Mitigating Visual Impacts (DEP-00-2, July 31, 2001).*

A separate viewshed analysis for the anticipated visibility of FAA obstruction lighting will also be prepared, based on turbine height and a lighting plan for the project, to determine the anticipated visibility of aviation safety lighting on the proposed turbines.

Shadow flicker caused by wind turbines is attributed to alternating changes in light intensity caused by the moving blade casting shadows on the ground and stationary objects, such as a window at a dwelling. Shadow flicker is not the sun seen through a rotating wind turbine rotor nor what an individual might view moving through the shadows of a wind farm. The Shadow Flicker Analysis will also be appended to the DEIS.

The anticipated impact to residences due to shadow flicker will be assessed through a shadow flicker study using WindPro software to calculate the annual hours of shadow impact for sensitive locations surrounding the project within 1,500 meters of the Project site that have been identified by field and desktop surveys. This will include the number of anticipated receptors and predicted annual hours of shadow flicker at each.

3.5.3 Anticipated Mitigation Measures

To mitigate anticipated impacts to visual and aesthetic resources, the Applicant will carefully consider potential impacts during the planning process. Using reference information, site survey photographs and computer-generated models, the Applicant has carefully selected sites during the planning process to avoid impacts to the greatest extent possible.

The Applicant will enter into development agreements with landowners, and will consult with local and state agencies including the State Historic Preservation Office (SHPO) and NYSDEC to further develop a specific mitigation plan for the project.

The Project will develop the mitigation plan consistent with NYSDEC Program Policy for mitigation of aesthetic impacts. The policy requires consideration of a specific range of mitigation types including screening, relocation, camouflage, reduced facility profile, project downsizing, lighting measures, maintenance actions and offsets. The Applicant will carefully evaluate the applicability, feasibility and anticipated benefits (reduced visual impact) of all mitigation options and will propose to implement those options that are viable and can provide a meaningful reduction in project impact. The mitigation assessment and plan will specifically include consideration of off-sets for anticipated visual impacts to historic structures.

3.6 Historic, Cultural and Archaeological Resources

3.6.1 Existing Conditions

This section will provide a brief history of the Project area and surrounding region and will identify and describe potentially significant historic architectural resources (buildings, structures and districts) within five miles of the Project. It will also provide a brief summary of the archeological resources that may be expected within the area of the Project and will provide the results of surveys that will be completed to identify archeological resources that may be affected by the Project. The historic architecture report will be completed prior to issuance of the FEIS. The Phase 1A Archeological Report for the Project has been completed and provided to SHPO for review and comment. The Applicant is currently consulting with SHPO to develop an appropriate workplan for Phase 1B field investigations for the Project which will be performed in Spring 2008. A Phase 1B report will be produced for SHPO and Lead SEQR-agency review. If subsequent phases of archeological investigation are needed, the Applicant will perform all required studies. Summaries of all completed studies will be included within the FEIS.

3.6.2 Anticipated Impacts

This section will discuss the anticipated impacts to historic and cultural resources. There will be no direct impacts to historically significant structures as none of these resources will be demolished or physically altered in connection with the construction and/or operation of the Project. There may be indirect visual impact to historically significant architectural resources during the operation of the project. This section will utilize simulations developed during the visual impact analysis to determine the anticipated impact to these resources. Anticipated direct impacts to archeological resources may include disturbance during construction. The Applicant assumes that it will be possible to avoid direct impacts to potentially significant archeological resources through possible modifications of Project design or construction technique.

3.6.3 Anticipated Mitigation Measures

This section will describe anticipated mitigation measures designed to reduce impacts to potentially significant historic architecture and potentially significant archeological resources. To mitigate anticipated impacts the Applicant will carefully consider potential impacts during the planning process. Using the information gathered during the architectural and the archeological surveys, the Applicant will first consider direct mitigation measures, such as micrositing in addition to the turbine downsizing already incorporated into the application, to minimize the anticipated impact to sensitive areas. If impacts to potentially significant architectural or archeological sites cannot be avoided, appropriate mitigation will be developed in consultation with SHPO.

3.7 Noise and Odor

3.7.1 Existing Conditions

This section will describe the existing noise and odor levels within the project area. The Applicant has conducted an ambient noise analysis to obtain the existing information. The data collected through this analysis will be described in detail in this section. This study involved an assessment of potential noise impacts from the project using the CadnaA software package developed by DataKustik GmBH in Munich, Germany. Noise sensitive areas (NSA) surrounding the project area were identified during a field survey and background noise levels were recorded at three representative locations over a continuous four-week period. The Sound Study and Noise Impact Analysis will also be included as an appendix to the DEIS.

This study consisted of two types of measurements. The first is the A-weighted sound level which is the overall sound level, weighted on a frequency basis, to correspond to the sensitivity of the human auditory system at different frequencies. This is used for comparison with any noise standards or ordinance levels. The A-weighted measurements were performed at all three locations.

The second type of measurement will be the standard 10 octave bands covering the frequency range from 20 Hz to 20,000 Hz, the range of audible sounds for humans. Additionally, two lower bands (sub-octave) covering the infrasonic range from 4 Hz to 20 Hz will be measured to provide a basis for comparison to low frequency noise from the turbines. The 10 octave bands and two sub-octave band measurements were performed at one of the three locations.

This section will also discuss the existing odors generally associated with agricultural practices (e.g. spreading manure).

3.7.2 Anticipated Impacts

This section will describe any anticipated impacts to the noise level within the project area during construction and operation. Though assessing and quantifying temporary construction related impacts is difficult as the activity is constantly moving throughout the site, this section will address estimated average known noise levels for the various components of construction activity including truck traffic, heavy equipment operation, and blasting.

Additionally, this section will assess the anticipated operational noise impacts from the Project during operation. Wind turbine specific noise emission data from the turbine manufacturer or similar machine will be entered into the CadnaA noise model to calculate expected noise levels at the NSAs. A map showing the predicted noise level contour lines will also be generated to show the distribution of sound throughout the project area. The predicted levels at NSAs will be evaluated relative to local and state noise ordinance/standards requirements. The expected increases above background levels will also be determined as another method of predicting the likelihood of complaints. Procedures found in NYSDEC Program Policy *Assessing and*

Mitigating Noise Impacts will be followed (DEP-00-1, February 2, 2001). This data will be quantified and displayed in both tabular and map format in this section.

No additional odors are anticipated to be introduced into the Project area as a result of the construction and operation of the Project.

3.7.3 Anticipated Mitigation Measures

This section will describe the anticipated mitigation measures to avoid or minimize noise impacts within the Project area.

The results of the noise analysis will also be used to determine the need to relocate any turbines to avoid noise impacts. The noise model will be used as a tool in this situation to determine the minimum distance that any particular turbine would have to be moved to reduce noise to an acceptable level.

In addition to avoidance the Applicant will also evaluate the following mitigation measures:

- Implementation of Best Management Practices;
- Adherence to setback requirements in accordance with the applicable Local Laws for the Towns of Chateaugay and Bellmont;
- Pursuit of development agreements with neighbors whose residence is located within 2,500 of a Project turbine;
- Notifying landowners of certain construction noise impacts in advance (e.g., if blasting becomes necessary);
- Implementation of a complaint resolution procedure to assure that any complaints regarding construction or operational noise are adequately investigated and resolved;
- Limiting the cutting/clearing of vegetation surrounding the proposed substation; and
- Keeping turbines in good running order throughout the operational life of the Project to reduce noise impacts.

3.8 Traffic and Transportation

3.8.1 Existing Conditions

This section will describe the existing road system and identify those roads that are anticipated to be used for construction of the proposed Project. It will also describe the transportation requirements of the Project (e.g., turning radii, vehicle widths, vehicle weight). This section will discuss any limitations/deficiencies that affected roads, culverts and bridges may have. In order to assess the existing traffic and road conditions within the Project area, a transportation study will be conducted to evaluate roadway safety, traffic capacity, structure inventory, and roadway geometry. The study will include a site visit to evaluate the anticipated delivery path(s) from Interstate I90 to the construction site,] lateral clearances, vertical clearances, intersecting roadway control, speed limits, posted truck size and weight restrictions, major roadway intersection configurations, and primary and alternate route selections. This will also include consultation with the New York State Department of Transportation (NYSDOT) and the local municipalities as well as a field visit to assess the road structures in the project area. The Transportation Study will be appended to the DEIS.

3.8.2 Anticipated Impacts

This section will address impacts anticipated to occur during the construction period, including temporary damage to road surfaces, affect on the integrity of local bridges, temporary traffic delays due to slow-moving or parked vehicles, and widening/upgrades to existing roads and intersections to accommodate construction vehicles. The Applicant will conduct a Delivery Route Assessment to identify anticipated off-site delivery routes for bringing turbine delivery vehicles into the Project area and the anticipated impact each route may have. This evaluation will also identify and describe improvements that may be required to ensure delivery of project components.

The applicant will also conduct a traffic analysis to identify and describe the anticipated traffic congestion/delays during construction due to road improvements and component delivery. Impacts to public utilities and public services (i.e., police, fire, medical, and school) from traffic due to construction will also be discussed.

This section will also describe the impacts to traffic and transportation during operation, including a discussion of the anticipated increase in traffic due to tourism to view the operating wind farm. Additionally, this section will describe the anticipated impact to air traffic and airports.

This section will identify and describe any anticipated long-term improvements to roads within the project area and the associated maintenance. A brief discussion of Impacts to wetlands, streams, and stormwater that may result from necessary improvements to public roads will be presented here in addition to the water resources discussion in section 3.2.

3.8.3 Anticipated Mitigation Measures

This section will discuss the anticipated mitigation measures to be conducted to remediate any anticipated damage to local roads that result from the proposed action. Such anticipated mitigation measures include a final delivery and road improvement plan to be developed prior to construction. This will include obtaining all necessary permits from the town and county highway departments and the NYSDOT to obtain new access points, improve existing roadways, cross highways with buried electrical interconnects and to operate oversize vehicles on the highways.

Additionally, transportation improvement plans will be developed prior to construction to address the bridges, pipes, and culverts that will not accommodate the construction-related traffic. The Applicant will consult with the towns to determine the conditions under which local roads may be used and improved by the Project, including measures to avoid/mitigate for excessive damage and post-construction restoration criteria for local roads. The negotiation often also includes the requirement for posting a road bond or some other assurance that the negotiated restoration criteria will be met. Through these negotiations the Applicant will likely develop Road Use Agreements with the towns.

Prior to construction, the Applicant will document the existing condition of roadways (for example, the Applicant may video tape the existing roadways to document the pre-construction roadway conditions). Upon completion of the construction activities, the Applicant will return the roadway to a minimum of pre-construction conditions.

This section will also describe proposed protocol for responding to traffic/transportation issues that arise during project construction. Such measures may include, but are not limited to, the following:

- Development of a detailed construction signage plan, including posting recommended speeds in the vicinity of the construction staging areas to improve safety of vehicular movement in the area;

- Identification of one or more construction managers prior to construction to act as the primary traffic contact(s) for traffic/transportation concerns that may arise during the construction of the Project; and
- Consultation with all town, county, and state highway departments prior to construction to develop a notification plan for any traffic issues that may arise during construction, and to identify potential traffic congestion areas, develop potential detours, and develop construction schedules to avoid public transportation or school bus conflicts.

3.9 Socioeconomics

3.9.1 Existing Conditions

This section will describe the existing socioeconomic conditions within the Towns of Chateaugay and Bellmont and the surrounding communities. Thus, this section will describe specific information regarding the labor force, including population and housing; the economy, in particular employment rates and opportunities; and municipal budgets and taxes, including the local school budgets and taxes. An inventory from the local assessor records identifying all affected properties within the defined view shed or within two miles of the project will be created and transfers of ownership (sales) of those parcels since project announcement will be documented. Resales or subsequent sales of like properties will be looked for to see what extent changes in price can be attributed to the project announcement. This information will be obtained through online resources such as the US Census Bureau and consultation with the towns and Franklin County. The Applicant has also conducted a study to identify and maintain a database of all houses in the Project area. This House Study will be included as an appendix to the DEIS.

3.9.2 Anticipated Impacts

This section will discuss the anticipated temporary and long-term socioeconomic impacts to the local community due to the construction and operation of the Project within the categories identified above. Considerations regarding impacts to low-income or minority communities will also be addressed in this section.

Socioeconomic impacts to the host community may include impacts to taxing jurisdictions. This will be investigated and discussed along with other, generally positive impacts including the following:

- Payment-in-lieu of tax (PILOT) revenues to local municipalities;
- Host Community agreement with host communities;
- Lease revenues to participating landowners;
- Expenditures on goods and services;
- Anticipated tourism revenue;
- Reduced wholesale electricity prices statewide; and
- Short-term (up to 250 jobs) and long-term (up to 25 jobs) employment.

Each of these potential benefits will be discussed in detail in this section.

Additionally, anticipated impacts associated with property values, as well as the developability and insurability of land within the project area, will be discussed in this section. This section will also discuss the findings of studies conducted at similar wind power projects to assess these issues. No negative impacts associated with these resources are anticipated. The Property Values Analysis will be appended to the DEIS.

3.9.3 Anticipated Mitigation Measures

As most anticipated socioeconomic impacts associated with the Project are positive, minimal mitigation techniques are anticipated to be discussed in the section.

Anticipated mitigation measures for impacts associated with decommissioning in the event that the Project is not completed, proves economically unviable, or reaches the end of its operational life span will be discussed in this section. Mitigation for the anticipated economic impact to the host community due to decommissioning will be proposed in the form of a decommissioning fund. This fund will include a financial structure for funding the cost of removal, a decommissioning prioritization schedule, and specific removal procedures.

Additionally, the Applicant will describe plans to negotiate a Host Agreement with the Towns of Bellmont and Chateaugay and a PILOT agreement through which affected taxing jurisdictions will receive revenue.

3.10 Public Safety

3.10.1 Existing Conditions

This section will identify and describe any safety concerns that are known at the project location. Currently, there are no known safety issues or concerns at the present location related to the presence of a wind farm.

3.10.2 Anticipated Impacts

This section will identify and describe the safety concerns in relation to the construction and operation of the Project.

Public safety concerns related to construction activity generally include the potential for injuries to workers and the general public from 1) the movement of construction vehicles, equipment and materials, 2) falling overhead objects, 3) falls into open excavations and/or from heights, and 4) electrocution.

This section will also describe in detail unique public safety concerns associated with operation of a wind power project including stray voltage, blade failure, ice shedding, the lightening strikes, electromagnetic fields and the potential for fire. The study will also note benefits including homeland security benefits, public health benefits and electrical system benefits.

The anticipated need for increased or more technical responses by local emergency service providers will be discussed in this section. The discussion will include a description of any specialized expertise or training necessary in a community wherein a wind energy Project has been developed, a description of any additional risks to service providers, and a description of the costs associated with additional training.

3.10.3 Anticipated Mitigation Measures

This section will describe proposed mitigation measures and siting, construction, and operational techniques to be employed by the Applicant to minimize/avoid potential impacts to public safety. As an initial avoidance measure, setbacks will be adhered to throughout the planning and construction phases of the Project to protect the public and electrical systems will be grounded to minimize the potential for stray voltage. Additional mitigation techniques to be evaluated include the following:

- Adherence to a Safety Compliance Program Protocol during construction and operation;

- Development of complaint resolution plan methods to ensure any complaints and safety concerns are adequately investigated and resolved;
- Development of a Construction Routing Plan;
- Installation of ice detectors to allow for appropriate actions to safeguard from ice throws;
- Installation of a Turbine Lightning Protection System to adhere to FAA regulations;
- Development of a Fire/Emergency Response Plan and employee safety program for both construction and operation activities; and
- Installation of fencing where required to protect the public or livestock from areas where the risk of injury is a concern.

Public safety and emergency planning considerations will be developed into a Fire Protection and Emergency Response Plan, which will be appended to the DEIS.

3.11 Community Facilities and Services

3.11.1 Existing Conditions

This section will describe the existing community facilities and services, including public utilities and infrastructure, police and fire protection services, medical services and facilities, education facilities, and recreational facilities (e.g., Public Fishing Rights (PFR) access areas along the Chateaugay River).

The Applicant will gather information on these services and facilities by interviewing State, County, and local officials. Additionally, the Applicant will review available information such as projected population growth; existing plans, goals, or municipal budgets; land use and zoning maps; open space and key recreational areas (parks, snow mobile trails etc) and other recreational facilities.

The adequacy of existing services and facilities will be evaluated, along with the anticipated economic benefits to these services and facilities resulting from Project implementation.

3.11.2 Anticipated Impacts

This section will describe anticipated construction and operation impacts. Anticipated impacts that will be considered include construction-induced increase in energy usage, modification to existing electrical distribution facilities, temporary road obstructions, demand for school district services or facilities, and the anticipated increased demands on police and emergency services. This section will provide a discussion regarding the potential disruption to recreational facilities, including PFR access areas along the Chateaugay River in the area south of the existing NYPA 230 kV transmission line, in association with the construction of an overhead collection line proposed to span the Chateaugay River. This section will also address the possible telecommunication interference and need for creation of utility distribution lines and poles, bulk power system upgrades. This section will provide a discussion of the potential impact on growth and character of community with respect to the community's ability to attract and maintain investment. This section will also demonstrate the Applicant's compliance with Town Local Laws as they pertain to setbacks from existing utilities and other facilities.

This section will also discuss the benefit this project provides by preserving existing recreation areas and creating a new source of clean renewable energy with zero-emissions.

3.11.3 Anticipated Mitigation Measures

Anticipated impacts to recreational, educational, and medical facilities will be primarily avoided by carefully planning and siting the Project. The Applicant will coordinate with local emergency service personnel and develop a coordinated emergency response plan, including alternate roads and routes for emergency response. A safety compliance program will be outlined in this section and will include the procedures that will be followed during construction of the Project. To minimize impacts during the Project planning phase, the Applicant will coordinate with corresponding utility entities and will institute protection of underground facility procedures. Jericho Rise will comply with all applicable local, state, and Federal regulations regarding impacts to utilities and community facilities and services.

3.12 Communication Facilities

3.12.1 Existing Conditions

This section will identify existing public, private, or government wireless communication facilities within and adjacent to the Project area, including television, AM/FM radio, land mobile radio, satellite, and cellular phone reception and transmission. A list of these facilities will be provided, which will include information such as location, frequency, operating status, and elevation.

To identify these resources, the Applicant will conduct a microwave systems study and television reception analysis. This analysis will include a search of any licensed non-Federal Government microwave paths that intersect the coordinate block of the proposed wind energy facility. This analysis will also determine the Worst Case Fresnel Zone (WCFZ) boundaries for each path. The WCFZ is a swath along the microwave path where wind turbines could obstruct the path. The study will be included as an appendix to the DEIS.

The Applicant will identify and map any off-air TV stations in a 100-mile radius of the proposed wind turbine facility. This section will include information on the communities served, and detailed technical data will be provided for each station. Baseline reception quality measurements of off air stations will also be mapped. This analysis will also be included as an appendix to the DEIS.

This information will be gathered by obtaining measurements at various locations in population centers and at locations where the potential for signal blockage, multipath and electromagnetic noise degradation is probable. Reception quality will be measured using a spectrum analyzer and calibrated conventional TV antenna to determine the television signal strength. The signal strength measured will be compared to Class A and B contour levels for television stations and the levels established by the Federal Communication Commission (FCC) for community standards. In addition, a TV monitor and video recorder will be used to observe and record the video and audio of the television channels to determine their video quality and to determine if any degradation effects are present and attributable to the presence of the wind turbines. One-minute recordings of each received television channel will be made.

3.12.2 Anticipated Impacts

The section will describe any anticipated impacts with respect to interference with public, private or government communication facilities during project construction or operation. Construction impacts would be temporary and limited to equipment that would be used (typically involving cranes).

3.12.3 Anticipated Mitigation Measures

Anticipated impacts to communication facilities will be avoided by carefully planning and siting the Project based on the identification of the locations of existing communication facilities and beam paths. The project will conduct a clearance calculations study and commit to complaint resolution plan methods.

3.13 Land Use and Zoning

3.13.1 Existing Conditions

This section will describe the land use and zoning within the Project area. Land use and zoning in the Project area will be determined through review of local town codes, tax parcel maps, aerial photographs, and field review. Land use and zoning will be discussed in terms of regional land use patterns, local and Project area land use and zoning, agricultural land use, and future land use.

Regional land use patterns will include a general description of Franklin County and its land use types. Local and Project area land use and zoning will include a percentage of each land use within the Project area. A summary of the Towns of Chateaugay and Bellmont local laws as they apply to the regulation of wind energy conversion systems will be identified and discussed. Agricultural land will be identified and discussed through review of the USDA National Agriculture Statistics Service website. Future land use and other planned major development (including wind projects) will be identified and reviewed through local land use plans, if available, and follow up with staff.

3.13.2 Anticipated Impacts

This section will include a discussion on short-term (construction-related) and long-term (operational) anticipated impacts related to each land use in the Project area. Such impacts include: damage to growing crops from the movement of equipment and material during construction, damage to due to construction forest access roads, damage to fences and gates, damage to subsurface drainage systems (tile lines), and temporary blockage of farmers' access to agricultural fields. Anticipated impacts during operation could also result in a change to community character and perceived land use throughout the area. Additionally, this section will also include a discussion of the anticipated positive impacts to agricultural land use within the Project area by providing a sustainable approach to farming and agricultural enterprises through revenue augmentation for Project participants through lease agreements.

No impact on property values is anticipated as a result of construction or operation of the project, although real estate transactions will be tracked and monitored to identify whether any such patterns develop. This section also will discuss the prospect for inducement of growth within the community as a consequence of new road development or improvement of existing roads.

3.13.3 Anticipated Mitigation Measures

This section will describe proposed mitigation measures to avoid or minimize negative impacts to the existing land use and character of the Project area. To mitigate anticipated impacts to land use and zoning (specifically forest land, agricultural land and farming operations), the Project will adhere to setback requirements and will comply, to the extent practicable, with the Ag & Markets guidelines. Other anticipated mitigation measures that will be included in the discussion are full compliance with the local laws regulating the development of wind power facilities in the Towns of Chateaugay and Bellmont, alteration to Project layout, and timing construction so as not to interfere with agricultural activities. This section will also include a discussion of the benefits to landowners from the compatibility of wind energy facilities with agricultural activities.

4.0 UNAVOIDABLE ADVERSE IMPACTS

Using information addressed in Section 3.0 above, this section of the DEIS will identify impacts that are likely to occur despite anticipated mitigation measures, and will compare the beneficial and adverse implications of these unavoidable impacts. An impact and mitigation table will be provided in this section.

5.0 ALTERNATIVES ANALYSIS

The section will include a description and evaluation of the range of reasonable alternatives to the proposed action. Alternatives in this section to be considered will include alternate Project size; alternate Project location; alternate Project layout; alternate turbine output, height, and color; and a “no action” alternative. This section will also describe the methodology and criteria for deciding among the alternatives.

The assessment of available mitigation for identified project impacts will include an assessment of a range of reasonable mitigation alternatives such as, alternative system communication technologies, relocation of individual wind energy installations and alternative delivery routes. Mitigation strategies such as relocation and reduction of Project scale will be considered and discussed where applicable. The alternative mitigation strategies will be assessed based on their effects on the anticipated impacts described in Section 3.0.

6.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Using the information from Section 3.0 above, this section of the DEIS will identify those natural and man-made resources consumed, converted or otherwise made unavailable for future use as a consequence of the proposed action.

7.0 CUMULATIVE IMPACTS

Using the information from Section 3.0 above, this section will evaluate the potential cumulative impact of the proposed Project, along with other wind power projects and significant development projects that have been proposed within the region and with which the project could create cumulative impacts. Known wind energy projects currently under review or development in the area in vicinity to the Project include the Noble Environmental power projects in the Towns of Chateaugay, Bellmont, Clinton, Ellenburg and Altona, the Marble River project in the Towns of Clinton and Ellenburg, and the Windhorse project in the Town of Beekmantown. The cumulative impacts analysis will address the resources areas discussed in Section 3.0 including, but not limited to, avian/bat wetland and visual resources. It will also focus on the potential for, and impact of future proposed wind power projects, or possible expansion of the proposed Project, along with other likely future development within the Project area. The analysis will address available information about the projects reviewed, assess whether there is the potential for cumulative impacts, and, for impact areas and projects for which cumulative impacts are anticipated, assess those impacts.

8.0 GROWTH-INDUCING ASPECTS

Using the information from Section 3.0 above, this section of the DEIS will describe potential growth-inducing aspects the proposed action may have, including the potential for additional development of wind power projects in the vicinity of the Project area. This section will also speak to the likelihood of an increase in tourism to the local area resulting from construction of the wind farm and the preservation of agricultural land by reducing the chances of farmers having to sell their land for the development of residential neighborhoods.

This section will review the potential for the currently proposed Project to enhance the likelihood, scale or extent of any subsequent wind energy projects that might be developed within the community. It will include a review to include a discussion of any plans, the feasibility and the likelihood of future re-powering (turbine replacement) that would increase anticipated visual, noise or other impacts.

9.0 EFFECTS ON THE USE AND CONSERVATION OF ENERGY RESOURCES

Using the information from Section 3.0 above, this section of the DEIS will describe the effect of the proposed action on the use and conservation of energy resources.

10.0 REFERENCES

This section of the DEIS will list any sources of relevant information cited directly in the report text.

APPENDICES TO ACCOMPANY DEIS

A summary of all SEQRA related agency consultation, including a copy of the Final Scope, will be included as an Appendix to the DEIS.

To supplement the information required in each topic section, the following will be included as appendices to the DEIS where appropriate:

- Relevant Technical Maps, Figures and Exhibits
- Project Plans, Specifications, or Construction Information
- Decommissioning Plan
- Relevant Agency Correspondence
- Agricultural Protection Measures
- Wetland and Stream Inventory Report
- Avian and Bat Studies
- Visual Impact Analysis
- Shadow Flicker Analysis
- Phase 1A Cultural Resources Investigation
- Unanticipated Discovery Plan
- Cultural Resources Correspondence
- Environmental Sound Survey and Noise Impact Assessment
- Transportation Study
- House Study
- Property Values Analysis
- Fire Protection and Emergency Response Plan
- Licensed Microwave Search & Worst Case Fresnel Zone
- TV Broadcast Off-Air Reception Analysis

LIST OF PREPARERS: List of firms and persons responsible for both overall preparation of the DEIS and the underlying plans and other exhibits relied upon.

List of Acronyms and Abbreviations

Ag & Markets	New York State Department of Agriculture and Markets
APE	area of potential affect
Applicant	Jericho Rise Wind Farm LLC
BBA	New York State Breeding Bird Atlas
BTU	British thermal units
Corps	US Army Corps of Engineers
DEIS	Draft Environmental Impact Statement
EAF	Environmental Assessment Form
EIS	Environmental Impact Statement
FCC	Federal Communications Commission
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Act
GIS	Geographic Information System
MOA	Memorandum of Agreement
NHP	Natural Heritage Program
NRCS	National Resources Conservation Service
NSA	Noise sensitive area
NWI	National Wetland Inventory
NYSDEC	New York State Department of Conservation
NYSDOT	New York State Department of Transportation
NYSGS	New York State Geological Survey
O&M	Operations and Maintenance
PILOT	payment-in-lieu of tax
Project	Jericho Rise Wind Farm
S/NRHP	New York State and National Registers of Historic Places
SEQRA	New York State Environmental Quality Review Act
SHPO	State Historic Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VIA	Visual Impact Assessment
WCFZ	Worst Case Fresnel Zone
WTG	Wind Generating Turbine

New York State Department of Environmental Conservation
Project Correspondence

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **FAX:** (518) 402-8925
Website: www.dec.state.ny.

Denise M. Sheehan
Commissioner

September 4, 2006

RECEIVED
SEP 07 2006
THE THOMAS GROUP
[illegible]
Project No ______ File No. ______

April Magrane
Tetra Tech, Inc
80 State Street, 10th floor
Albany, NY 12207

Dear. Ms. Magrane:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to an Environmental Assessment for the proposed Burke Wind Farm Project, area as indicated on the map you provided, located in the Towns of Burke, Bellmont and Chateaugay, Franklin County.

Enclosed is a report of rare or state-listed animals and plants, significant natural communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

PLEASE NOTE: For Windpower Projects, we report all records found within the project boundary, and any avian records that may be located within a 10-mile buffer of the project boundary. We also report Indiana bat hibernaculum that may be located within a 40-mile buffer of the project boundary.

The presence of rare species may result in this project requiring additional permits, permit conditions, or review. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the enclosed address.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement on presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,
Tara Seoane jp
Tara Seoane, Information Services
NY Natural Heritage Program

Enc.

cc: Reg. 5, Wildlife Mgr.
Mark Wothal, Bureau of Habitat, Albany
Jack Nasca, Environmental Permits, Albany

Natural Heritage Report on Rare Species

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor, Albany, NY
12233-4757
(518) 402-8935

~This report contains **SENSITIVE** information that may not be released to the public without permission from the NY Natural Heritage Program.
~Refer to the User's Guide for explanations of codes, ranks and fields.
~We do not provide maps for species most vulnerable to disturbance.

Natural Heritage Report on Rare Species and Ecological Communities

These bat occurrences are found within 40 miles of the project site.

MAMMALS

Myotis leibii
Eastern Small-footed Myotis

NY Legal Status: Special Concern
NYS Rank: Imperiled
Office Use 9518
Federal Listing:
Global Rank: Vulnerable
SC
County: Clinton
Town: Ausable
Location: There are two occurrences of Eastern Small-Footed Bats documented beyond the boundaries of the project site. Both occurrences are located in Ausable. For information, please contact the NYS DEC Regional Wildlife Manager or NYS DEC Endangered Species Unit at 518-402-8859.

OTHER

Bat Colony

NY Legal Status: Unlisted
NYS Rank: Rank not assigned
Office Use 8748
Federal Listing:
Global Rank: Not ranked
S
County: Franklin
Town: Bellmont
Location: There is one occurrence of a Bat Colony documented beyond the boundaries of the project site. The occurrence is located in Bellmont. For information, please contact the NYS DEC Regional Wildlife Manager or NYS DEC Endangered Species Unit at 518-402-8859.

Bat Colony

NY Legal Status: Unlisted
NYS Rank: Rank not assigned
Office Use 9246
Federal Listing:
Global Rank: Not ranked
SC
County: Clinton
Town: Ausable
Location: There are two occurrences of Bat Colonies documented beyond the boundaries of the project site. Both occurrences are located in Ausable. For information, please contact the NYS DEC Regional Wildlife Manager or NYS DEC Endangered Species Unit at 518-402-8859.

3 Records Processed

Natural Heritage Report on Rare Species and Ecological Communities

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor, Albany, NY
12233-4757
(518) 402-8935

~This report contains **SENSITIVE** information that may not be released to the public without permission from the NY Natural Heritage Program.
~Refer to the User's Guide for explanations of codes, ranks and fields.
~Location maps for certain species and communities may not be provided if 1) the species is vulnerable to disturbance, 2) the location and/or extent is not precisely known, and/or 3) the location and/or extent is too large to display.

Natural Heritage Report on Rare Species and Ecological Communities

BIRDS

these bird occurrences are found with in 10 miles of the project site.

Bartramia longicauda

Upland Sandpiper

NY Legal Status: Threatened
NYS Rank: S3B; Vulnerable
Federal Listing:
Global Rank: G5; Demonstrably secure
Last Report: **
EO Rank: **
County: Franklin
Town: Burke
Location: Trout River Road Fields Burke
General Quality and Habitat: **For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager or NYS DEC Endangered Species Unit at 518-402-8859.

Office Use
10958
ESU

Circus cyaneus

Northern Harrier

NY Legal Status: Threatened
NYS Rank: S3B,S3N; Vulnerable
Federal Listing:
Global Rank: G5; Demonstrably secure
Last Report: **
EO Rank: **
County: Franklin
Town: Constable, Fort Covington, Westville
Location: Westville Grassland
General Quality and Habitat: **For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager or NYS DEC Endangered Species Unit at 518-402-8859.

Office Use
5191
ESU

Gavia immer

Common Loon

NY Legal Status: Special Concern
NYS Rank: S3; Vulnerable
Federal Listing:
Global Rank: G5; Demonstrably secure
Last Report: 1985-07-27
EO Rank: Poor
County: Franklin
Town: Bellmont
Location: Ragged Lake
General Quality and Habitat: Lake.

Office Use
2631
SL

Gavia immer

Common Loon

NY Legal Status: Special Concern
NYS Rank: S3; Vulnerable
Federal Listing:
Global Rank: G5; Demonstrably secure
Last Report: 2004
EO Rank: Fair or Poor
County: Clinton
Town: Dannemora, Ellenburg
Location: Upper Chateaugay Lake
General Quality and Habitat: The rank is based on a comparison to other sites within New York State. The loons were observed on a lake.

Office Use
7477

Ixobrychus exilis

Least Bittern

NY Legal Status: Threatened
NYS Rank: S3B,S1N; Vulnerable
Office Use
7875
Federal Listing:
Global Rank: G5; Demonstrably secure
Last Report: **
EO Rank: **
ESU
County: Franklin
Town: Bellmont
Location: Ingraham Stream Wetland
General Quality and Habitat: **For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager or NYS DEC Endangered Species Unit at 518-402-8859.

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5 Records Processed

USERS GUIDE TO NY NATURAL HERITAGE DATA

New York Natural Heritage Program, 625 Broadway, 5th Floor, Albany, NY 12233-4757 phone: (518) 402-8935

NATURAL HERITAGE PROGRAM: The NY Natural Heritage Program is a partnership between the NYS Department of Environmental Conservation (NYS DEC) and The Nature Conservancy. Our mission is to enable and enhance conservation of rare animals, rare plants, and significant communities. We accomplish this mission by combining thorough field inventories, scientific analyses, expert interpretation, and the most comprehensive database on New York's distinctive biodiversity to deliver the highest quality information for natural resource planning, protection, and management.

DATA SENSITIVITY: The data provided in the report are ecologically sensitive and should be treated in a sensitive manner. The report is for your in-house use and should **not** be released, distributed or incorporated in a public document without prior permission from the Natural Heritage Program.

EO RANK: A letter code for the quality of the occurrence of the rare species or significant natural community, based on population size or area, condition, and landscape context.

A-E = Extant: A=Excellent, B=Good, C=Fair, D=Poor, E=Extant but with insufficient data to assign a rank of A-D.
F = Failed to find. Did not locate species during a limited search, but habitat is still there and further field work is justified.
H = Historical. Historical occurrence without any recent field information.
X = Extirpated. Field/other data indicates element/habitat is destroyed and the element no longer exists at this location.
U = Extant/Historical status uncertain.
Blank = Not assigned.

LAST REPORT: The date that the rare species or significant natural community was last observed at this location, as documented in the Natural Heritage databases. The format is most often YYYY-MM-DD.

NY LEGAL STATUS – Animals:

Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E - **Endangered Species**: any species which meet one of the following criteria:
- Any native species in imminent danger of extirpation or extinction in New York.
- Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T - **Threatened Species**: any species which meet one of the following criteria:
- Any native species likely to become an endangered species within the foreseeable future in NY.
- Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.

SC - **Special Concern Species**: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).

P - **Protected Wildlife** (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.

U - **Unprotected** (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.

G - **Game** (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NY LEGAL STATUS – Plants:

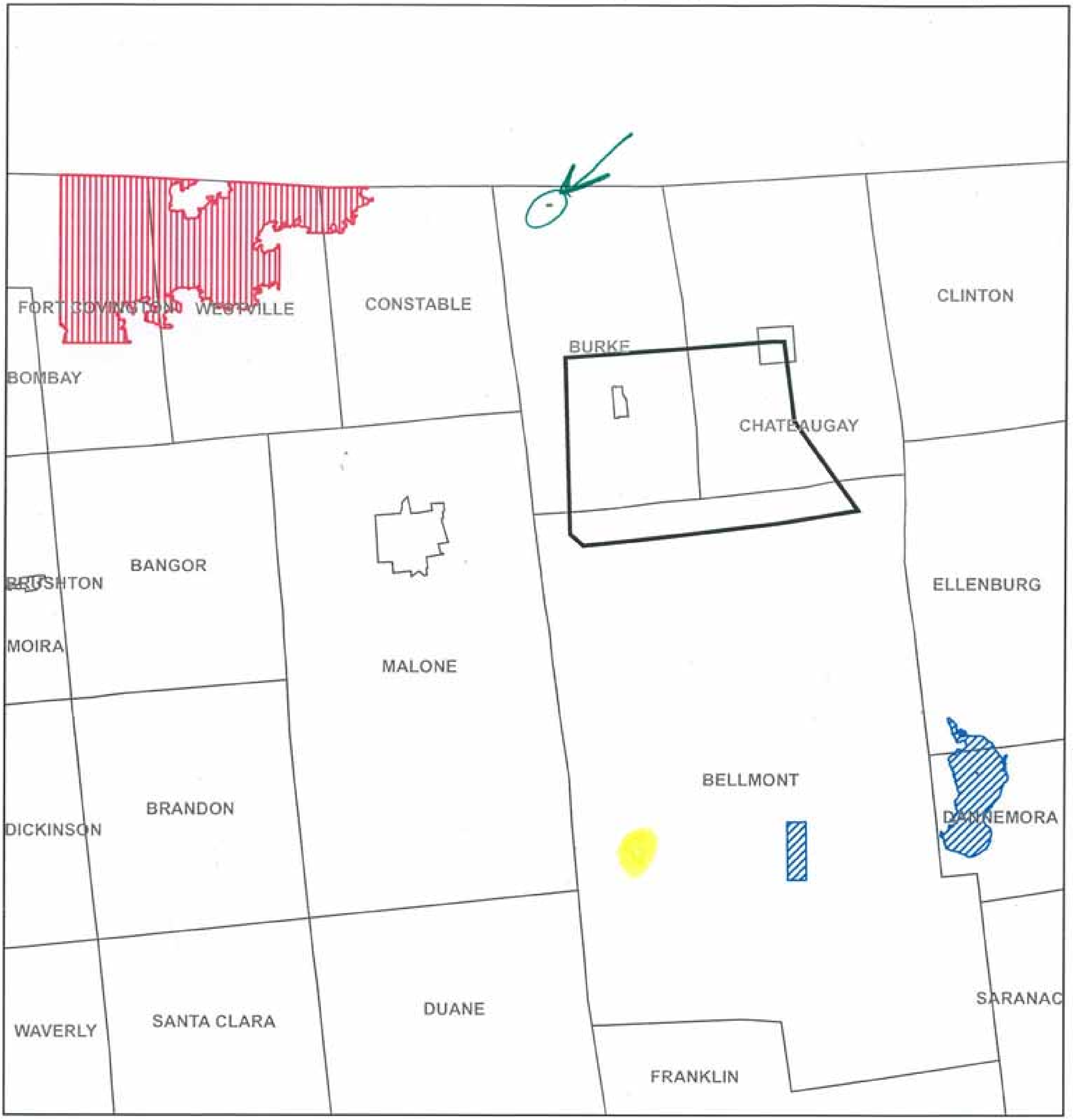
The following categories are defined in regulation 6NYCRR part 193.3 and apply to NYS Environmental Conservation Law section 9-1503.

E - **Endangered Species**: listed species are those with:
- 5 or fewer extant sites, or
- fewer than 1,000 individuals, or
- restricted to fewer than 4 U.S.G.S. 7 ½ minute topographical maps, or
- species listed as endangered by U.S. Dept. of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

T - **Threatened**: listed species are those with:
- 6 to fewer than 20 extant sites, or
- 1,000 to fewer than 3,000 individuals, or
- restricted to not less than 4 or more than 7 U.S.G.S. 7 and ½ minute topographical maps, or
- listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

Natural Heritage Map of Rare Species and Ecological Communities

Prepared September 1, 2006 by NY Natural Heritage Program, NYS DEC, Albany, New Yorl



Legend

☐ Project Site

NY Natural Heritage Program Database Records*

▨ Least Bittern

▥ Northern Harrier

▤ Upland Sandpiper

▨ Common Loon

1:250,000

0 1.25 2.5 5 7.5 **Miles**

*The locations that are displayed are considered sensitive and cannot be released to the public without permission. We do not provide map locations for all records. Please see report for details.

N W E S

"David Young"
<dyoung@west-inc.com>
01/09/2008 10:51 AM

To <Lucia.AllenKearns@tteci.com>
cc
bcc
Subject FW: Jericho Rise wind project

-----Original Message-----
From: Stephen Tomasik [mailto:smtomasi@gw.dec.state.ny.us]
Sent: Monday, March 12, 2007 10:59 AM
To: dyoung@west-inc.com
Cc: Brianna Gary
Subject: Jericho Rise wind project

Dave,

DEC Fish & Wildlife Staff have reviewed the Burke Horizon (aka Jericho Rise) avian/bat study plan. The plan as presented is consistent with DEC expectations. The Department is also requesting the following information:

The median value for passage rates, flight altitudes, and the percentage of targets below turbine height should be reported when discussing data obtained from radar observation. Radar reports have typically reported the mean, highs, and lows, but the median would provide a clearer picture of how individual animals are moving through the airspace over a proposed project area. An overall seasonal median, as well as a nightly and hourly median for passage rates and altitude should be reported. This is something that will be requested for inclusion in all future radar work done for wind projects in the state.

If you have any other questions, please reply by email or as per below.

Stephen Tomasik
Environmental Analyst 2
NYS Department of Environmental Conservation
Division of Permits
625 Broadway   4th Floor
Albany, New York 12233 1750
PH: (518) 486 9955
FAX: (518) 402 9168

"David Young"
<dyoung@west-inc.com>
01/09/2008 10:50 AM

To <Lucia.AllenKearns@tteci.com>
cc
bcc
Subject FW: Horizon Burke avian/bat meeting

-----Original Message-----
From: Stephen Tomasik [mailto:smtomasi@gw.dec.state.ny.us]
Sent: Tuesday, November 28, 2006 8:11 AM
To: dyoung@west-inc.com
Cc: Tim_R_Sullivan@fws.gov; Alan Hicks; Brianna Gary; Jack Nasca; Mark Woythal; Peter Nye
Subject: Horizon Burke avian/bat meeting

Dave,

We have set up a meeting to discuss a draft avian/bat study plan for the proposed wind power project in the Town of Burke, Franklin County, on Thursday, December 14, 2006, at 9 am, in Conference Room 518, DEC headquarters, 625 Broadway, Albany, NY. Tim Sullivan from US FWS is invited to attend by conference phone. DEC staff invited to participate are: Jack Nasca, Peter Nye, Alan Hicks, Mark Woythal, Brianna Gary, and myself.

You indicated in our discussion yesterday that you expect to provide a draft study outline by the end of this week for preliminary review by DEC staff. Please send by reply to all in this email group. If you have any questions, please contact me as per below. Thanks.

Stephen Tomasik
Environmental Analyst 2
NYS Department of Environmental Conservation
Division of Permits
625 Broadway - 4th Floor
Albany, New York 12233-1750
PH: (518) 486-9955
FAX: (518) 402-9168

State Historic Preservation Office
Project Correspondence

TETRA TECH EC, INC.

September 20, 2007

Lynn Garofalini, Staff Architectural Historian
Nancy Herter, Staff Archeologist

New York State Historic Preservation Office
Peebles Island Resource Center
Delaware Avenue
Cohoes, NY 12047

Subject: **Proposed Jericho Rise Wind Farm**
Towns of Bellmont and Chateaugay
Franklin County, New York

Dear Ms. Garofalini and Ms. Herter:

Tetra Tech EC, Inc., (Tetra Tech) is under contract to Jericho Rise Wind Farm, LLC, (Project Proponent) to assist in planning and obtaining permits for the proposed Jericho Rise Wind Farm (Project) in Franklin County. The Project Proponent anticipates that it will apply for a Nationwide Section 10/404 Permit from the U.S. Army Corps of Engineers. In addition, the Project will be reviewed under the State Environmental Quality Review Act (SEQRA). The towns of Bellmont and Chateaugay will act as Co-Lead Agencies for the SEQRA review.

Project Description
The proposed Project is situated in the southern part of the town of Chateaugay and the northeastern part of the town of Bellmont in northeastern Franklin County, New York (Figure 1). It is approximately 7 miles east of Malone, 35 miles west-northwest of Plattsburgh, and 5 miles south of the Canadian border. The northern boundary of Adirondack Park is situated at the Project's southern boundary. The Project will be developed on 92 parcels of leased private land, comprising a total of 5,042 acres. The Project is roughly bordered by the Burke-Chateaugay town line on the west, the Malone-Chateaugay Road (County Route 33) on the north, State Highway 374 on the east, and Brainardsville Road (County Route 24) on the south. The outer boundary of this project area, encompassing all 92 parcels involved in the Project along with additional non-participating parcels, covers 6,987 acres.

As proposed, the Project consists of 53 turbines, each with a nameplate capacity of 1.65 megawatts (MW), for a total capacity of 87.45 MW. Thirty-four turbines (56.1 MW) will be located in Chateaugay and 19 (31.35 MW) will be situated in Bellmont. The Project Proponent anticipates erecting Vestas V82 wind turbine generators or their equivalent. Each turbine will consist of an 80-meter (262-foot) tubular steel tower constructed on a concrete pedestal and surmounted by a nacelle housing the generator, gearbox, and power train. Attached to the nacelle will be three 40-meter (131-foot) composite blades, giving each tower a maximum height, including the concrete base pedestal, of 121 meters (397 feet) when a blade is in the tip-up position.

In addition to the wind turbines, the Project involves construction of associated components, including 14 miles of gravel access roads (typically upgrades of existing farm roads and generally ranging from 14 to 40 feet in width), two meteorological towers, 22 miles of electrical collection and communication cable networks, an operation and maintenance building, an on-site project step-up substation, and an interconnection substation. It is anticipated that the electrical and communication cables will generally be buried, but if in certain places environmental constraints preclude installation of underground cables, overhead lines will be used. Preliminary analysis indicates that underground cables will total 21 miles, and approximately 1 mile of above-ground cable will be needed. Construction of the Project will also require the development of up to two temporary laydown and staging areas that together are expected to total 20 acres. It is estimated that project construction will involve approximately 400 acres of land, of which 102 acres will be permanently altered by the installation of wind towers and associated crane pads, roadways, buildings, substations, and other project elements.

Cultural Resources Studies
Tetra Tech has initiated cultural resources studies that will comply with the *New York State Historic Preservation Office Guidelines for Wind Farm Development Cultural Resources Survey Work*. Dr. James Sexton is conducting the architectural history studies, and Dr. Christopher L. Borstel is leading the archeological studies. These studies will be performed under the supervision of Dr. Sydne B. Marshall.

Architectural Historical Issues
Based upon the boundaries of the 6,987-acre study area, Tetra Tech has delineated the boundaries of the 1-mile and 5-mile survey rings around the project. Much of the anticipated area of investigation has been recently surveyed by Panamerican Consultants, Buffalo, for the proposed Noble Chateaugay Windpark, which is being developed by Noble Environmental Power, Inc. (Figure 2). Tetra Tech anticipates making full use of this existing data and looks forward to conferring with you on our approach to such use. Dr. Sexton has recently been in touch with Ms. Garofalini by telephone and looks forward to a meeting soon in Albany concerning historic architectural studies for this project.

Tetra Tech has begun defining the area of potential effects (APE) with respect to architectural resources for the Project using computer-generated models of terrain (Figure 3). Our analysis indicates that the 5-mile ring of the APE will include all or portions of the towns of Malone, Burke, Bellmont, Constable, and Chateaugay in Franklin County and portions of the towns of Clinton and Ellenburg in Clinton County (Figure 4). We anticipate that Dr. Sexton will complete an architectural survey in portions of the Project APE not previously examined, in accordance with an approach that takes into account the procedures and geographic extent of recent studies in the area. We look forward to discussing our approach to fieldwork in portions of the Project APE that require survey.

Archeological Issues
Tetra Tech's cultural resources specialists will perform archeological investigations for the Project under the field direction of Dr. Borstel. Background research, including review of several recent studies completed by Panamerican Consultants for nearby wind energy projects, and a walkover reconnaissance have been initiated and will be summarized in a Phase IA report. A Phase IB testing strategy will be developed based on environmental zone identifications and methods discussed in Robert Funk's 1993 *Archaeological Investigations in the Upper Susquehanna Valley, New York St*ate (Chapter 5). The Phase IA report and proposed Phase IB testing strategy will be provided for your review. Tetra Tech will be prepared to discuss these by telephone or in person, depending upon your preferences and availability to meet.

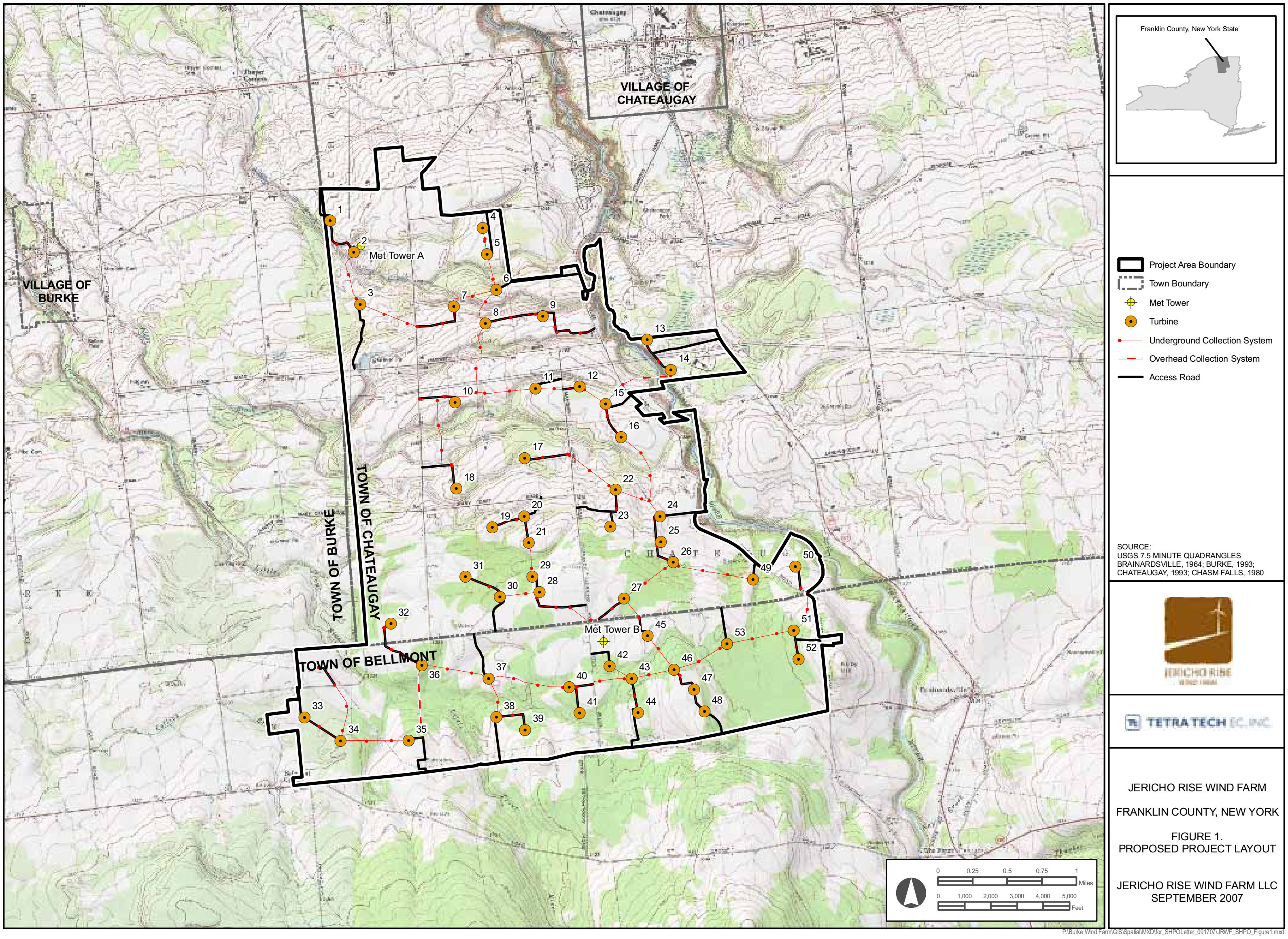
Thank you for your consideration of this project. We look forward to upcoming discussions about the cultural resources issues associated with the permitting of the Jericho Rise Wind Farm. Feel free to call me at 973-630-8104 or to contact me by e-mail at sydne.marshall@Tetra Techi.com should you have any questions.

Very truly yours,

Sydne B. Marshall, Ph.D., RPA
Lead Cultural Resources Specialist

Encl. (4)

cc: L. Allen Kearns (Tetra Tech)
J. Sexton (Tetra Tech)
C. Borstel (Tetra Tech)
P. Doyle (Horizon)
C. Turlinski (Horizon)
R. Cogen (Nixon–Peabody)



▭ Project Area Boundary
▭ Town Boundary
⊕ Met Tower
● Turbine
Underground Collection System
Overhead Collection System
Access Road

SOURCE:
USGS 7.5 MINUTE QUADRANGLES
BRAINARDSVILLE, 1964; BURKE, 1993;
CHATEAUGAY, 1993; CHASM FALLS, 1980

TETRA TECH EC, INC.

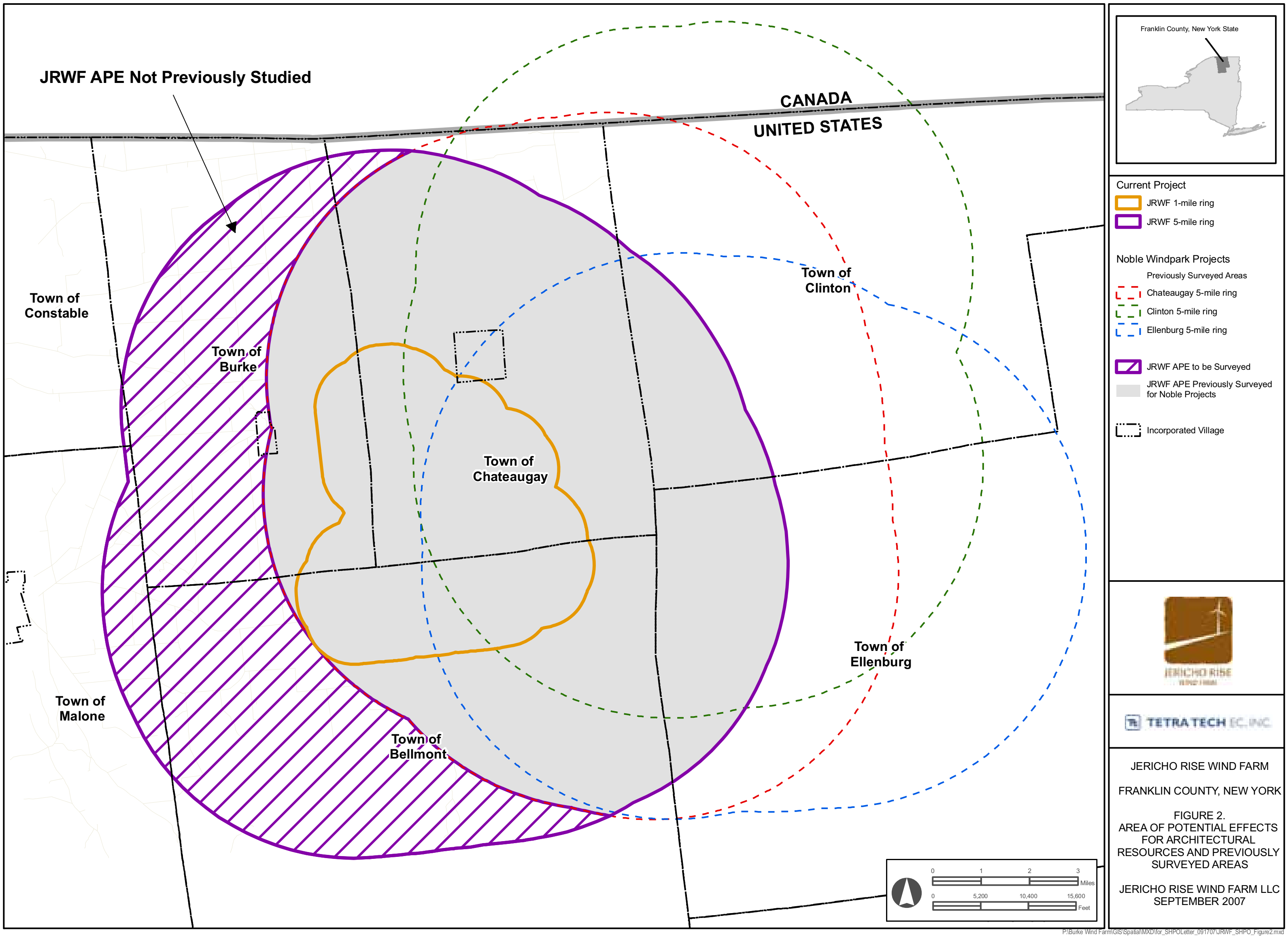
JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE 1.
PROPOSED PROJECT LAYOUT

JERICHO RISE WIND FARM LLC
SEPTEMBER 2007

P:\Burke Wind Farm\GIS\Spatial\MXD\for_SHPOLetter_091707\JRWF_SHPO_Figure1.mxd



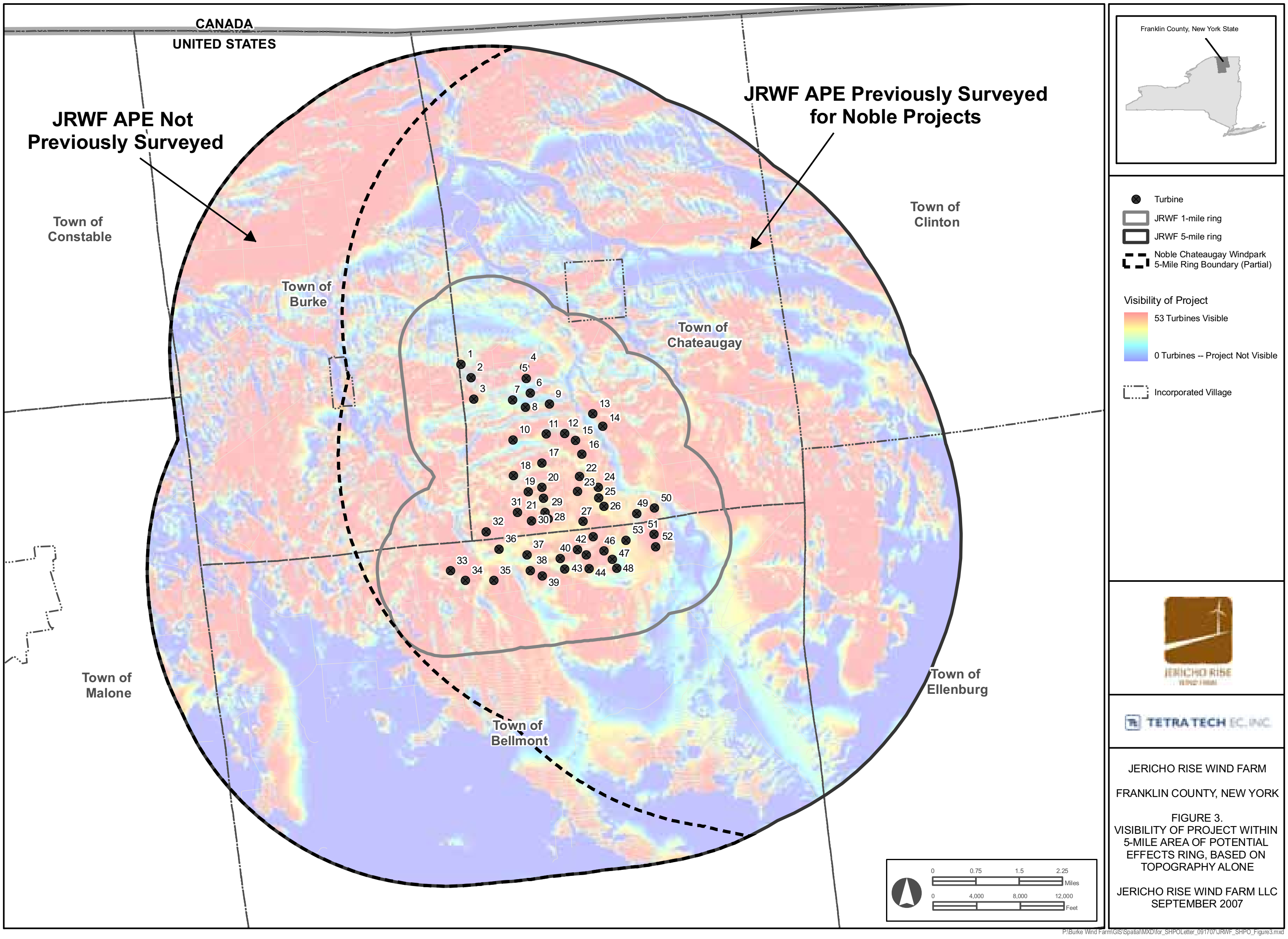
JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE 2.
AREA OF POTENTIAL EFFECTS
FOR ARCHITECTURAL
RESOURCES AND PREVIOUSLY
SURVEYED AREAS

JERICHO RISE WIND FARM LLC
SEPTEMBER 2007

P:\Burke Wind Farm\GIS\Spatial\MXD\for_SHPOLetter_091707\JRWF_SHPO_Figure2.mxd



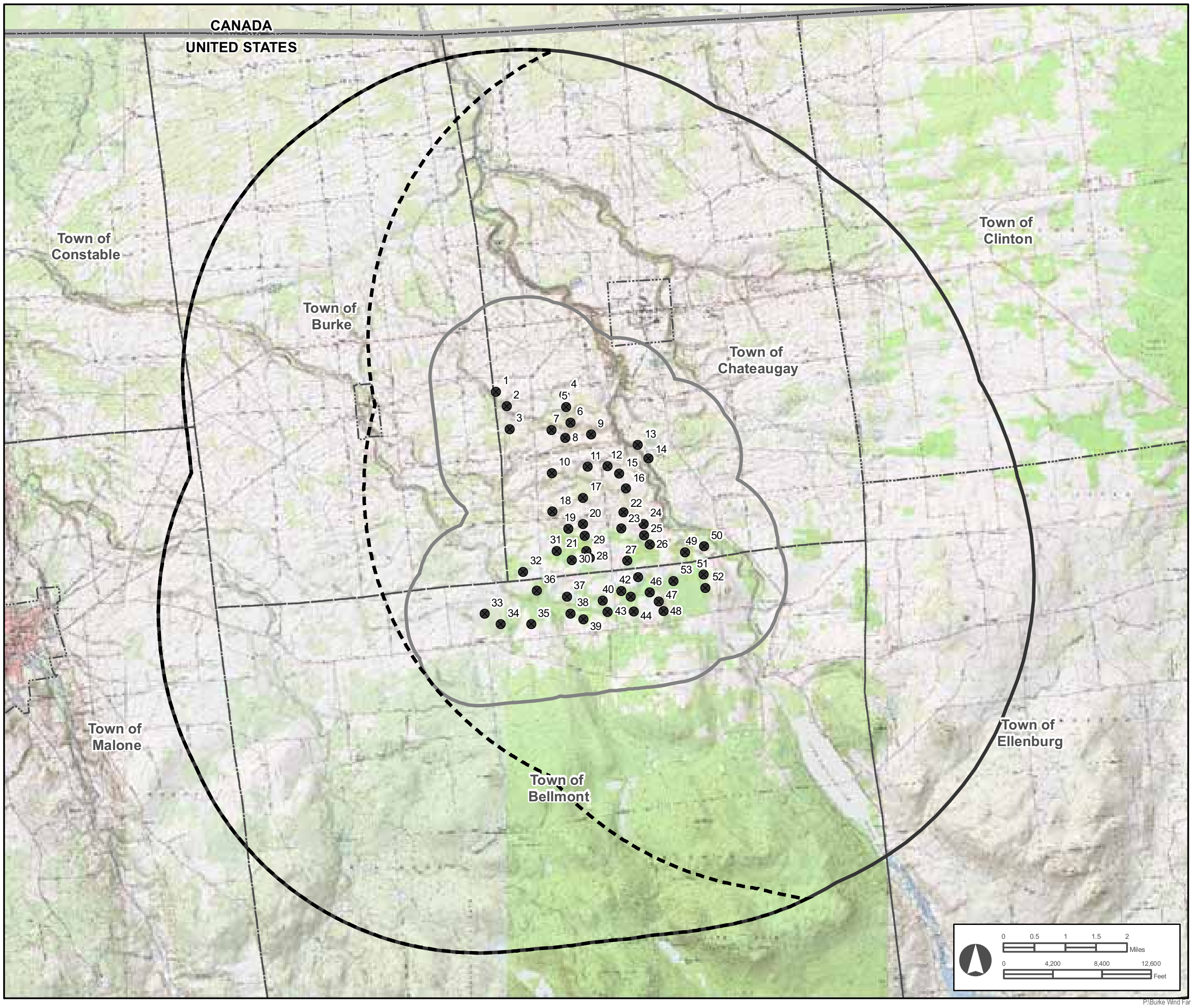
JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE 3.
VISIBILITY OF PROJECT WITHIN 5-MILE AREA OF POTENTIAL EFFECTS RING, BASED ON TOPOGRAPHY ALONE

JERICHO RISE WIND FARM LLC
SEPTEMBER 2007

P:\Burke Wind Farm\GIS\Spatial\MXD\for_SHPOLetter_091707\JRWF_SHPO_Figure3.mxd



JERICHO RISE

TETRA TECH EC, INC.

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE 4.
TOPOGRAPHY OF PROJECT'S
5-MILE AREA OF POTENTIAL
EFFECTS RING AND VICINITY

JERICHO RISE WIND FARM LLC
SEPTEMBER 2007

P:\Burke Wind Farm\GIS\Spatial\MXD\for_SHPOLetter_091707\JRWF_SHPO_Figure4.mxd

TETRA TECH EC, INC.

1000 The American Road, Morris Plains, NJ 07950
Tel 973.630.8000 **Fax** 973.630.8325

RECORD OF MEETING

DATE: September 27, 2007

ATTENDEES:

Lynn Garofalini	OPRHP	518.237-8643 x. 3267
Dan Fitzgerald	Horizon Wind	518.426-1650
Charlie Turlinski	Horizon Wind	518.426-1650
Lucia Kearns	Tetra Tech, EC	781.267-1105
Sydne Marshall	Tetra Tech, EC	973.630-8104
James Sexton	Tetra Tech, EC	973.630-8408

SUBJECT: **Jericho Rise Wind Farm Architectural Survey**

Met to discuss the strategy for undertaking Historic Architecture Survey for JRWF.

- Agreed that the applicant would not be required to perform a 1-mile Ring Survey of the area

- Agreed that the data for adjacent wind projects would be used where it fell within the visual APE for the Jericho Rise Wind Farm

- Agreed that fieldwork would be performed to identify potential NRHP-eligible properties within those areas of the APE not previously surveyed. This work will only record those buildings recommended as potentially NRHP-eligible. In areas of previous study, the buildings will be recorded in the report with a notation that they were previously determined NRHP-eligible.

- Ms. Garofalini requested that NYSHPO Project review numbers be added to the key of Figure 2 (showing overlapping of various wind project APEs in the vicinity of JRWF)

- Ms. Garofalini reminded those present that the Architectural Survey report is a stand alone document and should not rely on references to previously completed reports.

US Fish and Wildlife Service
Project Correspondence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

September 25, 2006

Post-it® Fax Note 7671	Date 9/27/06 # of pages ▸ 5
To APRIL MAGRANE	From ALTHEA
Co./Dept. TETRA TECH EC	Co. THE THOMAS GROUP
Phone #	Phone #
Fax # 617 457-8498	Fax #

Ms. April Magrane
Biologist
Tetra Tech EC, Inc.
80 State Street, 10th Floor
Albany, NY 12207

Dear Ms. Magrane:

This responds to your July 21, 2006, letter regarding a proposed wind farm in the Towns of Burke, Bellmont, and Chateaugay, Franklin County, New York. It appears that the proposed project may affect species under U.S. Fish and Wildlife Service (Service) jurisdiction under the Migratory Bird Treaty Act (MBTA) (40 Stat. 755; 16 U.S.C. 703-712), Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended; 16 U.S.C. 668 *et seq.*), and the New York State Environmental Quality Review Act. However, further information is necessary to adequately make any determinations. This additional information includes a more detailed project description (*e.g.*, estimate of the operational lifespan of the project, location of turbines, as well as information on bird and bat use within the project area). We are providing the following comments as technical assistance pursuant to the MBTA, ESA, and BGEPA. In addition to these comments, we may provide additional future comments under other legislation, such as the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*).

MBTA Comments

Migratory birds, such as waterfowl, passerines, and raptors, are Federal trust resources and are protected by provisions of the MBTA. The Service is the primary Federal agency responsible for administering and enforcing the MBTA. This Act prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests except when specifically authorized by the Service. The word "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect." The unauthorized taking of birds is legally considered a "take" under the MBTA and is a violation of the law. Neither the MBTA nor its implementing regulations, 50 CFR Part 21, provide for permitting of "incidental take" of migratory birds that may be killed or injured by wind projects. However, we recognize that some birds may be killed at structures such as wind turbines even if all reasonable measures to avoid it are implemented. Depending on the circumstances, the Service's Office of Law Enforcement may exercise enforcement discretion. The Service focuses on those individuals, companies, or agencies that take migratory birds with disregard for their actions and the law, including when conservation measures have been developed but are not properly implemented.

Construction and operation of wind turbines can adversely affect wildlife in a variety of ways. Habitat loss and modification will result from clearing of vegetation for roads, powerlines, and turbine locations. The potential exists for bird and bat collision within the rotor-swept area of each turbine. It has been documented that wind turbines cause bat and bird mortality in a variety of species (Erickson *et al.* 2001). Research to date indicates that raptors are prone to wind turbine collisions. Songbirds, particularly those individuals migrating at night under poor visibility conditions, are even more susceptible. Recently, it has been reported that large numbers of bats have also been killed by these structures located on ridges (Johnson *et al.* 2003, Arnet 2005).

Recognizing the potential impacts to wildlife due to development of wind power projects, the Service developed *Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines* (Guidelines). A copy of this document may be obtained from our office or found on the Internet at www.fws.gov/r9dhcbfa/WindTurbineGuidelines.pdf. These Guidelines include recommendations for: 1) proper evaluation of wind resource areas; 2) proper siting and design of turbines within development areas; and 3) pre- and post-construction research and monitoring to identify and/or assess impacts to wildlife. We suggest the project sponsor review this information during development of the project design. The potential for bat and bird mortality from this type of project appears to be dependent on factors such as wildlife abundance, presence of migration corridors, geographic location, and particular landscape features. As specified in the Guidelines, the project site should be evaluated for habitat features such as the presence of breeding, feeding, and roosting areas.

For wind energy projects such as this one, we recommend that a bat and bird assessment be conducted by the project sponsor. This assessment should include a review of all available data and literature relevant to bat and bird use of this site. In addition, the assessment should identify potential impacts as a result of collisions with turbines, including the potential effects on, but not limited to, raptors, passerines, and bats, as well as cumulative effects of collision mortality from the proposed turbines. The physical disturbance, direct loss, and fragmentation of grassland and forest habitat should also be included in the evaluation. This information should be incorporated into the project EIS for review.

Pre-construction studies of birds and bats for this location <u>are</u> recommended. These studies should be of sufficient rigor to determine the temporal and spatial distribution of resident and migrating bat and bird species in and adjacent to the project area during various weather conditions (*e.g.*, fog, rain, low cloud ceilings, clear skies, etc.). Information on monitoring the project site for bird species can be obtained from "Studying Wind Energy/Bird Interactions: A Guidance Document. Metrics and Methods for Determining or Monitoring Potential Impacts on Birds at Existing and Proposed Wind Energy Sites" (Anderson *et al.* 1999).

In order to determine the potential collision-hazard for a particular site, the spatial and temporal uses of the airspace by birds and bats need to be defined during a multi-year period. This can best be accomplished by using remote sensing technology (radar, acoustic, and infrared) to collect data in various spatial and temporal scales (day and night, season to season, and year to year). Traditional sampling protocols (*e.g.*, visual observation and/or mist netting) are appropriate to supplement remote sensing work and would likely be necessary to ground truth the data for individual species. Further, we recommend that information on climatic conditions during these surveys be included with this analysis. This weather information will provide migratory flight conditions during the surveys.

Finally, the Service recommends that all wind power projects that proceed to construction be monitored for impacts to wildlife following construction and during turbine operation. Post-construction bat and bird mortality monitoring should occur for a minimum of 3 years. Monitoring methods should be coordinated with both the Service and the New York State Department of Environmental Conservation (NYSDEC). Information gained from post-construction monitoring will continue to aid the Service and project sponsors as we learn more about the potential impacts, or lack thereof, to wildlife in the project area.

Unique habitats, such as wetlands, must also be considered. We suggest that a wetland delineation be performed and all measures to avoid and minimize wetland impacts be implemented as required by the Clean Water Act. Work in waters of the United States, including wetlands, may require a permit from the U.S. Army Corps of Engineers (Corps). If a permit is required, in reviewing the application pursuant to the Fish and Wildlife Coordination Act, the Service may concur, with or without recommending additional permit conditions, or recommend denial of the permit depending upon potential adverse impacts on fish and wildlife resources associated with project construction or implementation. The need for a Corps permit may be determined by contacting the appropriate Corps office(s). In addition, should any part of the proposed project be authorized, funded, or carried out, in whole or in part, by a Federal agency, such as the Corps, further consultation between the Service and that Federal agency pursuant to the ESA may be necessary.

ESA and BGEPA Comments

As you are aware, the bald eagle (*Haliaeetus leucocephalus*) is a Federally- and State-listed threatened species that is known to nest approximately 20 miles from the proposed project area. The bald eagle frequents aquatic ecosystems such as large lakes, reservoirs, major rivers, and seacoasts. The bald eagle prefers to nest in large trees in relatively remote, undisturbed areas close to water. During the winter, bald eagles tend to congregate at specific wintering sites which offer open water, day perch, and night roost trees. For more information on bald eagles, please visit http://www.fws.gov/midwest/eagle/recovery/recovery.htm. We cannot provide any digital data on the location of bald eagle nests. However, you can contact the New York State Natural Heritage Program Information Services for more information.* The project's environmental documents should identify activities that might result in adverse impacts to bald eagles or their habitat. This should include an analysis of the potential direct mortality or injury of eagles striking into wind turbines, as well as impacts associated with construction of the facility (*e.g.*, harassment, impacts to nesting or foraging habitat). This information should be provided to this office and they will be used to evaluate potential impacts to the bald eagles or their habitat, and to determine the need for further coordination or consultation pursuant to the ESA.

While your July 21, 2006, letter mentioned the potential presence of the Federally- and State-listed endangered Indiana bat (*Myotis sodalis*), we do not believe this is likely based on the proposed project's geographic location and elevation compared to our current understanding of Indiana bat roosting habitat in New York. Therefore, no further coordination or consultation with the Service is required regarding the Indiana bat.

Except for the potential for the bald eagle, Indiana bat, and occasional transient individuals, no other Federally-listed or proposed endangered or threatened species under our jurisdiction are known to exist in the project area. In addition, no habitat in the project area is currently designated or proposed "critical habitat" in accordance with provisions of the ESA. Should project plans change, or if additional information on listed or proposed species or critical habitat becomes available, this determination may be reconsidered. The most recent compilation of Federally-listed and proposed endangered and threatened species in New York* is available for your information. Until the proposed project is complete, we recommend that you check our website* every 90 days from the date of this letter to ensure that listed species presence/absence information for the proposed project is current.

As stated above, the bald eagle is listed as threatened by the State of New York. Additional information regarding the proposed project and its potential to impact listed species should be coordinated with both this office and with the NYSDEC. The NYSDEC contact for the Endangered Species Program is Mr. Peter Nye, Endangered Species Unit, 625 Broadway, Albany, NY 12233 (telephone: [518] 402-8859).

For additional information on fish and wildlife resources or State-listed species, we suggest you contact the appropriate NYSDEC regional office(s) and the New York Natural Heritage Program Information Services.*

Thank you for your time. If you require additional information please contact Robyn Niver or Timothy Sullivan at (607) 753-9334. Future correspondence with us on this project should reference project file 61497.

Sincerely,

David A. Stilwell

David A. Stilwell
Field Supervisor

References:

Anderson, R., M. Morrison, K. Sinclair, D. Strickland, H. Davis, and W. Kendall. 1999. Studying wind energy/bird interactions: a guidance document. Metrics and methods for determining or monitoring potential impacts on birds at existing and proposed wind energy sites. Avian Subcommittee, National Wind Coordinating Committee, Washington, DC. 87 pp.

Arnet, E.B., technical editor. 2005. Relationships between bats and wind turbines in Pennsylvania and West Virginia: an assessment of bat fatality search protocols, patterns of fatality, and behavioral interactions with wind turbines. A final report submitted to the Bats and Wind Energy Cooperative. Bat Conservation International. Austin, Texas, USA.

Erickson, W.P., G.D. Johnson, M.D. Strickland, K.J. Sernka, and R.E. Good. 2001. Avian collisions with wind turbines: a summary of existing studies and comparisons to other sources of avian collision mortality in the United States. Western EcoSystems Technology, Inc., Cheyenne, WY. National Wind Coordinating Committee Resource Document, August: 62 pp.

Johnson, G.D., W.P. Erickson, and M.D. Strickland. 2003. What is known and not known about bat collision mortality at windplants? *In* R.L. Carlton (ed.). Proc. Workshop on Avian Interactions at Wind Turbines, 16-17 October, 2002, Jackson Hole, WY. Electric Power Research Inst., Palo Alto, CA.

U.S. Fish and Wildlife Service. 2003. Interim guidelines to avoid and minimize wildlife impacts from wind turbines. Web site address: http://www.fws.gov/habitatconservation/wind.pdf

*Additional information referred to above may be found on our website at:
http://www.fws.gov/northeast/nyfo/es/section7.htm

cc: NYSDEC, Ray Brook, NY (Env. Permits)
NYSDEC, Albany, NY (Endangered Species; Attn: P. Nye)
NYSDEC, Albany, NY (Natural Heritage)
COE, New York, NY (Regulatory Program)

National Telecommunications and Information Administration
Project Correspondence

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and
Information Administration
Washington, D.C. 20230

JUN 2 2007

Mr. Lester E. Polisky
Comsearch
Senior Principal Engineer
Field Services Department
19700 Janelia Farms Blvd
Ashburn, VA 21147

Re: Jericho Rise Wind Farm Franklin County, NY

Dear Mr. Polisky:

In response to your request, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC) the plans for the Jericho Rise Wind Farm in Franklin County, NY. After a 30 day period of review, the agencies have not identified any concerns regarding blockage of their radio frequency transmissions.

While the IRAC agencies did not identify any concerns regarding radio frequency blockage, this does not eliminate the need for the wind energy facilities to meet any other requirements specified by law related to these agencies. For example, this review by the IRAC does not eliminate any need that may exist to coordinate with the Federal Aviation Administration concerning flight obstruction.

Thank you for the opportunity to review these proposals.

Sincerely,

Karl B. Nebbia
Associate Administrator
Office of Spectrum Management

Federal Aviation Administration (FAA)
Project Correspondence

Federal Aviation Administration
Air Traffic Airspace Branch, ASW-520
2601 Meacham Blvd.
Fort Worth, TX 76137-0520

Aeronautical Study No.
2007-AEA-4458-OE

Issued Date: 10/04/2007

Patrick Doyle
Horizon Wind Energy
3 Columbia Place
Albanay, NY 12207

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Wind Turbine JR1 0255.NY.001
Location:	Malone, NY
Latitude:	44-54-28.29 N NAD 83
Longitude:	74-7-38.61 W
Heights:	397 feet above ground level (AGL) 1365 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

As a condition to this Determination, the structure is marked and/or lighted in accordance with FAA Advisory circular 70/7460-1 K Change 2, Obstruction Marking and Lighting, white paint only - Chapters 12&13(Turbines).

It is required that the enclosed FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part I)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part II)

This determination expires on 04/04/2009 unless:

(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission if the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (718) 553-2560. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2007-AEA-4458-OE.

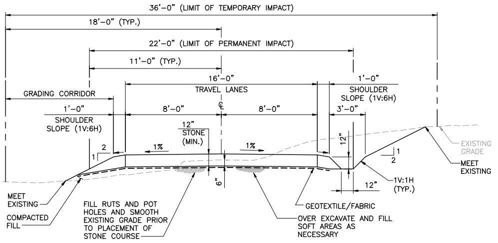
Signature Control No: 536572-100746171 (DNE)
William Merritt
Specialist

Attachment(s)
Case Description

7460-2 Attached

Appendix B

Project Component Location, Construction Information and Specifications

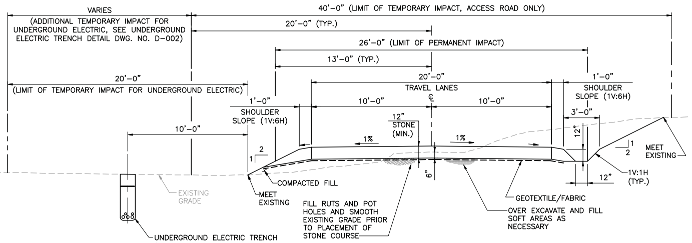


TYPICAL 16' ACCESS ROAD DETAIL

0' 2' 4' 6' 8'
SCALE: 1/4"= 1'-0"

16' ACCESS ROAD REQUIREMENTS:

1. THE ROAD SURFACE SHALL BE ADEQUATELY COMPACTED FOR A FOURTEEN (14) TON PER AXLE LOAD IN WET OR DRY CONDITIONS, WITH A MAXIMUM 24 INCHES DEVIATION IN A 110-FOOT SPAN.
2. ACCESS ROADS MUST BE GRADED SO AS TO SELF DRAIN AND MUST NOT ALLOW WATER TO PUDDLE.
3. ROADS MUST BE DEFORESTED TO GIVE A HORIZONTAL CLEARANCE OF NO LESS THAN THE LIMIT OF PERMANENT IMPACT, AND A VERTICAL CLEARANCE OF 22 FEET.
4. OVERHEAD OBSTRUCTIONS AS IDENTIFIED BY CONTRACTOR SHALL BE REMOVED BY OWNER PRIOR TO START OF TURBINE EQUIPMENT DELIVERIES, AND TURBINE CONSTRUCTION ACTIVITIES.
5. THE OWNERS BOP CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE SURFACE IS FREQUENTLY AND ROUTINELY MAINTAINED AS NECESSARY TO ENSURE THAT THE SURFACE REMAINS IN GOOD CONDITION SUITABLE FOR CONSTRUCTION TRAFFIC.
6. DITCHES SHALL BE CONSTRUCTED AS REQUIRED BY THE APPROVED STORMWATER POLLUTION PREVENTION PLAN AND AS REQUIRED BY CONSTRUCTION.
7. GRADE ALONG DIRECTION OF TRAVEL SHALL NOT EXCEED 12%.
8. COMPACT TO PROVIDE A GROUND BEARING CAPACITY OF NOMINAL 3,600 POUNDS PER SQUARE FOOT IN WET OR DRY CONDITIONS.
9. REFER TO WETLAND PERMIT NOTES ON DRAWING ES-003 FOR SOIL STOCKPILING REQUIREMENTS.

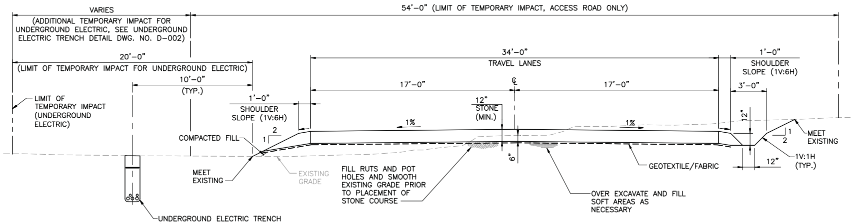


TYPICAL 20' ACCESS ROAD DETAIL

0' 2' 4' 6' 8'
SCALE: 1/4"= 1'-0"

20' ACCESS ROAD REQUIREMENTS:

1. THE ROAD SURFACE SHALL BE ADEQUATELY COMPACTED FOR A FOURTEEN (14) TON PER AXLE LOAD IN WET OR DRY CONDITIONS, WITH A MAXIMUM 24 INCHES DEVIATION IN A 110-FOOT SPAN.
2. ACCESS ROADS MUST BE GRADED SO AS TO SELF DRAIN AND MUST NOT ALLOW WATER TO PUDDLE.
3. ROADS MUST BE DEFORESTED TO GIVE A HORIZONTAL CLEARANCE OF NO LESS THAN THE LIMIT OF PERMANENT IMPACT, AND A VERTICAL CLEARANCE OF 22 FEET.
4. OVERHEAD OBSTRUCTIONS AS IDENTIFIED BY CONTRACTOR SHALL BE REMOVED BY OWNER PRIOR TO START OF TURBINE EQUIPMENT DELIVERIES, AND TURBINE CONSTRUCTION ACTIVITIES.
5. THE OWNERS BOP CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE SURFACE IS FREQUENTLY AND ROUTINELY MAINTAINED AS NECESSARY TO ENSURE THAT THE SURFACE REMAINS IN GOOD CONDITION SUITABLE FOR CONSTRUCTION TRAFFIC.
6. UNDERGROUND ELECTRIC LOCATION VARIES, REFER TO PLAN FOR LOCATIONS.
7. DITCHES SHALL BE CONSTRUCTED AS REQUIRED BY THE APPROVED STORMWATER POLLUTION PREVENTION PLAN AND AS REQUIRED BY CONSTRUCTION.
8. GRADE ALONG DIRECTION OF TRAVEL SHALL NOT EXCEED 12%.
9. COMPACT TO PROVIDE A GROUND BEARING CAPACITY OF NOMINAL 3,600 POUNDS PER SQUARE FOOT IN WET OR DRY CONDITIONS.
10. REFER TO WETLAND PERMIT NOTES ON DRAWING ES-003 FOR SOIL STOCKPILING REQUIREMENTS.

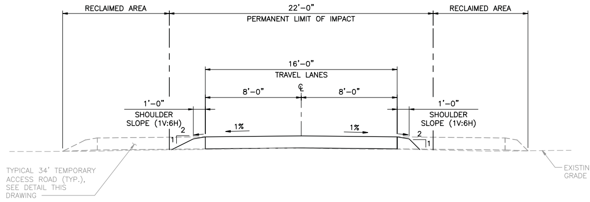


TYPICAL 34' TEMPORARY ACCESS ROAD DETAIL

0' 2' 4' 6' 8'
SCALE: 1/4"= 1'-0"

34' ACCESS ROAD REQUIREMENTS:

1. THE TEMPORARY 34' ACCESS ROAD WILL BE REDUCED TO 16' AFTER TURBINE CONSTRUCTION IN ACCRODANCE WITH TYPICAL 34' ROAD TO 16' ROAD REDUCTION DETAIL PRESENTED ON THIS DRAWING.
2. THE ROAD SURFACE SHALL BE ADEQUATELY COMPACTED FOR A FOURTEEN (14) TON PER AXLE LOAD IN WET OR DRY CONDITIONS, WITH A MAXIMUM 24 INCHES DEVIATION IN A 110-FOOT SPAN.
3. ACCESS ROADS MUST BE GRADED SO AS TO SELF DRAIN AND MUST NOT ALLOW WATER TO PUDDLE.
4. ROADS MUST BE DEFORESTED TO GIVE CLEAR CORRIDOR OF NO LESS THAN THE LIMIT OF PERMANENT IMPACT WITH NO OVERHEAD OBSTRUCTIONS.
5. OVERHEAD OBSTRUCTIONS AS IDENTIFIED BY CONTRACTOR SHALL BE REMOVED BY OWNER PRIOR TO START OF TURBINE EQUIPMENT DELIVERIES, AND TURBINE CONSTRUCTION ACTIVITIES.
6. THE OWNERS BOP CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE SURFACE IS FREQUENTLY AND ROUTINELY MAINTAINED AS NECESSARY TO ENSURE THAT THE SURFACE REMAINS IN GOOD CONDITION SUITABLE FOR CONSTRUCTION TRAFFIC.
7. ROADS MUST BE CONSTRUCTED WITH A MAXIMUM CROSS GRADIENT OF 1%.
8. GRADE ALONG DIRECTION OF TRAVEL SHALL NOT EXCEED 12%.
9. COMPACT TO PROVIDE A GROUND BEARING CAPACITY OF NOMINAL 3,600 POUNDS PER SQUARE FOOT IN WET OR DRY CONDITIONS.
10. FOR GRADES >6%, INCREASE THE GROUND BEARING CAPACITY BY 25%.
11. SHOULDER SLOPES OF ROADS MUST BE NO GREATER THAN 45°.
12. ALL CREEKS AND DITCHES WITHIN THE CRANE PATH MUST BE FILLED AND MADE DRIVABLE, PROVIDE CULVERTS IF REQUIRED. INSTALLATION OF CULVERTS SHALL CONFORM TO THE USACOE PERMITS AND SWPPP PREPARED FOR THE PROJECT.
13. UNDERGROUND ELECTRIC LOCATION VARIES, REFER TO PLAN FOR LOCATIONS.
14. REFER TO WETLAND PERMIT NOTES ON DRAWING ES-003 FOR SOIL STOCKPILING REQUIREMENTS.



TYPICAL 34' TEMPORARY ACCESS ROAD RESTORATION DETAIL

0' 2' 4' 6' 8'
SCALE: 1/4"= 1'-0"

NOTES:

1. IN AREAS WHERE DITCHES HAVE BEEN CONSTRUCTED, THE PERMANENT ROAD WILL BE ALONG THE DITCH SIDE AND NOT CENTERED WITHIN THE 34 FOOT ROAD.

NOT FOR CONSTRUCTION

J:\11174823.00000\CAD\WETLAND EXHIBIT REV3\ EXHIBIT-GORDON.DWG 1=1 01/04/08-1 ELB

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NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION

REVISIONS

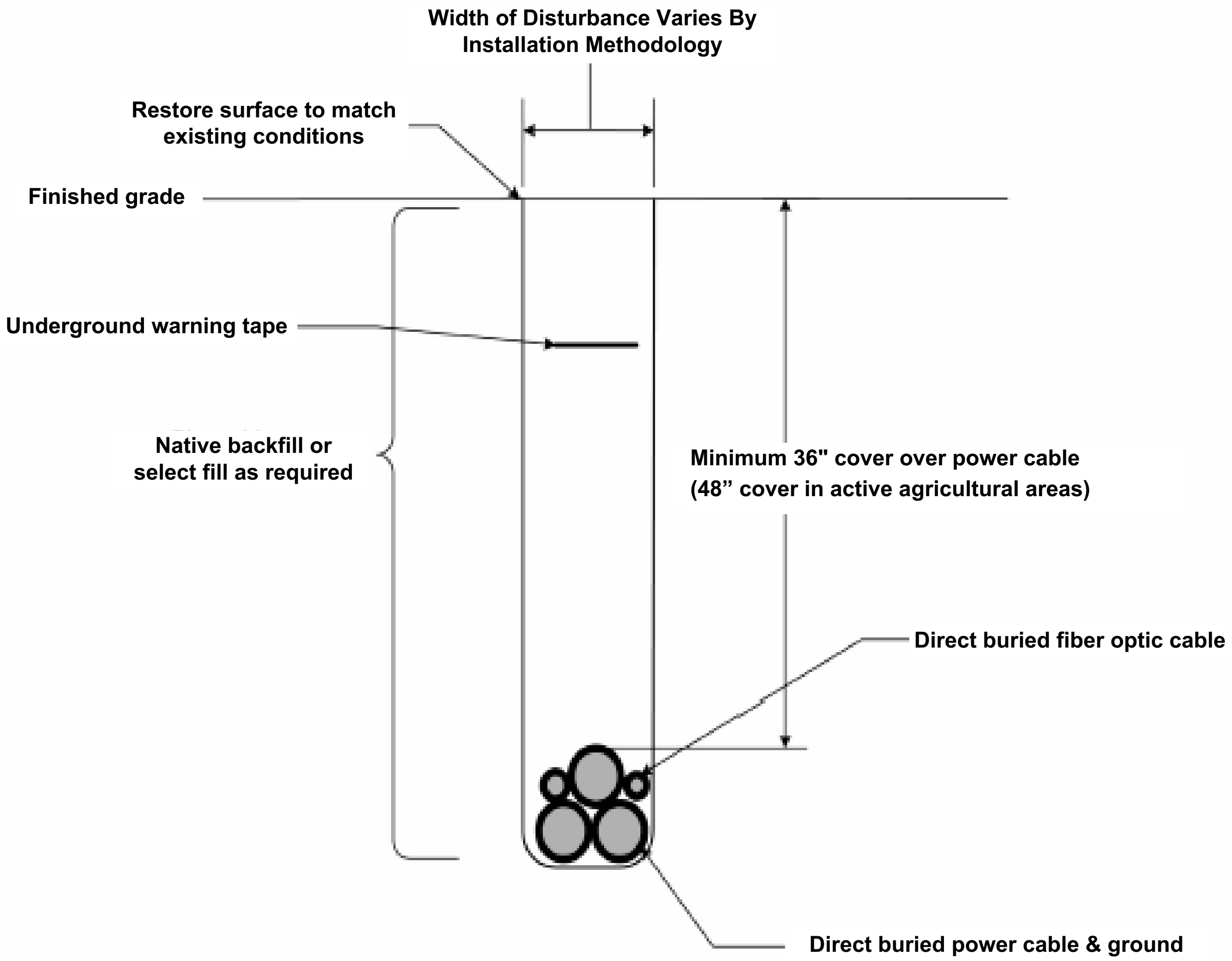
DESIGNED BY: ELB
DRAWN BY: ELB
CHECKED BY: MJA
PROJ. ENGR. MCD

URS Corporation
New York
77 Goodell Street, Buffalo, New York 14203
(716)856-5636 - (716)856-2545 fax
JOB NO. 11174823

TYPICAL ACCESS
ROAD DETAIL

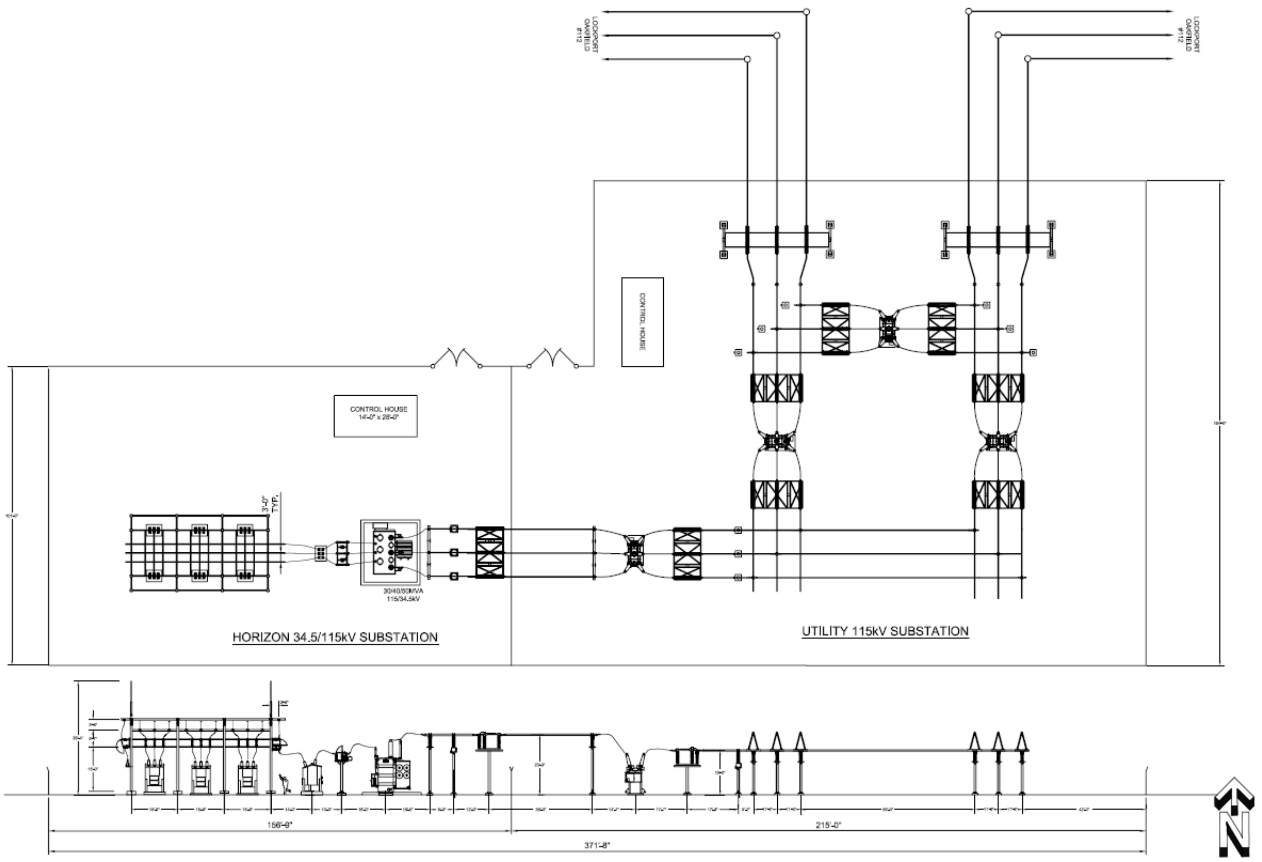
JERICHO RISE WIND FARM
COUNTY NAME
STATE

APPENDIX B
Scale: AS SHOWN
Date: DEC. 2007
D-001



Appendix B

Typical Buried Interconnect Trench



General Notes

No.	Revision/Issue	Date

Firm Name and Address

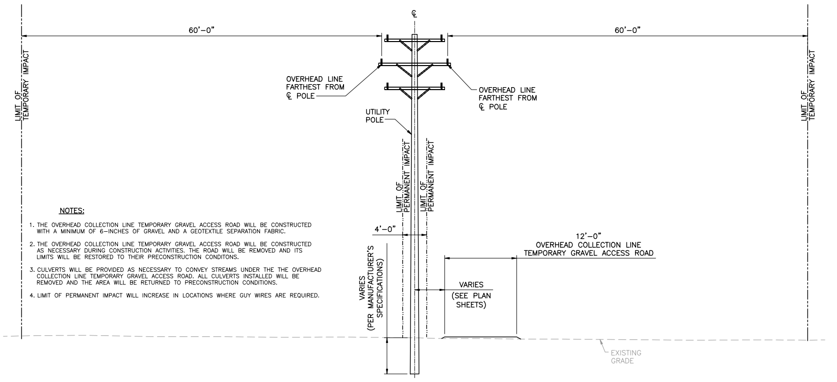
TRC
225 GREENFIELD PKWY SUITE 203
LIVERPOOL,NEW YORK
13088

Project Name and Address

JERICHO
RISE

FRANKLIN COUNTY
NEW YORK

Project: P/N 150878
Date: 05/07/2007
Scale: 1/32/1'
Sheet: COLECTION STATION

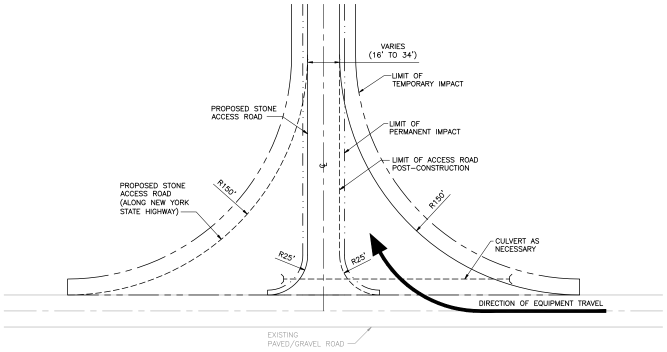


NOTES:

1. THE OVERHEAD COLLECTION LINE TEMPORARY GRAVEL ACCESS ROAD WILL BE CONSTRUCTED WITH A MINIMUM OF 6-INCHES OF GRAVEL AND A GEOTEXTILE SEPARATION FABRIC.
2. THE OVERHEAD COLLECTION LINE TEMPORARY GRAVEL ACCESS ROAD WILL BE CONSTRUCTED AS NECESSARY DURING CONSTRUCTION ACTIVITIES. THE ROAD WILL BE REMOVED AND ITS LIMITS WILL BE RESTORED TO THEIR PRECONSTRUCTION CONDITONS.
3. CULVERTS WILL BE PROVIDED AS NECESSARY TO CONVEY STREAMS UNDER THE THE OVERHEAD COLLECTION LINE TEMPORARY GRAVEL ACCESS ROAD. ALL CULVERTS INSTALLED WILL BE REMOVED AND THE AREA WILL BE RETURNED TO PRECONSTRUCTION CONDITIONS.
4. LIMIT OF PERMANENT IMPACT WILL INCREASE IN LOCATIONS WHERE GUY WIRES ARE REQUIRED.

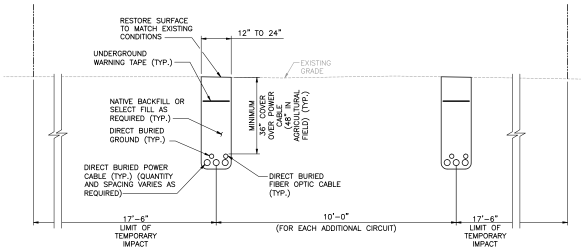
TYPICAL UTILITY POLE DETAIL

NOT TO SCALE



TYPICAL ACCESS ROAD ENTRANCE DETAIL

30' 0 30'
SCALE IN FEET

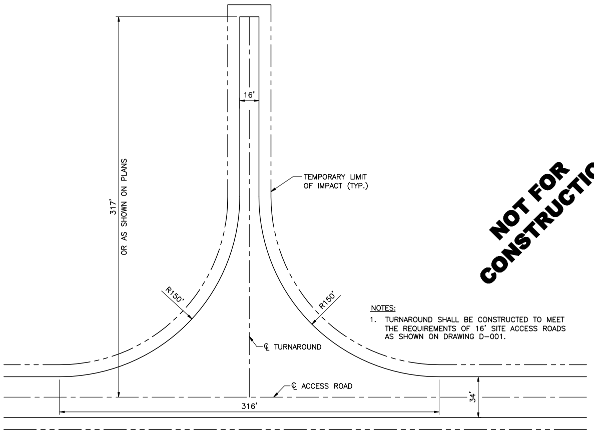


NOTES:

1. CONTRACTOR SHALL EXCAVATE AND STOCK PILE TOPSOIL OR WETLAND SOIL DURING EXCAVATION ACTIVITIES. THIS STOCK PILED MATERIAL SHALL BE USED AS BACKFILL FOR THE TOP 12" OF THE TRENCH.
2. IMPACT LIMITS SHOWN APPLY TO TRENCH INSTALLATIONS NOT IN PROXIMITY TO ACCESS ROADS. REFER TO DRAWING D-001 FOR UNDERGROUND ELECTRIC TRENCH DETAIL ALONG ACCESS ROADS.
3. REFER TO WETLAND PERMIT NOTES ON DRAWING ES-003 FOR SOIL STOCKPILING REQUIREMENTS.

UNDERGROUND ELECTRIC TRENCH DETAIL

0' 2' 4'
SCALE: 1/2"= 1'-0"



NOTES:

1. TURNAROUND SHALL BE CONSTRUCTED TO MEET THE REQUIREMENTS OF 16' SITE ACCESS ROADS AS SHOWN ON DRAWING D-001.

NOT FOR CONSTRUCTION

TYPICAL T-TURNAROUND DETAIL

40' 0 40'
SCALE IN FEET

J:\11174823.00000\CAD\JERICHO RISE\ D-003.DWG 1=1 01/28/08-1 ELB

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REVISIONS

DESIGNED BY: ELB
DRAWN BY: ELB
CHECKED BY: MJA
PROJ. ENGR. MCD

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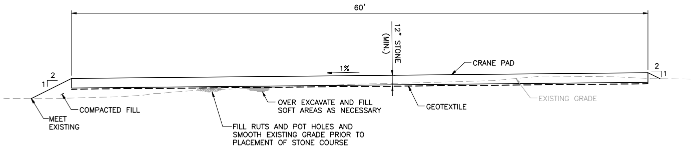
New York
77 Goodell Street, Buffalo, New York 14203
(716)856-5636 - (716)856-2545 fax
JOB NO. 11174823

JERICHO RISE
WIND FARM, LLC
52 JAMES STREET
ALBANY, NEW YORK 12207

JERICHO RISE
WIND FARM, LLC
NEW YORK

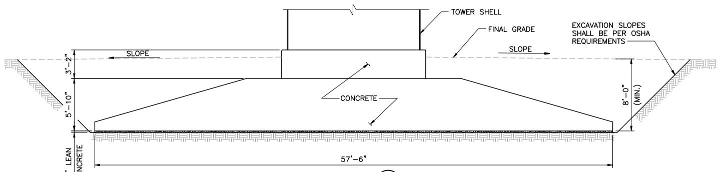
MISCELLANEOUS DETAILS

Scale: AS SHOWN
Date: FEB. 2008
D-003

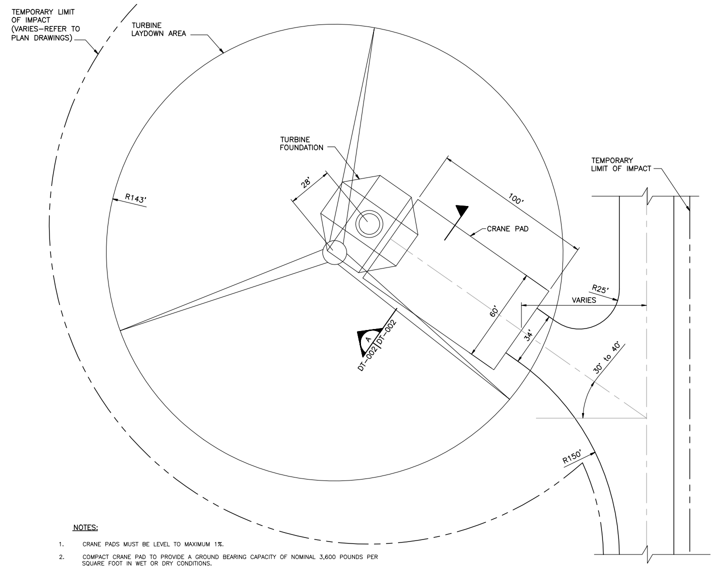


SECTION A
DT-002 | DT-002

5' 0 5'
SCALE IN FEET



SECTION B
DT-002 | DT-002

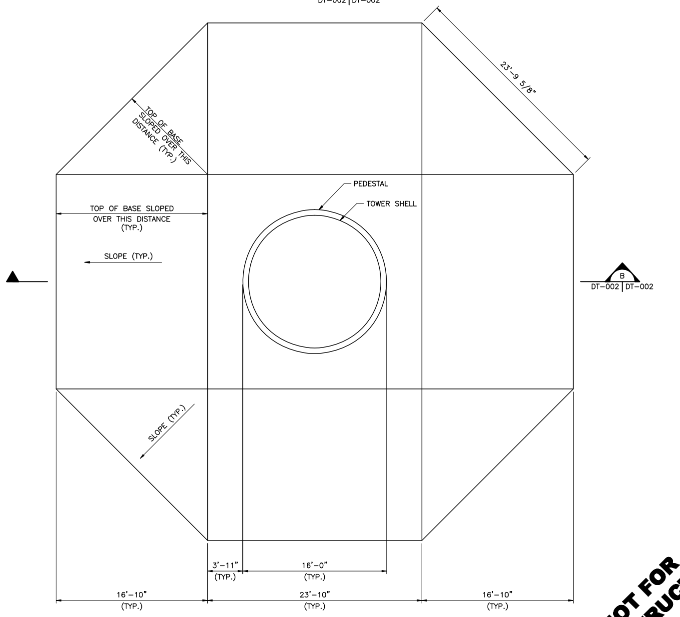


NOTES:

1. CRANE PADS MUST BE LEVEL TO MAXIMUM 1%.
2. COMPACT CRANE PAD TO PROVIDE A GROUND BEARING CAPACITY OF NOMINAL 3,600 POUNDS PER SQUARE FOOT IN WET OR DRY CONDITIONS.
3. THE TRANSITION AREAS SHALL BE BACKFILLED WITH THE SUBGRADE MATERIAL UNLESS OTHERWISE INDICATED ON THE CONSTRUCTION DRAWINGS.

TYPICAL TURBINE LAYOUT DETAIL

30' 0 30'
SCALE IN FEET



PLAN

TYPICAL TURBINE FOUNDATION DETAIL

0' 6' 12'
SCALE: 3/16"= 1'-0"

NOT FOR CONSTRUCTION

J:\11174823.00000\CAD\JERICHO RISE\ D-002.DWG 1=1 01/28/08-1 ELB

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ALBANY, NEW YORK 12207

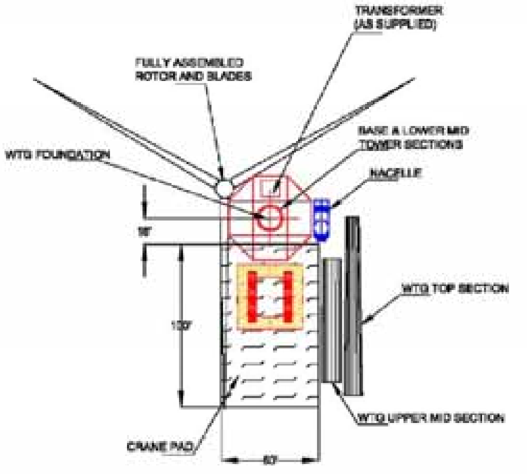
JERICHO RISE
WIND FARM, LLC
NEW YORK

MISCELLANEOUS DETAILS

Scale: AS SHOWN
Date: FEB. 2008
D-002

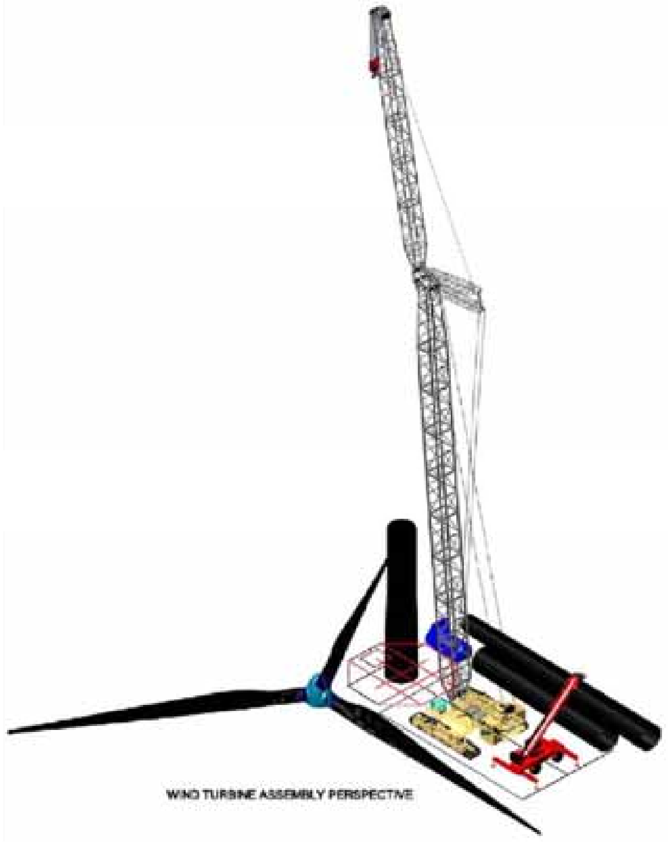
Only copies from the original of this drawing that are marked with the original seal and signature of the Engineer, shall be considered as true valid copies.

This drawing was computer generated. Any changes and/or revisions should be made to the CADD drawing file.



CRANE PAD PLAN VIEW

CROSS SECTION
TYPICAL CRANE PAD DETAILS



WIND TURBINE ASSEMBLY PERSPECTIVE

JERICHO RISE
WIND FARM

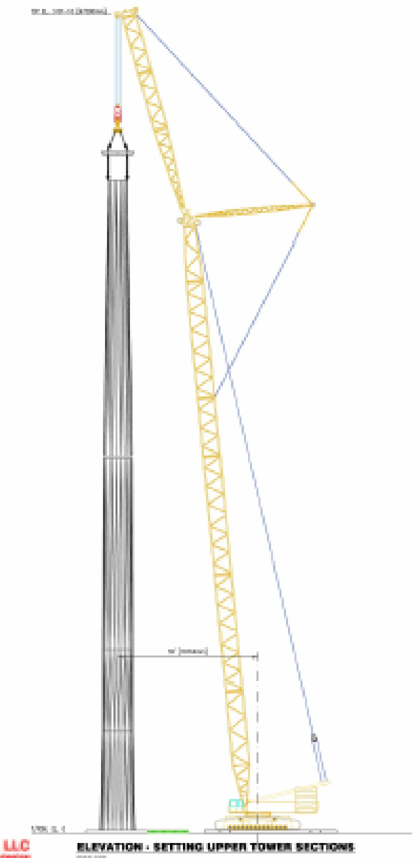
Jericho Rise Wind Farm

Franklin County, New York

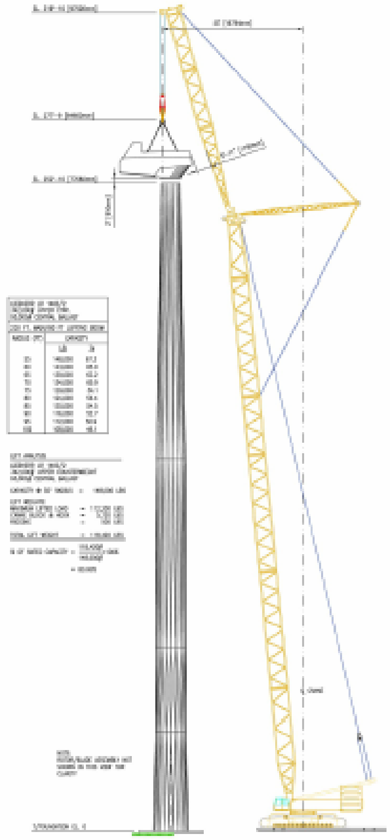
Appendix B.
Typical Crane Pad Assembly

June 2007

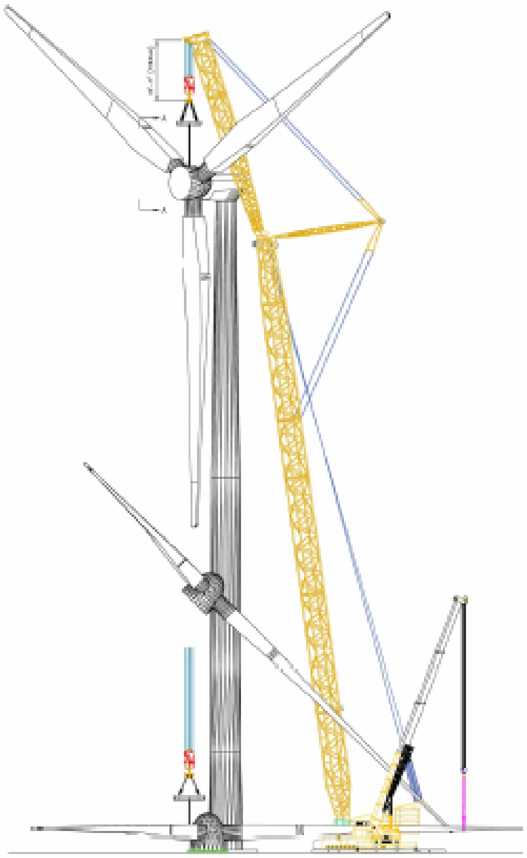
P:\Burke Wind Farm\GIS\Spatial\MXD\EAF\JRWF_EAF_3.mxd



ELEVATION - SETTING UPPER TOWER SECTIONS



ELEVATION - SETTING OF NACELLE



END VIEW - UPRIGHTING OF ROTOR/BLADE ASS'Y.

Source:
FOUR WINDS, LLC
WATERTOWN, WISCONSIN

**FOR ILLUSTRATIVE PURPOSES ONLY;
COMPONENT MEASUREMENTS VARY
BY MANUFACTURER**

Appendix B
Typical Wind Turbine Assembly

Technical Description

Lightning protection system

TSD 4000175-01 EN

Table of contents

1 Lightning protection system

1.1 System overview

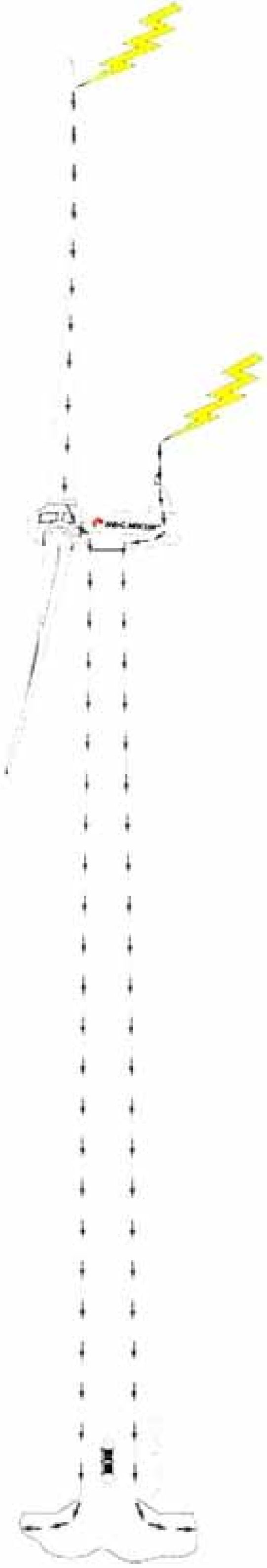
The objective of the lightning protection system is to provide equipotential bonding of all components and to ensure that lightning energy is conducted to earth in a simple and safe manner. Hereby, the build-up of large energy levels, which could cause extensive damage, is avoided

Experience has shown that the lightning protection system transfers high voltages and currents without any effect on turbine operations.

Mainly the machine base frame provides safe protection of the components in the nacelle. The components, which are not directly mounted to the base frame, are connected by the means of earthing cables. At the rear end on the outside of the nacelle a lightning conductor is mounted through the radiator cover. The lightning conductor extends considerably higher than any other equipment which is mounted on the nacelle and radiator cover.

The machine base frame is connected to the tower wall through earthing cables. The tower wall and the power cabinet are connected by cables to the earthing system.

A copper brush and a spark gap arranged at the main bearing housing makes up the lightning connection to the rotor. In the case of lightning strike an electric arc will occur over the spark gap. The metal brush which connects the shaft and the base frame transmits the voltage shock. As a result the lightning is conducted to the base of the nacelle without any risk of destroying the main bearing.

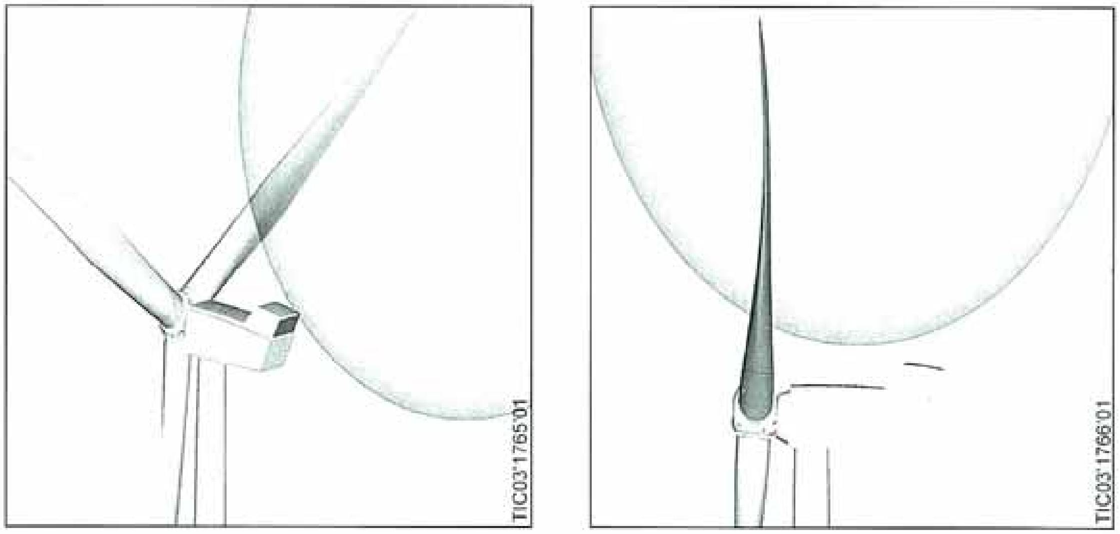


1.2 Total concept for lightning protection of NM72 and NM82

The lightning protection system has been designed according to EN/IEC 61024 Class 1 and under observation of DEFU Recommendation 25,

To assess possible strike points on the wind turbine, the "Rolling Sphere" method is used. An imaginary sphere is rolled over the wind turbine. Wherever the sphere touches the wind turbine, lightning strike is possible. The method takes into consideration the fact that lightning does not always strike the highest point. The diameter of the imaginary sphere is determined by the desired protection level. Here protection level 1 is applied, which is the highest level under IEC 61024. At protection level 1 the radius of the imaginary sphere is 20 m. All points on the wind turbine which the sphere can touch are possible strike points, and these points are classified as lightning protection zone 0. Within lightning protection zone 0, components must be able to withstand a direct lightning strike.

The rolling sphere method



Components in lightning protection zone 0 must be able withstand the full lightning current at 200 kA 10/350 µs.

In the areas in which the imaginary sphere forms shadows there will be no direct lightning strikes but the components in these areas must be able to tolerate the full electro-magnetic field.

These areas are classified as zone 0E. An example of a Zone 0E area is the area where the meteorological equipment is mounted.

The nacelle and glass fibre housing can then be considered as being in zone 1. In zone 1, possible lightning transients are further reduced. The level is 6 kV 1.2/50µs or 3 kA 8/20 8µs.

The wind turbine tower is also lightning-protected to level 1.

Metal electrical cabinets in lightning protection zone 1 should be regarded as lightning protection zone 2 internally. The level for lightning transients in lightning protection zone 2 is 0.5-2 kV 1.2/50 µs, depending on signal type.

Components in the individual lightning protection zones are over voltage-protected at the levels indicated.

1.3 Overvoltage protection of components mounted in lightning protection zone 2

Electronic components and other electronic equipment installed in the turbine have been tested to EN 61000-4-5. Supply cables have been tested to 2 kV common mode and 1 kV differential mode.

For communication purposes, optical cables are used, so here lightning arresters are not relevant.

1.4 Overvoltage protection of components mounted in lightning protection zone 1

Items in lighting protection zone 1 are items such as the main panel, phase compensation panel and control panel placed in tower, and panels placed in the nacelle and hub. Supply intake in the main panel is over voltage-protected by lightning arresters with a nominal discharging current of 15 kA 8/20μ/s and a limit discharging current of 40 kA 8/20μ/s.

Signal cables are protected by screens. In addition, signal cables from the control panel are protected by varistor clamps, capable of dealing with discharging current of 2.5 kA 8/50μ/s.

Various control transformers also have lightning arresters on the primary side.

If IGC system (power transformer) is installed inside in the tower. The power transformer has lightning arresters on the primary side.

1.5 Over voltage protection of wind measurement equipment in zone 0E

Wind measurement equipment is mounted where no direct lighting strike can reach it. This is done by placing a lightning conductor on the boom on which the wind measurement equipment is mounted. Cables from the wind measurement equipment are led by pipes to the control panel in to the nacelle, where the individual conductors are overvoltage-protected by varistor clamps capable of dealing with a discharge current of 2.5 kA 8/20μs.

1.6 Component-specific requirements

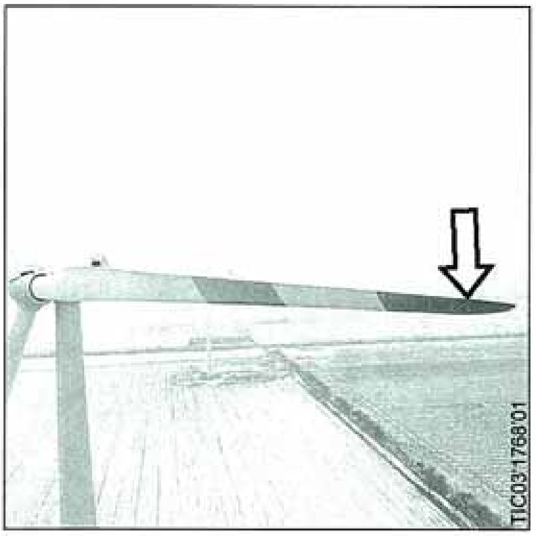
1.6.1 Blade protection

1.6.1.1 AL blades

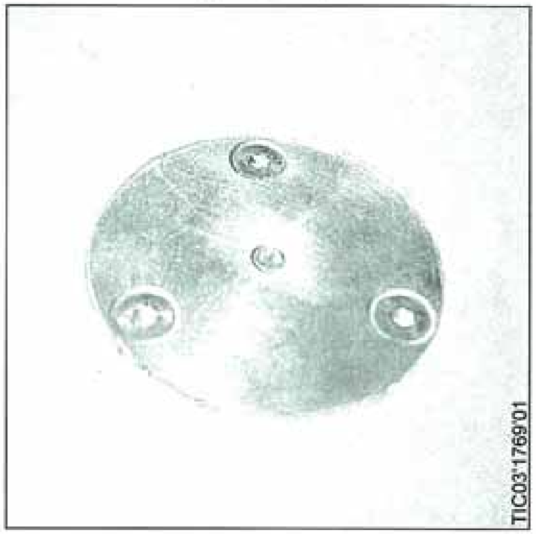
The AL blades are lightning-protected with AL's standard solution. The blade structure is protected from lightning strike by means of lightning receptors placed on both side of the blade tip, and a conduction system, which dissipates energy discharge through the blade by means of a metallic mesh laminated into the blade skin. The mesh is laminated under the gel coat layer covering sections of the blade and is doubled up at the blade tip. This design also protects the blade from the low probability strikes along the length of the blade.

The mesh is in direct contact with an aluminium alloy sheet across the root of the blade which provides a conductive path, via the blade bearings and the hub to main shaft bolt connection, to the main bearing house.

Blade (arrow indicates position of lightning receptor)



Close-up picture of lightning receptor on blade



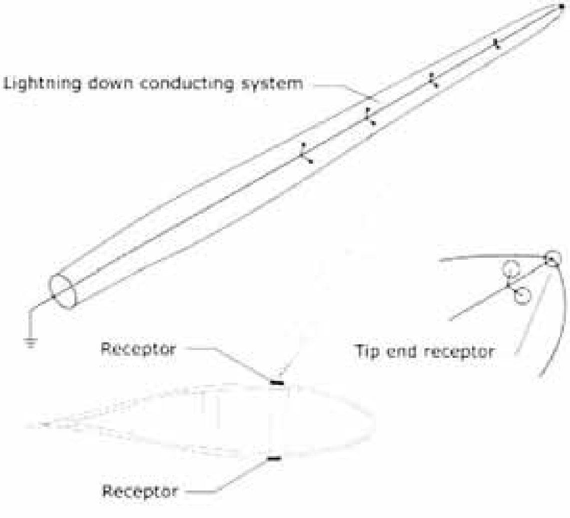
1.6.1.2 LM blades

The LM blade protection system comprises a patented tip end receptor with an integrated drain called a DrainReceptor, a series of special receptors called MultiReceptors on each side of the blade, and a conductive cable connected to the turbine's other lightning protection system, and located in the middle of the blade. In the event of a lightning strike, this conducts the lightning charge from the blade to the turbine tower, which is earthed.

1.6.1.3 Connection to engine bed

Electrical continuity of the rotor to the engine bed is made by a metal brush and spark gap placed on the main bearing housing. When lightning strikes, an electric arc will occur over the gap. The voltage surge is transmitted by a metal brush, which connects the shaft and the housing.

Sketch of the new LM Lightning Protection System



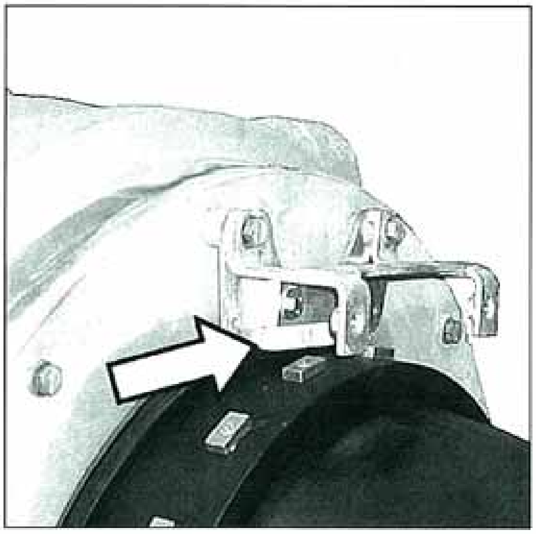
1.6.2 Blade turning system

Lighting current passing through blade bearings will not cause any significant damage, as there is extremely good electrical contact through the blade bearing because either it is not in motion or it is moving slowly, so there is no lubricant film.

1.6.3 Spinner, main bearing and transmission system

The gearbox is partially insulated, as it is suspended on rubber mountings. NEG Micon uses a discharge system placed at the main bearings, thus minimising lightning current through the main bearing. The discharge system consists of combs/collector shoes with replaceable copper brushes.

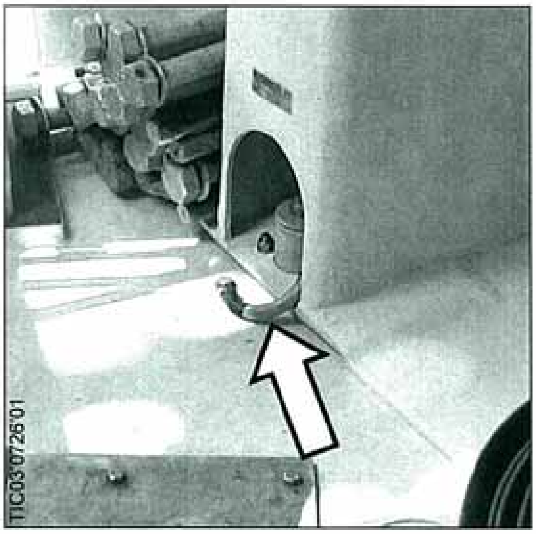
Copper brush



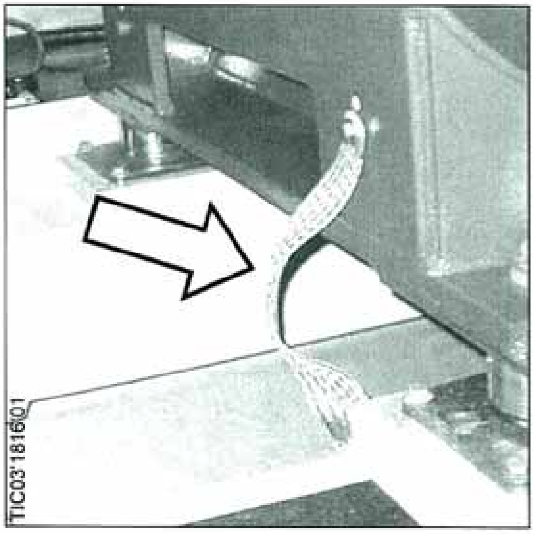
1.6.4 Nacelle

The nacelle cover is made of glass fibre. All major components in the nacelle are equipotentially bonded with the base frame.

Connection from top of nacelle to base frame

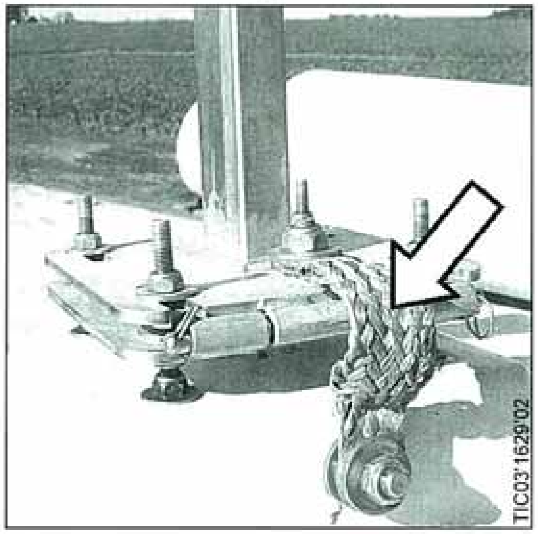


Connection between generator and base frame

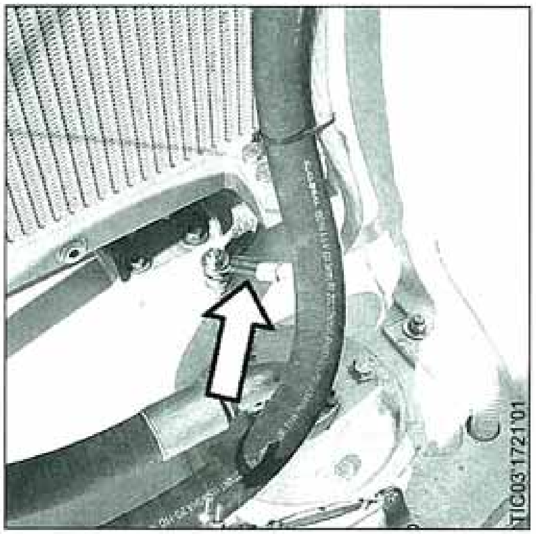


The meteorological equipment on top of the radiator cover is fitted with lightning conductors. The lightning conductor is equipotentially bonded with the base frame.

Ground cable on meteorological console



Ground cable from meteorological console to nacelle



Lightning current from the blades is conducted to the base frame via the discharge system on the main shaft with copper brushes.

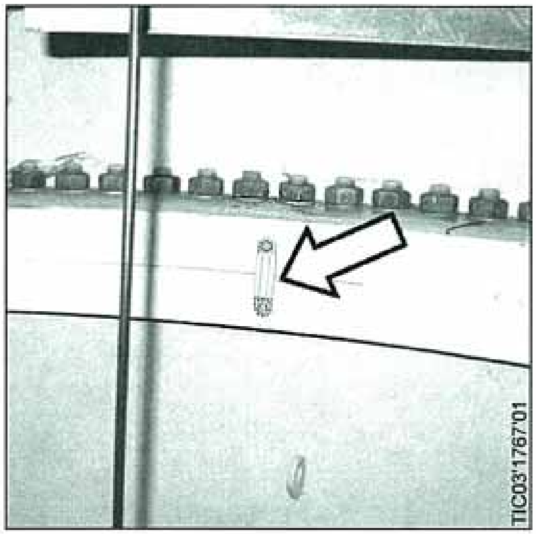
1.6.5 Yaw system

The lightning current is conducted through the yaw bearing. The yaw bearing is pretension and moves only very slowly, so for these reasons and due to its large dimension, there is good electrical contact through the yaw bearing. The yaw bearing is dimensioned to 300,000 rpm at a much higher rotational speed. The yaw bearing is expected to undergo approx. 10,000 rotations during the lifespan of the wind turbine. An equaliser connection, PE connector 95 mm² is connected from the nacelle frame to the tower through the cable loop.

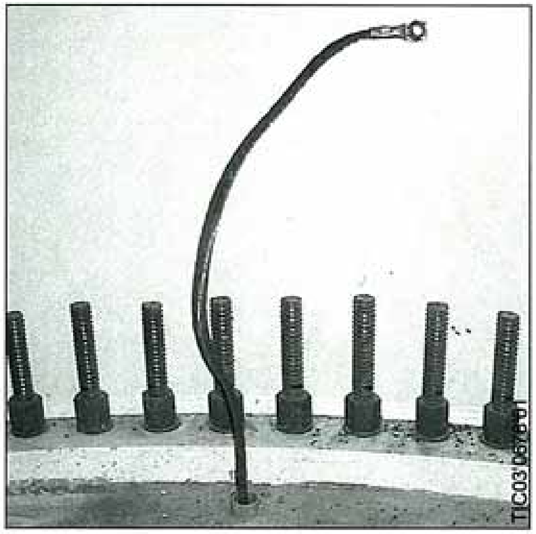
1.6.6 Tower

The lightning current is conducted down through the tower. The tower itself is used as conductor. Joints between tower sections are zinc-coated and 4 equaliser connections, PE connector 50 mm² are connected between tower sections, giving good metallic contact all the way round.

Connector between tower sections



Example of conductor between tower and foundation



1.7 Medium voltage system

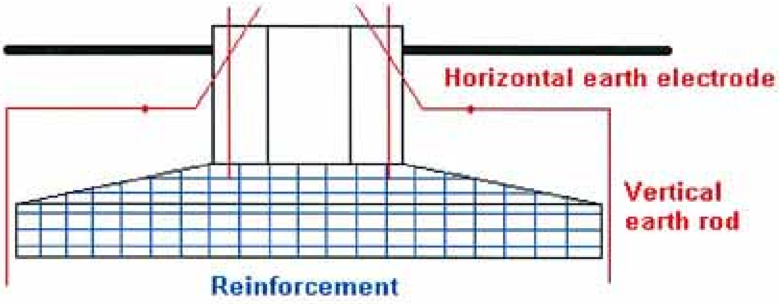
If IGC is installed the power transformer has a lightning arrester on the high-voltage side.

1.8 Earthing/grounding system

As standard the turbine is fitted with an earthing system that has a transient resistance of less that 10 Ohm. The earthing system at the turbine shall be made as 50 mm² copper conductors (horizontal earth electrode) laid around the turbine foundation with a distance of approx 1 meter and with a depth of approx 1 below the surface. Two vertical earthing rods, 50mm² copper shall be connection to the ring and located opposite each other (180 deg.)

The ring shall be connection to earthing arrangements inside the tower. In parks with more than one turbine, a main equaliser 50 mm² copper connection between the turbines shall be established.

The lightning protection earthing system is carried out to IEC norm 1024-1



The wind turbine generator with corresponding control panels and boxes are protected against indirect touch.

The protection against indirect touch is executed as a TN-S system. The TN-S system has a point in the supply system, the power transformer's star point, connected directly to earth, while exposed parts of the wind turbine are also connected to earth. Throughout the whole installation the TN-S system has separate neutral and earth conductors.

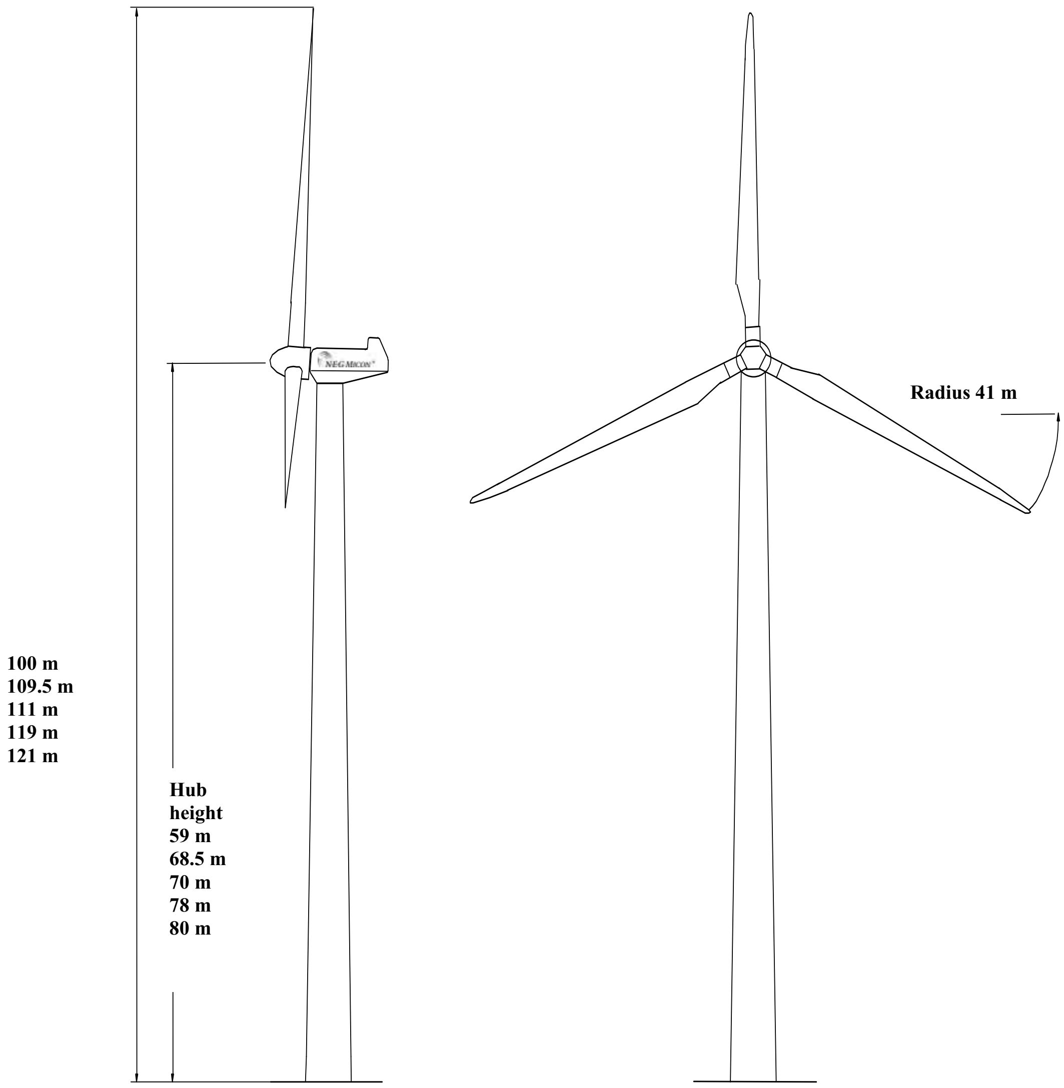
Class I
TSD 4000258-01 EN
2004-10-07

General Specification

V82-1.65 MW MK II

NM82/1650 Vers. 2

0 Illustration



1	Main Data			
		50 Hz	**60 Hz**	**60 Hz UL**
	Nominal Power	1650 kW	1650 kW	1650 kW
	Rotor diameter	82 m	82 m	82 m
	Swept area	5281 m^2	5281 m^2	5281 m^2
	Hub height. IEC IIb	59 m, 68.5 m, 70 m, 78 m	70 m, 78 m.	59 m, 70 m, 80 m
	Rotational speed	14.4 rpm	14.4 rpm	14.4 rpm

2	Nacelle Base Frame		
		50Hz	**60Hz**
	Material	EN-GJS-400-18U-LT	EN-GJS-400-18U-LT
	Standard colour	RAL 7035	RAL 7035
	Corrosion class, outside	Acc. to DS EN ISO 12944:C5 I	Acc. to DS EN ISO 12944:C5 I

3	Rotor		
		50Hz	**60Hz**
	Number of blades	3 pieces	3 pieces
	Tip speed (synchronous)	61.8 m/s	61.8 m/s
	Rotor shaft tilt	5°	5°
	Eccentricity (tower center to hub center)	3447 mm	3447 mm
	Solidity (Total blade area/rotor area)	5.0 %	5.0 %
	Power regulation	Active Stall®	Active Stall®
	Rotor orientation	Upwind	Upwind

4	Blades		
		50Hz	**60Hz**
	Type description	AL 40	AL 40
	Blade length	40 m	40 m
	Material	Carbon/wood/glass/epoxy	Carbon/wood/glass/epoxy
	Standard colour	RAL 7035	RAL 7035
	Gloss	Class 2: (30-70%) in accordance with (1), to be measured acc. to DS/ISO2813	Class 2: (30-70%) in accordance with (1), to be measured acc. to DS/ISO2813
	Type of rotor air brake	Full blade	Full blade
	Blade profiles	• FFA -W3, NACA 63.4	• FFA - W3, NACA 63.4
	Twist	20°	20°
	Largest chord	3.08 m	3.08 m
	Blade area (projected)	86 m^2	86 m^2
	Note! (1) Technical Criteria for Danish Approval Scheme for Wind Turbines		

5	Blade bearing		
		50 Hz	**60 Hz**
	Type description	Ball bearing	Ball bearing
	Number of bearings	3 pcs.	3 pcs.

6	Hub		
		50Hz	**60Hz**
	Type description	Spherical	Spherical
	Material	EN-GJS-400-18U-LT	EN-GJS-400-18U-LT
	Corrosion class, outside	Acc. to DS EN ISO 12944:C5 I	Acc. to DS EN ISO 12944:C5 I

7	Main shaft		
		50Hz	**60Hz**
	Type description	Forged shaft and flange	Forged shaft and flange
	Material	34CrNiMo6 + QT	34CrNiMo6 + QT
	Corrosion class	Acc. to DS EN ISO 12944:C2	Acc. to DS EN ISO 12944:C2

8	Main Bearing		
		50Hz	**60Hz**
	Type description	Spherical roller bearing	Spherical roller bearing
	Number of	1 piece	1 piece
	Lubrication	Oil pump	Oil pump

9	Main Bearing Housing		
		50Hz	**60Hz**
	Type description	Flange bearing	Flange bearing
	Material	EN-GJS-400-18U-LT	EN-GJS-400-18U-LT

10	Gearbox		
		50 Hz	**60Hz**
	Type description	1. step planet, 2. step helical	1. step planet, 2. step helical
	Gear house material	Cast	Cast
	Ratio	1:70.2	1:84.3
	Mechanical power	1800 kW	1800 kW
	Bending strength acc. to ISO 6336	S_F > 1.6	S_F > 1.6
	Surface durability acc. to ISO 6336	S_H > 1.25	S_H > 1.25
	Scuffing safety acc. to DNV 41.2	S_S > 1.3	S_S > 1.3
	Shaft seals	Labyrinth	Labyrinth
	Oil sump	App. 250 l	App. 250 l

11	Cartridge Gear Heater - for Arctic Version only		
		50 Hz	**60 Hz**
	Rating	800 W/ pcs.	800 W/ pcs.
	Number of	4 pieces	4 pieces

12	Oil pump		
		50 Hz	**60Hz**
	Voltage	3 x 690 V	3 x 480 V

13	Heat Exchange Unit (Water/Oil)		
		50 Hz	**60 Hz**
	Cooling capacity	41.3 kW	41.3 kW

14	Oil Cooler		
		50 Hz	**60 Hz**
	Cooling capacity	37.5 kW	37.5 kW

15	Water Pump		
		50 Hz	**60Hz**
	Voltage	1 x 230 V	3 x 480 V

16	Water Cooler/ Radiator		
		50 Hz	**60 Hz**
	Cooling capacity	46.2 kW	46.2 kW

17	Electrical Nacelle Heater - for Arctic Version only		
		50 Hz	**60Hz**
	Voltage	3 x 690 V	3 x 600 V
	Power	20 kW	20 kW
	Number of heaters	2 pieces	2 pieces

18	Mechanical Shaft Brake		
		50 Hz	**60Hz**
	Type description	Active Brake	Active Brake
	Brake disc	Steel, mounted on high speed shaft	Steel, mounted on high speed shaft
	Number of calipers	2 piece	2 piece

19	Hydraulic Power Unit for Mechanical Shaft Brake		
		50 Hz	**60Hz**
	Voltage	3 x 690 V	3 x 480 V
	Working pressure range	140-150 bar	140-150 bar
	Oil capacity	11 l	11 l

20	Coupling		
		50 Hz	**60Hz**
	Type description	Flexible coupling, constant rpm	Flexible coupling, constant rpm

21	Generator			
			50 Hz	60 Hz
	Type description		1 speed generator, water cooled	1 speed generator, water cooled
	Rated power	P_N	1650 kW	1650 kW
	Apparent power	S_N	1805 kVA	1808 kVA
	Rated current	I_N	1510 A	1740 A
	Max power at Class F	P_{Fmax}	1815 kW	1815 kW
	Max current at Class F	I_{Fmax}	1661 A	1914 A
	No load current	I_0	400 A	430 A
	Reactive power consumption at rated power (tolerance. acc to IEC 60034-1)	Q_N	731 kvar	740 kvar
	Reactive power consumption at no load (tolerance. acc to IEC 60034-1)	Q_0	478 kvar	447 kvar
	Number of poles	P	6	6
	Synchronous rotation speed	n_0	1000 rpm	1200 rpm
	Rotation speed at rated power	n_N	1012 rpm	1214 rpm
	Slip at rated power	s_N	1.20 %	1.17 %
	Voltage	U_N	3 x 690 V	3 x 600 V
	Frequency	F	50 Hz	60 Hz
	Coupling		Δ	Δ
	Enclosure		IP54	IP54
	Insulation class/ Temperature increase		F/B	F/B

22	Yaw System – Ball Bearing Slewing Ring		
		50 Hz	60 Hz
	Type description	Ball bearing, internal gearing	Ball bearing, internal gearing

23	Yaw System – Yaw Gear and Motors		
		50 Hz	60 Hz
	Type description	Planetary gear motor	Planetary gear motor
	Gear ratio of yaw gear unit	app. 1:1687	app. 1:1687
	Voltage	3 x 690 V	3 x 480 V
	Rotational speed at full load	920 rpm	1140 rpm
	Number of yaw gears	6 pieces	6 pieces

24	Yaw System – Yaw Brake		
		50 Hz	60 Hz
	Type Description	Hydraulic disc brake	Hydraulic disc brake
	Number of Yaw Friction Units	6 pieces	6 pieces

25	Hydraulic Power Unit for Yaw Brake		
		50 Hz	60 Hz
	Voltage	3 x 400/ 3x 690 V	3 x 480 V
	Working pressure range	140-150 bar	140-150 bar
	Oil capacity	App. 10 l.	App. 10 l.

26	Tower		
		50 Hz	60 Hz
	Type Description	Conical, tubular	Conical, tubular
	Material	Welded steel plate	Welded steel plate
	Corrosion class, outside	Acc. to DS EN ISO 12944: C5 I	Acc. to DS EN ISO 12944: C5 I
	Colour	RAL 7035	RAL 7035
	Access conditions	Internal, safety harness, ladder cage	Internal, safety harness, ladder cage

27	Wind Turbine Main Panel/ Control panel/ phase comp. panel		
		50 Hz	**60 Hz**
	Voltage	3 x 690 V	3 x 600 V
	Frequency	50 Hz	60 Hz
	Cut-in system	Soft with thyristors	Soft with thyristors
	Design Standard	IEC	UL

28	Electrical Grid Requirements		
		50 Hz	**60Hz**
	Max. voltage	+10 % (60 sec.)	+10 % (60 sec.)
	Min. voltage	-10 % (60 sec.)	-10 % (60 sec.)
	Max. voltage	+12.5 % (0.1 sec.)	+12.5 % (0.1 sec.)
	Min. voltage	-15 % (0.1 sec.)	-15 % (0.1 sec.)
	High frequency	+1 Hz (0.2 sec.)	+1 Hz (0.2 sec.)
	Low frequency	- 2 Hz (0.2 sec.)	- 2 Hz (0.2 sec.)
	Maximum asymmetri current	15 % (60 sec.) – phase to ground	15 % (60 sec.) – phase to ground
	Maximum asymmetri voltage	2 % (60 sec.) – phase to ground	2 % (60 sec.) – phase to ground
	Maximum short circuit current	25 kA at 690V	30 kA at 600V
	Single harmonic	Max 1% of any single harmonic	Max 1% of any single harmonic
	Total harmonic distortion	Max 3% total harmonic distortion	Max 3% total harmonic distortion
	Connection	• Solidly grounded wye at secondary (690 V) side of transformer	• Solidly grounded wye at secondary (600 V) side of transformer

29	Integrated Grid Connection System, IGC System, Transformer in tower - Optional (IGC is not delivered in the US)		
	Power Transformer incl. Metal Enclosure		
		50 Hz	60 Hz
	Type description	Cast Resin (dry type)	Cast Resin (dry type)
	Apparent power	1800 kVA	1800 kVA
	Primary voltage	10 – 24 kV+/- 2 x 2.5 %	10 – 24 kV+/- 2 x 2.5 %
	Secondary voltage	0.690 kV	0.600 kV
	Frequency	50 Hz	60 Hz
	Coupling group	Dyn, Solidly grounded wye at 690 V	Dyn, Solidly grounded wye at 600 V
	Switch gear		
	Type description	Gas insulated SF6 ring main unit	Gas insulated SF6 ring main unit
	Nominal voltage	24 kV	24 kV
	Frequency	50 Hz	60 Hz

31	Climate and Site Conditions regarding structural design		
		50 Hz – IEC IIb	**60 Hz – IEC IIb**
	Design life time	20 years	20 years
	Temperature interval for operation	See specifications below	See specifications below
	Temperature interval for structure	See specifications below	See specifications below
	A-factor	9.59 m/s	9.59 m/s
	Form factor, c	2.0	2.0
	Annual average wind speed	8.5 m/s	8.5 m/s
	Wind shear	0.20	0.20
	Extreme wind speed	42.5 m/s (10 min. average)	42.5 m/s (10 min. average)
	Survival wind speed	59.5 m/s (3 sec. average)	59.5 m/s (3 sec. average)
	Automatic stop limit	20 m/s (10 min. average)	20 m/s (10 min. average)
	Re-cut in	18 m/s (10 min. average)	18 m/s (10 min. average)
	Characteristic turbulence intensity acc. to IEC 61400-1 (15 m/s)	16% (including wind farm turbulence)	16% (including wind farm turbulence)
	Air density	1.225 kg/m3	1.225 kg/m3
	Maximum in-flow angle	8°	8°

32	Specific Climate and Site Conditions			
		Standard (only 50 Hz)	**Tropical -20 to +40°C (50 + 60 Hz)**	**Arctic (50 + 60 Hz)**
	Temperature interval for operation[1,2,3]	-20 to +30°C	-20 to +35°C (+40°C)	-30 to +30°C
	Temperature interval for structure	-20 to +50°C	-20 to +50°C	-40 to +50°C
	[1] Note! For Tropical! Rated power is reduced to 1500 kW for temperature between +35°C and +40°C. [2] Note! No operation if temperature is below -10°C in control panel or gear oil sump. Heating systems are optional. [3] Note! If the windturbine is placed more than 1000m above sea level, a higher temperature rise than usual might occur in the generator, the transformer and other electrical components. In this case a periodic reduction of rated power might occur, even if the ambient temperature is within specified limits. Furthermore increased risk of icing up occur at sites more than 1000m above sea level.			

33	**Conditions for Power Curve (at hub height)**		
		50 Hz	**60Hz**
	Air density	1.225 kg/m^3	1.225 kg/m^3
	Wind shear	0.12-0.16	0.12-0.16
	Turbulence intensity	11-16 %	11-16 %
	Blades	Clean	Clean
	Ice/snow on blades	No	No
	Leading Edge	No damage	No damage
	Rain	No	No
	Terrain	IEC 61400-12	IEC 61400-12
	Inflow angle	0±2 °	0±2 °
	Grid frequency	50 ±0.5	60±0.5 Hz
	Verification acc. to	IEC 61400-12	IEC 61400-12

Noise Measurement Summary, NM82/1650

Noise measurement summary, NM82/1650

1. Identification of Measuring institute

Windtest Grevenbroich GmbH
Frimmersdorfer str. 73
D 41517 Grevenbroich, Germany

Windtest Grevenbroich is accredited by DAR (DPT-DL-3175.00) to perform noise measurements on wind turbines.

2. Report identification

Acoustic report for a wind energy converter type
NEG Micon NM 82/1650, hub height 93,6m
Report SE03007B1

Authorised signatory: Dr. Markus Koschinsky

3. Measurement date:

May 12. 2003, Grevenbroich test site

4. Description of wind turbine and surroundings

Wind turbine: NM82/1650
Rotor blades: AL 40
Main Gear: Flender PEAS 4390
Generator: ELIN MCS556M31Z7B
Terrain: Flat
Surface: Grass, low vegetation, a few tree lines
Measurement conditions: Optimal

5. Standard of measurement

IEC 61400-11: 1998 " Wind turbine generator systems – Part 11: Acoustic noise measurement techniques"

	Name:	**Date:**	**Signature:**
Written by:	ESL	19-01-2004	
Approved by:			
Filename:	Noise measurement summary NM82-1650.doc rev 1		
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6. Measurement results

6.1 Apparent sound power level and uncertainty:

	6 m/s	7 m/s	8 m/s	95% RP (8,6 m/s)
L_{wA} [dB re 1 pW]	100,3	100,7	101,7	101,8
uncertainty	0,9	0,9	>0,9	>0,9

6.2 Frequency analysis at 8 m/s

A-weighted 1/1 octave analysis of the sound power level at 8 m/s

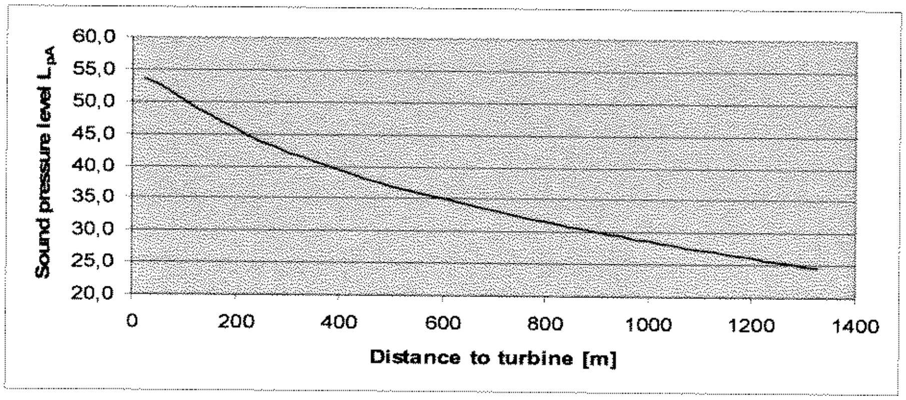
Octave band	63 Hz	125 Hz	250 Hz	500 z	1 kHz	2 kHz	4 kHz	8 kHz
L_{wA} [dB]	83,3	90,3	94,9	95,0	95,9	92,9	91	81,5

6.3 Tonality

The noise from the turbine did not contain any tonal peaks with a calculated ΔL_{tn} above the IEC 61400-11:1998 expression (9). According to IEC 61400-11:1998 no audible tones is present in the noise.

7 Sound pressure level at distances from turbine

The graph below shows the sound pressure level L_{pA} 1.5 m above the ground at a wind speed 10 m above ground of 8 m/s as function of the distance from the turbine. It is calculated for 78 m hub height, and includes air absorption (0.005 dB(m)). At 218 meters distance from the turbine the sound pressure level is 45 dB(A), and at 376 meters distance form the turbine, the sound pressure level is 40 dB(A).



	Name:	Date:	Signature:
Written by:	ESL	19-01-2004	
Approved by:			
Filename:	Noise measurement summary NM82-1650.doc rev 1		
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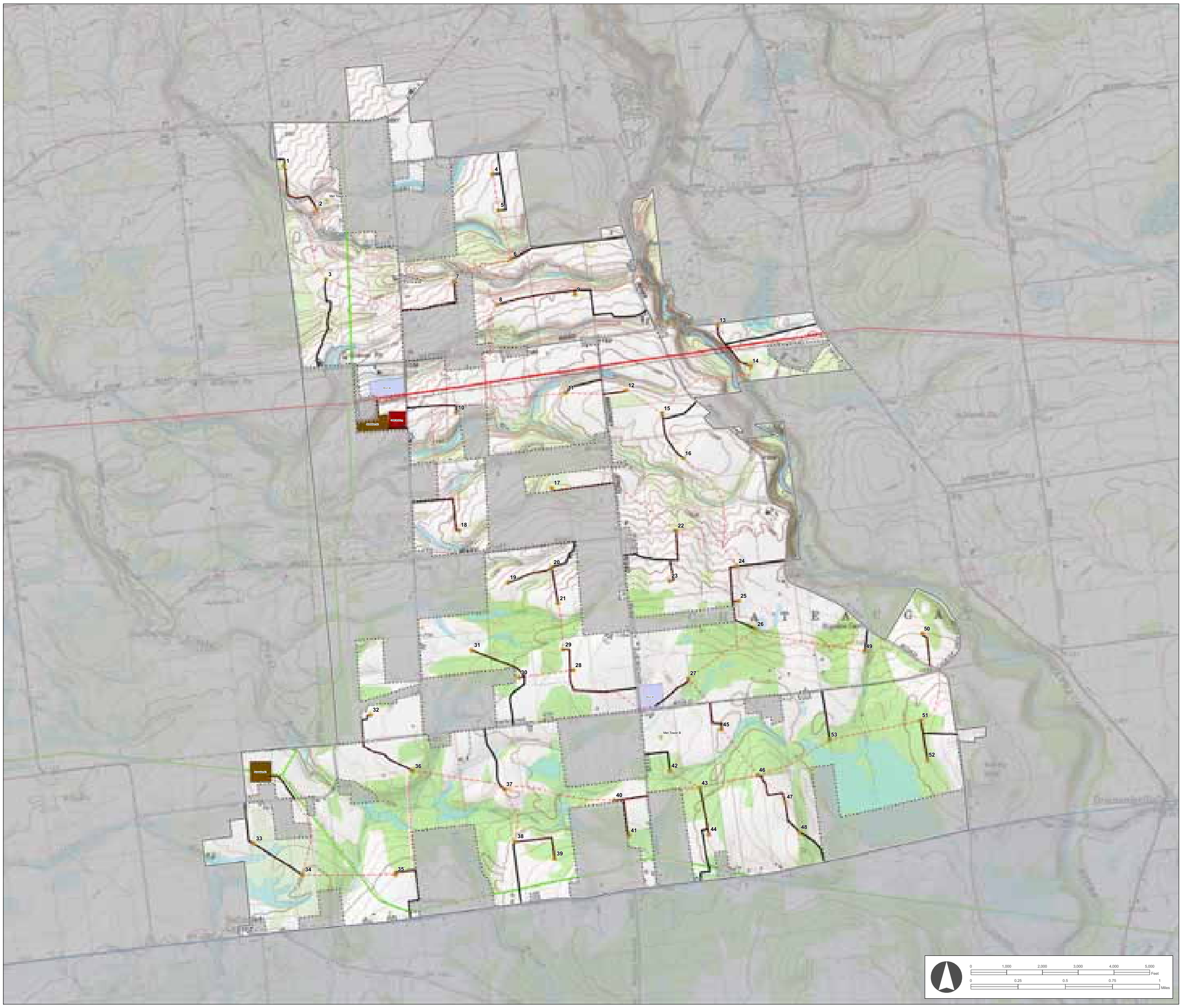

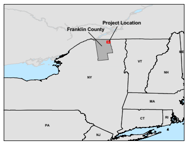

Legend

- Structure
- Met Tower
- Turbine
- Underground Collection System
- Overhead Collection System
- Access Road
- Substation
- O & M Building
- Construction Laydown Yard
- Project Boundary
- Project "Site" Boundary
- NYSDEC Wetland
- NYSDEC Stream
- NWI Wetland
- Adirondack Park Blue Line
- Existing Willis Substation
- Existing Transmission Line: 230 kV
- Existing Transmission Line: 115 kV
- Parcel Boundary

JERICHO RISE
WIND FARM

JERICHO RISE WIND FARM

APPENDIX B

JERICHO RISE WIND FARM
PROPOSED PROJECT COMPONENTS

JERICHO RISE WIND FARM LLC
FRANKLIN COUNTY, NEW YORK
DECEMBER 2007

Prepared By:
TETRA TECH EC, INC.

Parcel Data Source:
Franklin County Real Property Office. Tax Map Department.

Aerial Image Source:
NYS Department of State, Division of Coastal Resources, GIS Unit
NYS 2000 Digitally Enhanced Orthoimagery, 2000

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Appendix C
Agricultural Protection Measures

Agricultural Protection Measures

Jericho Rise Wind Farm

Towns of Bellmont and Chateaugay

Franklin County, New York

Appendix C

Prepared by:

JERICHO RISE
WIND FARM

Jericho Rise Wind Farm, LLC
3 Columbia Place #3
Albany, New York 12207

2007

Siting Considerations

1. Locate wind turbines and other structures along field edges so as to minimize adverse impacts on agricultural land and farming operations.

2. Limit permanent road width to 16 feet or less, and where possible, follow hedgerows and field edges to minimize loss of agricultural land.

3. Have roads that must cross agricultural fields stay on ridgetops and other high ground. The advantages of this are 1) it allows farming along the contours, 2) it requires no cut and fill or ditching that would take additional land out of production, and 3) it avoids potential drainage and erosion problems.

4. Avoid cutting existing fields into smaller irregularly shaped fields which are more difficult to farm, by locating access roads along the edges of agricultural fields where possible.

5. Locate parking areas, construction staging areas, and other temporary and permanent support facilities outside of active agricultural fields where possible.

6. Overhead electrical collection systems shall have as wide a span as possible to minimize the number of poles that are used in agricultural areas.

7. Avoid disturbance of surface and subsurface drainage features (ditches, diversions, tile lines, etc.). Identification of any known subsurface drainage features will be done with assistance from the landowners and the Franklin County Soil and Water Conservation District, and efforts will be made to avoid potential impacts. In cases where disturbance is unavoidable any necessary repair/replacement of the affected features will be undertaken.

8. Landowners will be consulted during the siting of access roads that cross/intersect active agricultural lands.

Construction Specifications

Access Roads

- No vehicular access to the tower sites will be permitted until permanent access roads have been constructed.

- Roads will be constructed only in locations shown on the construction drawings or as staked in the field by the Construction Manager (CM) or Environmental Monitor (EM).

- The EM shall be trained in agricultural protection measures per New York State Department of Agriculture and Markets (Ag & Markets) Guidelines;

- Ag & Markets Guidelines shall be followed throughout the entire Project construction and post-construction monitoring period;

- Ag & Markets representatives shall be consulted prior to construction to ensure all construction and restoration activities planned in agricultural areas follow the Ag & Markets Guidelines.

- The boundaries of all work areas shall be identified with snow fence or other temporary barrier. No vehicles or equipment shall be allowed outside the fenced area without prior approval of the CM/EM.

- All roads across agricultural fields will be the minimum width necessary to accommodate construction traffic (i.e. no wider than 16 feet unless approved by the CM/EM).

- Roads across agricultural fields shall not be constructed during saturated conditions when their development would damage agricultural soils.

- In developing roads on active agricultural land, strip all topsoil from the entire work area and stockpile in windrows along the road or in designated temporary storage areas. Temporarily stockpiled topsoil shall be segregated from other excavated material (rock and/or subsoil). Stockpiled topsoil must be left on the property from which it was removed.

- When stockpiling topsoil in windrows along roads, avoid blocking surface water drainage from the road or adjacent agricultural fields.

- Permanent roads through agricultural land shall be constructed by placing up to 12 inches of stabilized gravel on a geotextile mat over compacted sub-grade.

- When constructing roads through active agricultural land, final road surface should be level with the adjacent field surface. If drainage or other issues preclude a level surface, the road shall be elevated no more than 6 inches above the surrounding field. Topsoil shall be used during restoration to create a smooth transition between the road surface and surrounding agricultural land, so as not to impede crossing by farm equipment.

- Where necessary, culverts or water bars shall be installed to assure uninterrupted natural surface water drainage patterns. Such culverts or water bars will be installed in a manner that prevents concentration of water runoff and soil erosion.

- Maintain access roads throughout construction so as to allow continued use/crossing by farm machinery. Maintenance will be required when rutting occurs to an extent that it interrupts natural cross drainage of the area traversed or prevents use or crossing of the road by the landowner.

- To prevent damage to adjacent agricultural land, all vehicle traffic and parking shall be confined to the access roads, designated work areas at the tower sites, and/or designated parking and material laydown areas. Any necessary pull-offs and parking areas will be developed outside of active agricultural fields. If this is not possible, all topsoil shall be stripped from agricultural areas used for vehicle and equipment traffic and parking. Such areas will be restored at the end of construction (see restoration specs).

Construction Staging/Storage Areas

- Temporary construction parking, staging and storage areas on active agricultural land will be developed by removing all topsoil from areas that will receive vehicular traffic. Topsoil will be stockpiled in windows or piles adjacent to the staging area and on the same property from which it was removed. The exposed subsoil will be covered with a geotextile mat and 12 inches of stabilized gravel.

- Construction materials may be stored on undisturbed ground only if their placement and removal can be accomplished without driving over the undisturbed areas.

- Upon completion of construction, all gravel and geotextile mat will be removed, and the soils decompacted and restored as described in the Restoration specifications.

Vegetation Clearing and Disposal

- In areas where woody vegetation (trees and brush) needs to be removed, such removal will be undertaken in a manner that minimizes impacts on adjacent agricultural land.

- In areas that will be used as future agricultural fields or access roads, all stumps must be removed completely.

- Cut logs will be separated from limbs and brush and piled outside of active agricultural fields.

- Limbs and brush will be disposed of by piling or chipping in areas outside of active agricultural fields.

- No cut black cherry will be left in areas used as active pasture by livestock.

Excavation and Backfill

- The boundaries of all rights-of-way and work areas will be identified with snow fence or other temporary barrier. No vehicles or equipment shall be allowed outside the fenced area without prior approval of the CM/EM.

- All agricultural areas to be disturbed by excavation (for tower foundations, electric cable trench, etc.) shall first be stripped of topsoil. Topsoil stripping must be undertaken on the full area anticipated to be disturbed by excavation, grading and/or piling of excavated subsoil/rock. For installation of buried electric lines, no topsoil stripping is required if direct burial methods (e.g., cable plow, rock saw) are used, depending upon total area of disturbance. If width of disturbance (i.e. parallel buried circuits) exceeds 30 feet, topsoil stripping and protection measures are required.

- Stripped topsoil will be segregated from subsoil and stockpiled in temporary storage areas on the property from which it was removed. Topsoil from trenching may be temporarily stockpiled by wind-rowing immediately adjacent to the trench. Ag & Markets shall be consulted to develop and implement the appropriate stabilization methods per the required duration for any topsoil that may be stockpiled.

- All areas to be disturbed by excavation and backfilling shall be enclosed within silt fencing or other temporary barrier to define the allowable limits of disturbance. No vehicular activity will be allowed outside the fenced area without the approval of the CM/EM.

- Excavated subsoil and rock shall not be stockpiled or spoiled on active agricultural land.

- Excess excavated subsoil and rock, or that which is not suitable as backfill will be removed from the site. On site disposal shall only occur with permission from the EM and the landowner. Such disposal shall not impact active agricultural land.

- Open excavation areas in active pasture land will be temporarily fenced to protect livestock. All existing fences and gates will be maintained or relocated as necessary to prevent livestock access to the work area and/or escape from fenced enclosures. Relocated fencing will be restored to “like new” condition in its original location following construction or as otherwise agreed to with the landowner.

- Any water pumped from open excavations shall be directed into temporary sediment traps prior to discharge. Pumping will be done in a manner that minimizes adverse effects on agricultural crops and operations. Surface water ponding and soil erosion shall be avoided.

- Buried electric lines in active agricultural fields will be at least 4 feet deep, unless bedrock is encountered prior to reaching this depth. If bedrock is encountered, the buried lines must be placed completely below the bedrock surface.

- Backfill will utilize excavated subsoil and rock whenever possible. If this material is determined to be unsuitable as backfill, select granular fill (e.g. bank run gravel) will be utilized in its place. No rock backfill is allowed in the top 24 inches in active agricultural fields.

Foundations

- Concrete trucks shall be restricted to designated access roads and gravel crane pads at all times.

- Excess concrete shall be disposed of off site, unless otherwise approved by the CM/EM and the landowner. Under no circumstances shall it be buried or left on the surface in active agricultural areas.

- Washing of concrete trucks shall occur outside of active agricultural areas in locations approved by the CM/EM.

- In active pasture areas, foundations treated with concrete curing compound or sealer shall be temporarily fenced to prevent access by livestock.

Erection

- Any grading to accommodate crane pads and material storage/laydown at the structure sites will be confined to the fenced work area around each foundation.

- Topsoil shall be stripped from crane pad locations and work areas around foundations, and stockpiled in areas designated on the construction drawings.

- Erection cranes shall be restricted to designated access roads and work pads at the structure sites. Crane set-up and break-down activities will not occur outside these areas on active agricultural land.

- Crane paths across active agricultural land will be improved to the extent necessary to protect agricultural soils. If conditions allow (i.e., soils hard and dry) the crane may drive across the ground without stripping of topsoil. If leveling of the ground is required, such leveling will be kept to a minimum and topsoil will not be mixed with subsoil. If significant rutting or soil disturbance will occur, temporary roads will be established to accommodate crane passage.

- Development of temporary roads across agricultural land will involve stripping and stockpiling of topsoil and placement of gravel over a geotextile mat. Following use by the crane all gravel and matting will be removed and soils restored in accordance with Restoration specifications.

- The same procedures described above for crane paths will also be utilized by equipment/vehicles involved in the placement of poles and stringing of overhead line on aboveground sections of the electrical interconnect system.

- With the approval of the EM, areas of active agricultural land outside the fenced work areas may be available for structure laydown and assembly, but not for heavy equipment access. Access by light vehicles may also be restricted under wet conditions if, in the opinion of the EM, such access would lead to rutting or excessive soil compaction.

- In active pasture land, the contractor shall immediately pick up and dispose of all pieces of wire, bolts, staples or other small metallic objects that fall to the ground in such areas.

<u>Restoration</u>

- Following completion of construction (including erection), all disturbed agricultural lands excess gravel/fill will be removed from along the access roads and crane paths, around towers, and in temporary parking and staging areas. Exposed subsoils will be decompacted with a deep ripper or heavy duty chisel plow to a minimum depth of 18 inches. Soil decompaction shall be conducted prior to topsoil replacement.

- Following decompaction of the subsoil, rock pick the surface of the subsoil to remove all rocks 4 inches in size or larger. Following rock picking, stockpiled topsoil will be returned to all disturbed agricultural areas. The topsoil will be regraded to match original depth and contours to the extent possible. The surface of the regraded topsoil shall be disked and any rocks over four inches in size shall be removed from the soil surface. Restored topsoil will be stabilized by seeding and/or mulching in accordance with guidance provided by the EM in consultation with the landowner/farm operator.

- Decompaction of crane paths over otherwise undisturbed agricultural land will be accomplished using a deep ripper or heavy chisel plow if required in the judgment of the EM and/or the NYS Department of Agriculture & Markets.

- Soil decompaction and topsoil replacement shall not be performed after October 1 or prior to May 1, unless approved on a site-specific basis by the EM, in consultation with the NYS Department of Agriculture & Markets.

- All access roads will be regraded as necessary to create a smooth travel surface, allow crossing by farm equipment, and prevent interruption of surface drainage. Temporary water bars and culverts shall be removed if they are no longer necessary.

- Restored agricultural areas will be stabilized with seed and/or mulch. In areas to remain in hay production, a seed mix will be selected in consultation with the landowner. If future crop type is undetermined at the time of restoration, the site shall be seeded with annual rye or similar cover crop, or as agreed to with the landowner. If restoration occurs outside of the growing season, restored areas will be stabilized by mulching with hay or straw.

- Following restoration of all disturbed areas, any excess topsoil shall be distributed in agricultural areas of the site if practicable without adversely impacting site drainage. All such activity will be as directed by the EM based on guidance provided by the landowner.

- Any surface or subsurface drainage features, fences or gates damaged during construction shall be repaired or replaced as necessary.

- All construction debris will be removed and disposed of off site at the completion of restoration.

- The project developer will review the restored site with the Department of Ag and Markets and the landowner during the following growing season to identify and correct any project-related problems (drainage, compaction, etc.) that may not have been apparent immediately following restoration.

Two-Year Monitoring and Remediation

- The Project Sponsor will provide a monitoring and remediation period of no less than two years immediately following the completion of initial restoration. The two year period allows for the effects of climatic cycles such as frost action, precipitation and growing seasons to occur, from which various monitoring determinations can be made. The monitoring and remediation phase will be used to identify any remaining agricultural impacts associated with construction that are in need of mitigation and to implement the follow-up restoration.

- General conditions to be monitored include topsoil thickness, relative content of rock and large stones, trench settling, crop production, drainage and repair of severed fences, etc. Impacts will be identified through on site monitoring of all agricultural areas impacted by construction and through contact with respective farmland operators and the Department of Agriculture and Markets.

- Topsoil deficiency and trench settling shall be mitigated with imported topsoil that is consistent with the quality of topsoil on the affected site. Excessive amounts of rock and oversized stone material will be determined by a visual inspection of disturbed areas as compared to portions of the same field located outside the construction area. All excess rocks and large stones will be removed and disposed of by the Project Sponsor.

- When the subsequent crop productivity within affected areas is less than that of the adjacent unaffected agricultural land, the Project Sponsor as well as other appropriate parties, will help to determine the appropriate rehabilitation measures to be implemented. Because conditions which require remediation may not be noticeable at or shortly after the completion of construction, the signing of a release form prior to the end of the remediation period will not obviate the Project Sponsor's responsibility to fully redress all project impacts. After completion of the specific remediation period, the Project Sponsor will continue to respond to the reasonable requests of the farmland owner/operator to correct project related affects on the impacted agricultural resources.

- Subsoil compaction shall be tested using an appropriate soil penetrometer or other soil compaction measuring device. Compaction tests will be made for each soil type identified on the affected agricultural fields. The subsoil compaction test results within the affected area will be compared with those of the adjacent unaffected portion of the farm field/soil unit. Where representative subsoil density of the affected area exceeds the representative subsoil density of the unaffected areas, additional shattering of the soil profile will be performed using the appropriate equipment. Deep shattering will be applied during periods of relatively low soil moisture to ensure the desired mitigation and to prevent additional subsoil compaction.

- Oversized stone/rock material which is uplifted to the surface as a result of the deep shattering will be removed.

Appendix D
Wetland Inventory Report

TETRA TECH EC, INC.

MEMORANDUM

Date: December 3, 2007

To: Patrick Doyle, Jericho Rise Wind Farm LLC

From: Lucia Kearns, Tetra Tech EC, Inc.

Cc: Dan Fitzgerald, Jericho Rise Wind Farm LLC

RE: **Jericho Rise Wind Farm (formerly Burke Wind Power Project)**
Wetland Inventory Report Update

As you know, Tetra Tech completed a wetland inventory for Jericho Rise Wind Farm LLC (formerly Horizon Wind Energy), for the Jericho Rise Wind Farm, formerly Burke Wind Power Project (Project), in the fall of 2006. Attached to this letter is the final version of the report for this field analysis for your records. Since this initial issuance of this report to Jericho Rise Wind Farm LLC, and per the request of the Towns of Bellmont and Chateaugay, the project size and location has changed to exclude the Town of Burke. Additionally the name has officially changed from Burke Wind Power Project to Jericho Rise Wind Farm.

This study was conducted using Project Layout Revision 5 of the project layout which included the Towns of Burke, Chateaugay, and Bellmont New York. Also included in the report is a desktop inventory that was conducted on the subsequent Project Layout Revision 6. A full wetland delineation on the revised Jericho Rise Wind Farm Project area is planned for the spring/summer of 2008.

133 Federal Street, 6th Floor, Boston, MA 02110
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Wetland Inventory Report

for the

Burke Wind Power Project
Franklin County, New York

Prepared for

Horizon Wind Energy
3 Columbia Place
Albany, New York 12207

Prepared by

TETRA TECH EC, INC.

January 2007

TABLE OF CONTENTS

FIGURES

TABLES

ATTACHMENTS

1.0 INTRODUCTION

Horizon Wind Energy (Horizon) contracted with Tetra Tech EC, Inc. (Tetra Tech) to perform a field inventory of wetlands and waterbodies associated with the proposed Burke Wind Power Project (Project), Revision 5 of the conceptual design, located in Franklin County, New York. After completion of the wetland inventory, the conceptual layout of the Project facilities was revised to avoid and/or minimize impacts to wetlands identified during the field effort. Subsequently, an additional desktop inventory was conducted on this revision (Revision 6).

Wetlands within the Project area fall under the jurisdiction of the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Army Corps of Engineers (ACOE). New York State's freshwater wetlands are protected under Article 24 of the Environmental Conservation Law, commonly known as the Freshwater Wetlands Act. The NYSDEC defines wetlands as "Those areas of land and water that support a preponderance of characteristic wetland plants that out-compete upland plants because of the presence of wetland hydrology (such as prolonged flooding) or hydric (wet) soils. Freshwater wetlands commonly include marshes, swamps, bogs, and fens" (NYSDEC, 2005). The ACOE does not recognize delineations performed outside of the growing season.

Wetlands provide critical habitat to a variety of plants and animals, which are often dependent upon the characteristic attributes of wetland ecosystems. In addition to wildlife value, wetlands offer hydrological benefits such as water quality improvement, floodwater retention, and erosion control. Therefore, alterations or the destruction of wetlands may result in a decline in water quality downstream or in adjacent lakes. In addition, wetlands have a recreational significance as they contribute to the aesthetic value of the landscape as well as provide habitat to numerous game species of fish and wildlife. For example, these areas provide important hunting, fishing, bird watching, photography and other recreational opportunities.

Data collected during the Project wetlands inventory will be used to supplement information presented in the environmental impact statement, pursuant to New York's State Environmental Quality Review Act. In addition, information gained from this inventory will identify sensitive habitats and allow Horizon to locate Project facilities in ways that minimize or avoid unnecessary impacts to wetlands and waterbodies. This report provides a description of the Federal and State freshwater wetlands identified in the Project area. Included are a description of the Project site, methods used to inventory wetlands, information reviewed, field inventory results, and references. Copies of datasheets and sketch maps, and wetland photographs recorded during the field effort are provided in Appendices A and B, respectively.

2.0 SITE DESCRIPTION

The Project encompasses approximately 10,758 acres of leased private lands comprised of approximately 55 percent upland forest, most of which is in the southern portion of the Site. Forty-four percent of the area consists of agricultural lands, which are mostly found in the northern portion of the Project area. The remaining two percent of land cover is made up of developed lands, open water, and wetland habitat. The proposed 168-megawatt (MW) Project consists of 80 wind turbine generators (WTGs) with associated access roads (Figure 1), a 34.5 kV power collection system, and an overhead interconnection with an existing 115 kV electric transmission line. Ancillary facilities also include storage/laydown areas, a new substation at the point of transmission interconnection, and may include other associated facilities.

The Project is located in the towns of Burke, Bellmont, and Chateaugay in the north east corner of Franklin County, New York (Figure 1). The Project is roughly bound by Canada to the north, Clinton County to the east, and the Adirondack State Park to the south. The western extent of the Project area is not defined by administrative boundaries, and is approximately one mile east of Burke, New York.

Project elevations range from approximately 900 feet to 1500 feet above mean sea level. Chateaugay River and its tributaries drain the eastern portion of the Project. Allen Brook and Alder Brook begin in the eastern portion of the Project and drain in a west to north-west direction, including their tributaries, until they leave the Project area. The Little Trout Stream begins south-east of the Project and courses in a north-west direction through the Project area (including its tributaries) until it leaves the Project area on the north-west side.

Minor local roads and major local roads bisect the Project site and state highways travel to the north and east of the Project. Rural residential properties and agricultural properties border the minor and major local roads. The state highways are Route 11 to the north of the Project and Route 374 to the east. Major local roads include Mary Cary Road, Mahoney Jericho Road, Cook Road, Hartnett Road, Toohill Road, Quarry Road, River Road, Brainardsville Road, Legacy Road, and Ponderosa Road

3.0 METHODS

Wetlands and waterbody naming conventions were used to standardize the way field inventoried features were recorded on datasheets, GPS waypoints and in the desktop review. In the field inventory, wetlands identified within 250 feet of a WTG were identified as WTG wetlands, wetlands identified within the 40-foot right-of-way of an access road or road widenings were identified as AR wetlands, and those within the 25-foot interconnect corridor were identified as IC wetlands. WTG wetlands were further identified by the turbine number with which they were associated, while wetlands identified in access roads and interconnects were assigned the number associated with the nearest WTG. Alphabetical suffixes were sequentially added when multiple wetlands or waterbodies were identified within the facility of interest. For example, a wetland within 250 feet of WTG 2 would be identified as WTG-2A, and a second wetland found within the access road outside of the 250-foot radius leading to WTG 2 would be identified as AR-2B. Stream names are consistent with the above description but include the suffix, "-ST" to differentiate between streams and wetlands. In the desktop review, wetlands and stream names were assigned as outlined in the field inventory, but contain the code "DR" to designate its origin from the desktop review.

Field and desktop wetland inventories serve to identify probable locations of wetlands that may be affected by construction and operation of the Project. For purposes of understanding the magnitude of these affects, the area of wetlands that are crossed by the each revision of the Project layout was calculated using dimensions described in Table 1. Note that for some wetlands, construction methods could be employed to minimize or avoid impacts to wetlands.

3.1 Information Review

Desktop information reviewed prior to field mobilization included U.S. Geological Survey 7.5-minute topographic maps, NYSDEC Freshwater Wetland and Stream Maps, and National Wetland Inventory (NWI) Maps that were associated with the Project, and the Franklin County Soil Survey (USDA SCS, 1958).

3.2 Wetland Delineation Methods

Methods described in the 1995 New York State Freshwater Wetlands Delineation Manual (Browne *et al.* 1995) were used to inventory wetlands within areas potentially affected by the Project. For this inventory, boundaries were delimited primarily based upon visual inspection of vegetation and hydrology. Table 2 provides a list of all WTGs searched and those where access was not available.

A field review of the on-site wetlands was conducted from October 27, 2006 through November 10, 2006. All wetlands were identified within 250 feet of the proposed WTG locations and a 40-foot wide corridor (20 feet of either side of the centerline) for the proposed access roads and a 15-foot interconnect corridor based on a Project layout designated as Revision 5. Wetland boundaries were determined by visual inspection of vegetation and hydrology. The identified wetland boundaries were marked in the field with pink surveyor flagging, and the corresponding GPS waypoints were recorded using a Trimble© GeoXT™ handheld unit. Data collection was limited to recording the dominant vegetation and cover type(s) and sketches of the wetland boundaries. Cover types assigned to wetlands were based on the NWI classification hierarchy (Cowardin *et al*., 1979). Cover types were assigned by determining the most abundant cover type in the wetland. A wetland was assigned multiple cover types if more than one class comprised at least 30 percent aerial coverage. Copies of datasheets and sketch maps, and wetland photographs recorded during the field effort are provided in Appendices A and B, respectively.

3.3 Stream Delineation Methods

Streams that crossed turbine locations; or associated access roads, road widenings or interconnect were identified in the field and recorded on stream datasheets. Characteristics including width, depth, substrate, and bankside vegetation were noted, and streams encountered were documented with photographs. Wetland drainages were noted on sketch maps but not recorded on stream sheets unless definite features of streambed and bank were observed. Stream locations were flagged with pink surveyor flagging and the location of the flagged boundaries were recorded with the GPS unit. If a stream was less the 5 feet wide only the location of the stream centerline was recorded with the GPS; however, if the stream width was greater than five feet, the location of both banks were recorded. Copies of stream data sheets and stream photographs recorded during the field effort are provided in Attachments A and B, respectively.

3.4 Desktop and GIS Analysis

Wetlands and waterbodies crossed by the Revision 6 layout were delineated utilizing desktop delineation methods. This method compiled information from the NYSDEC Freshwater Wetlands and Streams mapped data (dated 1989), the NWI mapped data (dated 1977), USGS 7.5-minute topographic base maps (Burke 1964, Chateaugay 1964, Chasm Falls 1964, and Brainardsville 1964 quadrangles), recent aerial photography of Franklin County (dated 2003), and the Natural Resources Conservation Service (NRCS) soils maps for Franklin County (dated 1958) (soils information was scanned into digital format and geo-referenced over the Project area). Using GIS ArcMap 9.1 software, these datasets were analyzed to identify probable locations of wetlands and waterbodies. Wetlands delineated within 250 feet of a WTG were identified as WTG wetlands, wetlands delineated within the 40-foot right-of-way of an access road or road widenings, were identified as AR wetlands, and those within the 15-foot interconnect corridor were identified as IC wetlands.

4.0 RESULTS

Wetlands and waterbodies crossed by the Project were identified in a two-tiered approach. In the first phase, a field-based inventory of wetlands and waterbodies was conducted for all Project facilities where access was available. Information from this field inventory was reviewed in GIS and used to modify the Project layout with emphasis on reducing impacts to wetlands and waterbodies. A desktop review of the Revision 6 Project layout was subsequently conducted to evaluate the potential impacts to wetlands and waterbodies. This desktop review was only conducted on portions of the Project that were not reviewed in the field.

4.1 Wetlands Associated with Revision 5 of the Project Layout

Figure 2 shows the 67 wetlands that were identified during the field inventory using the Revision 5 Project layout. Wetland cover types identified in the Project site included palustrine forested (PFO), palustrine scrub shrub (PSS), palustrine emergent (PEM), and PFO/PSS, PFO/PEM, and PSS/PEM complexes, and are listed in Table 3. The highest number of wetlands identified during the field-based wetlands inventory occurred within the access road rights-of-way (n=36 wetlands), with similar numbers of wetlands occurring in the interconnect rights-of-way (n=31) and turbine rights-of-way (n=29).

Wetlands were identified at both the substation and proposed laydown yard locations as well. The total acreage of wetlands that were identified within the Project access roads, interconnects, and WTG locations totaled 9.14, 2.76, and 38.91 acres, respectively. Nine of the field reviewed wetlands were associated with mapped NWI wetlands and one was classified as a NYSDEC wetland. These are also indicated in Table 3.

Forested wetlands along the interconnect routes are typically not subject to permanent loss of wetland habitat, but rather represent areas where right-of-way maintenance may permanently convert wetlands from one cover type to another. Forested wetlands located in interconnects may be converted to scrub-shrub or emergent wetlands directly above the interconnect route within the 15 foot construction right-of-way. Wetlands that could be subject to habitat conversion are described in Table 4.

4.2 Surface Waterbodies Associated with Revision 5 of the Project Layout

Four perennial surface waterbodies were identified at the Project site and occurred within the access road rights-of-way. Surface waterbodies were not identified within WTG location areas. Table 5 lists each watercourse crossed by the Revision 5 Project layout, and lists NYSDEC Stream Classification. Other descriptive information including flow regime, speed and direction, and stream width, depth, substrate, bank vegetation and wetland association area also provided in Table 5. Stream crossings are depicted in Figure 2. The total length of stream crossings within the access roads is approximately 26 feet.

Policies to preserve and protect New York lakes, rivers, streams and ponds are established under the Environmental Conservation Law (Article 15). New York designates surface freshwater resources based on best usage classifications and standards (6NYCRR Part 701) or on wild, scenic and recreation value (6NYCRR Part 666). Wild, Scenic and Recreation Rivers were not identified at the Site. Certain waters of the State are protected on the basis of their classification pursuant to 6NYCRR Part 608 Protection of Waters. Protected waters include waters with the classifications and standards of: AA, AA(t), A, A(t), B, B(t) or C(t). State water quality classifications of watercourses within the Project area fall into one category, Class C streams. Classification C is for waters supporting fisheries and suitable for non-contact activities. Waters with C classifications may also have a standard of (t), indicating that it may support a trout population. In addition, small lakes and ponds with a surface area of 10 acres or less, located within the course of a stream, are considered to be part of a stream and are subject to regulation under. NYSDEC stream locations are depicted in Figure 1.

Both Allen Brook, which runs though the north section of the Project, and Alder Brook which runs through the central part of the Project, are classified as Class C(t) streams. Two of the four waterbodies documented at the proposed Project site are not classified by the NYSDEC. One other NYSDEC stream that that is crossed by the Project, the Little Trout Stream, a Class C(t) stream, was not field reviewed by the field team because they did not have property access during the field review effort.

4.3 Vegetation Associated with Revision 5 of the Project Layout

Only dominant vegetation, comprising at least 50 percent relative abundance was recorded on field datasheets. Vegetation included canopy species such as fir, maples, and elms; subcanopy species including gray birch; shrub species such as dogwoods and nannyberry; and herbaceous species such as goldenrods, ferns, and rushes were observed within Project wetlands. Sphagnum was commonly observed; although not listed in Reed (1988), sphagnum is considered a wetland obligate when relative abundance exceeds 20 percent. Table 6 lists the major plant species encountered during the field inventory of the Revision 5 Project layout.

4.4 Wetlands and Waterbodies Associated with Revision 6 of the Project Layout

A total of 65 wetlands would be crossed by Project facilities associated with the Revision 6 layout. Based on the desktop delineation method, the Revision 6 layout has the potential to impact a total of 35.1 acres of wetlands, of which 22.4 acres would be temporarily impacted, and 12.7 acres would be permanently impacted. Of the permanent wetland impacts, 0.3 acres were associated with WTG wetlands and 3.2 acres were associated with AR wetlands. Of the temporary wetland impacts, 14. 4 acres were associated with WTG wetlands, 2.7 acres were associated with AR wetlands, and 3.65 acres were associated with IC wetlands. The remaining 10.8 acres of impacts are attributed to 1.6 acres of temporary impacts for staging areas and 9.3 acres of permanent impacts for the substation. Table 7 lists wetland impacts for each wetland. Wetland cover classes within the Project area consists of palustrine forested (PFO), palustrine scrub/shrub (PSS), palustrine emergent (PEM), and PFO/PSS, PFO/PEM, and PSS/PEM complexes.

Forested wetlands along the interconnect routes are typically not subject to permanent loss of wetland habitat, but rather represent areas where right-of-way maintenance may permanently convert wetlands from one cover type to another. Forested wetlands located in interconnects may be converted to scrub-shrub or emergent wetlands, directly above the interconnect route within the 15 foot construction right-of-way. These wetland segments are listed in Table 8.

Within the Revision 6 Project layout, one stream is B(t); 28 streams are C(t); and ten streams are not regulated by the DEC. The Revision 6 Project layout would cross a total of 39 streams, including one overhead transmission line span of the Chateaugay River. Of the 39 stream crossings, 22 of the streams are perennial and 17 are intermittent. Stream crossings are listed in Table 9.

5.0 RECOMMENDATIONS

Tetra Tech recommends that Horizon conduct a complete wetland delineation using the 1987 ACOE three-parameter approach (i.e., presence of wetland vegetation, wetland hydrology, and hydric soils) during the 2007 growing season to verify the locations and extent of boundaries of wetlands and streams crossed by the Project. Field verification will allow wetland biologists to identify hydrologically connected and isolated wetlands, as well as to verify that all wetlands and waterbodies identified in the field inventory and desktop review meet the requirements of all three wetland parameters used in the ACOE delineation methods.

For future changes to the Project layout, Tetra Tech also recommends that a wetland biologist be present during turbine staking to identify the presence of wetlands and waterbodies. This should include a field investigation of all areas that would be affected by temporary / permanent construction limits (e.g., access roads, interconnects, etc.).

Overall impacts to wetlands and waterbodies could be minimized by employing construction techniques that avoid these sensitive areas, including using a reduced workspace through wetlands crossings; changing the location of rotor blade laydowns; making minor adjustments to locations of Project facilities to avoid discrete wetland boundaries; and for interconnects, using horizontal directional drilling methods for protected wetlands and streams crossings.

For future projects, Tetra Tech recommends that a desktop review of available information is conducted early during project planning. Wetland surveys frequently identify more wetland acreage than are indicated by mapped wetland information alone, and often result in revisions to the project layout to avoid impacts to these sensitive areas. The direct result is additional cost and time needed to conduct additional wetland surveys, and could result in additional environmental permitting. At the earliest stage in project siting, Tetra Tech recommends conducting a comprehensive preliminary desktop wetlands and waterbodies analysis of the project area, including the identification of mapped state and federal wetlands in addition to a comprehensive GIS-based wetland interpretation using soils, topographic, photo-aerial, and other applicable data. Desktop reviews conducted in this manner are subject to error, and are not intended to replace field-based wetlands delineation; however, a desktop analysis of the project area would reduce some of the "unknown" wetland constraints that are responsible, in part, for changes to project layout. This environmental review would provide project engineers with more information to consider when it becomes necessary to revise the conceptual design.

6.0 REFERENCES

Browne, S., Crocoll, S., Goetke, D., Heaslip, N., Kerpez, T., Kogut, K., Sanford, S., and Spada, D. 1995. *New York State Freshwater Wetlands Delineation Manual*. New York State Department of Environment and Conservation, July 1995. 35 pp plus appendices.

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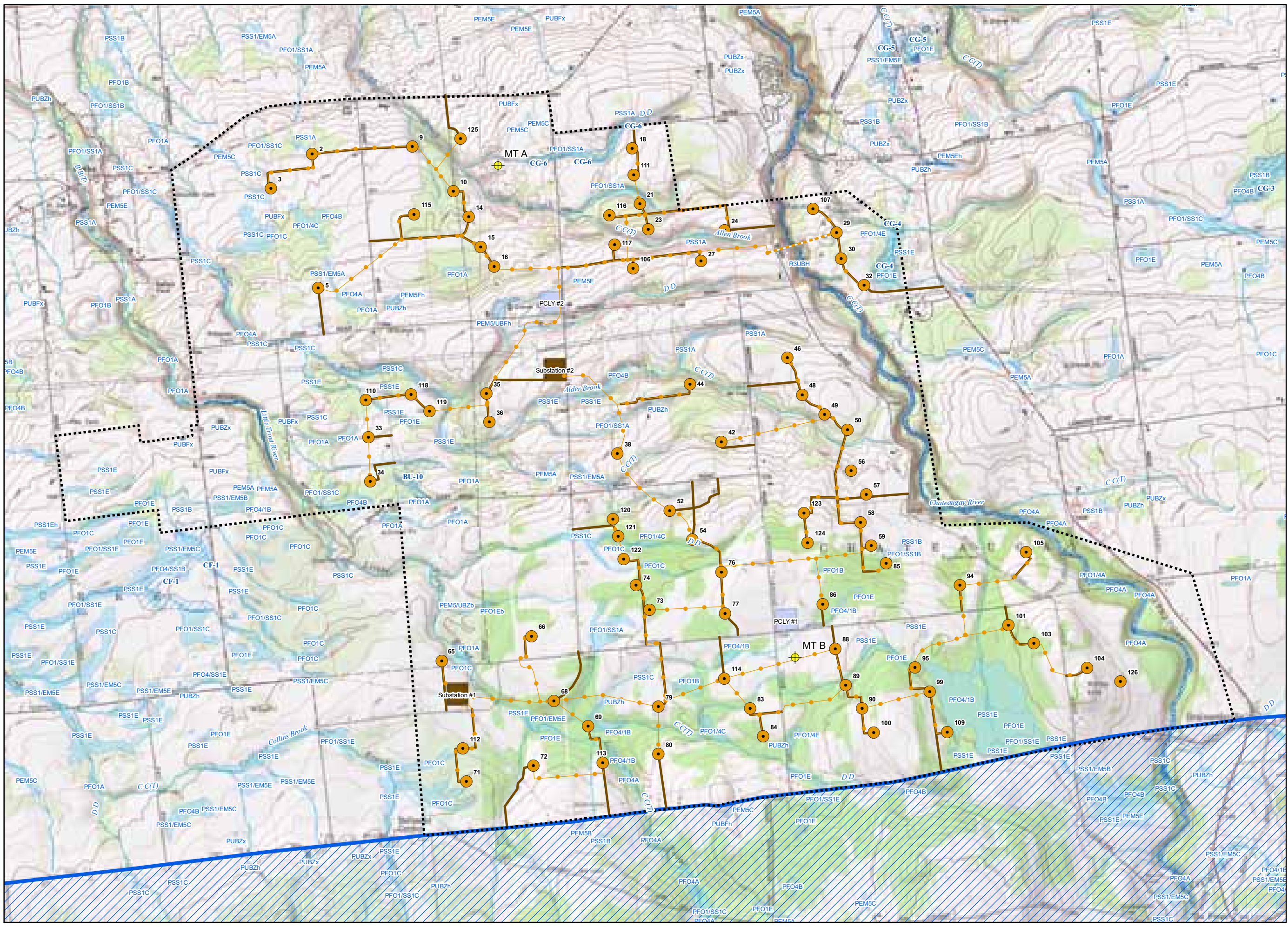
Figures



LEGEND

- Project Boundary
- Proposed Met Tower
- Turbine (Rev 5)
- Proposed Interconnect (Rev 5)
- Proposed Overhead Interconnect (Rev 5)
- Proposed Access Road (Rev 5)
- Proposed Substation
- Proposed Construction Laydown Yard
- NWI Wetland
- NYSDEC Stream
- NYSDEC Surface Water
- NYSDEC Wetland

Horizon

TETRA TECH EC, INC.

Burke Wind Power Project

FIGURE 1

New York State DEC and NWI Mapped Wetlands Revision 5

USGS Topographic Basemap

PROJECT OVERVIEW

Franklin County, New York
Dec 15, 2006

Topographic Source:
National Geographic - USGS 7.5 minute Quadrangles
Burke, 1969; Chateaugay, 1969; Chasm Falls, 1969; Brainardsville, 1969

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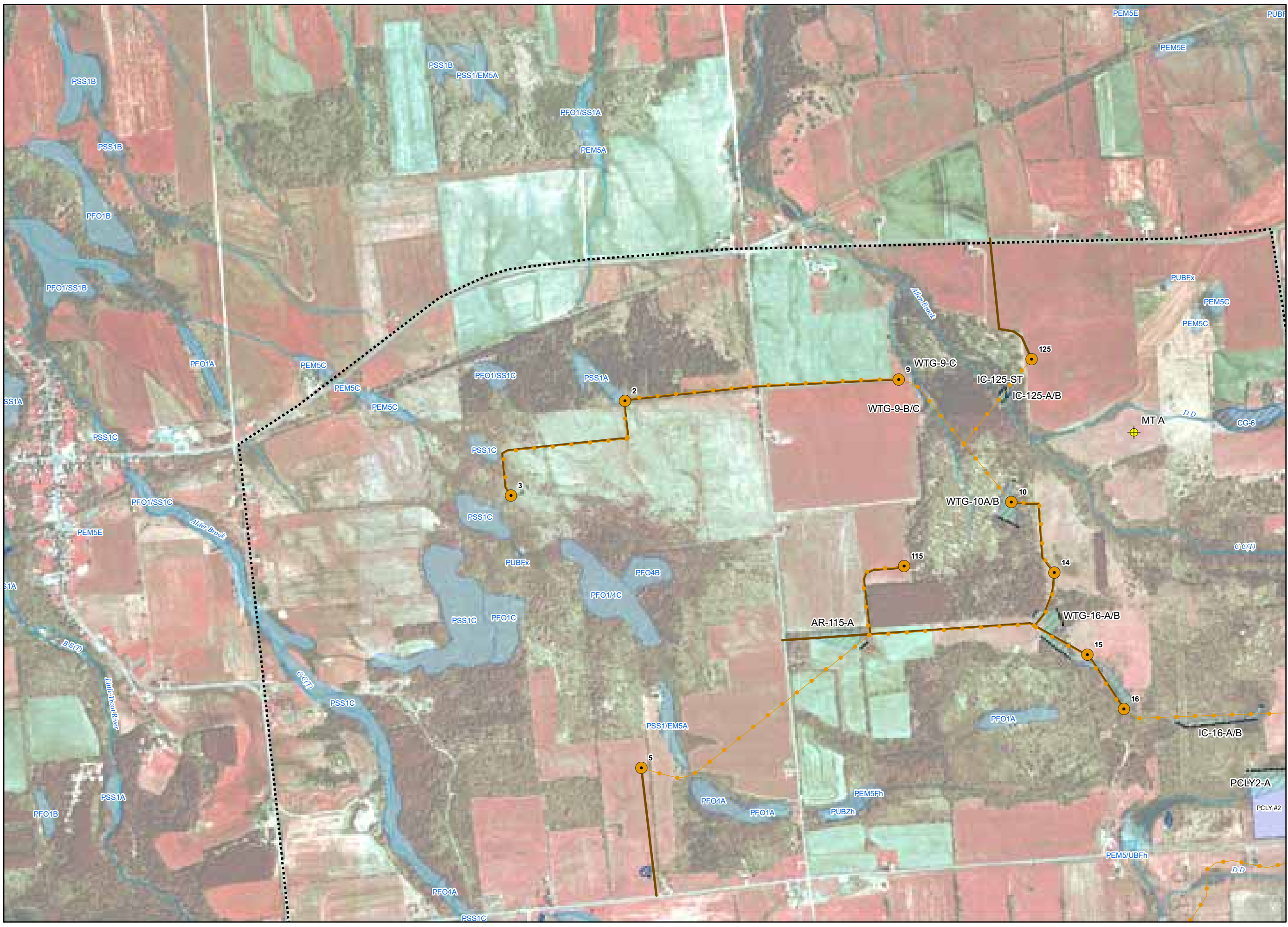

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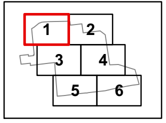

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- Proposed Construction Laydown Yard
- TtEC Field Delineated Stream
- TtEC Field Reviewed Wetland Continuation
- TtEC Field Delineated Wetland

0 300 600 1,200 Feet

Burke Wind Power Project

FIGURE 2

Revision 5
Field Identified
Wetlands and Streams

Aerial Image Basemap

TILE 1

Franklin County, New York

Dec 18, 2006

Aerial Image Source:
NYS Department of State, Division of Coastal Resources, GIS Unit
NYS 2000 Digitally Enhanced Orthoimagry, 2000

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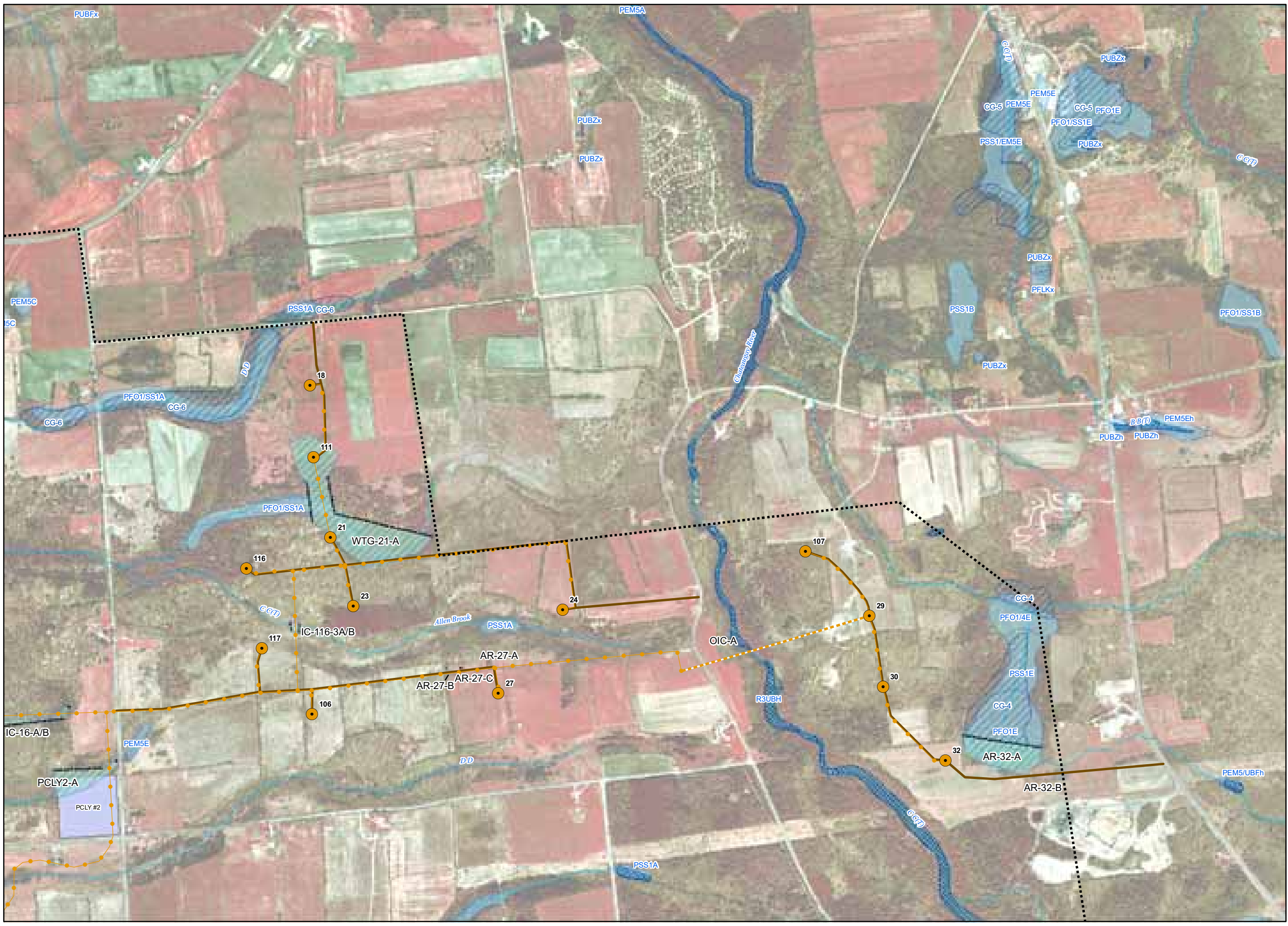

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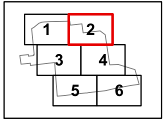

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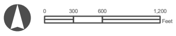

Horizon

TETRA TECH EC, INC

Burke Wind Power Project

FIGURE 2

Revision 5
Field Identified
Wetlands and Streams

Aerial Image Basemap

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Dec 18, 2006

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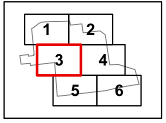

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Horizon

TETRA TECH EC, INC

Burke Wind Power Project

FIGURE 2

Revision 5
Field Identified
Wetlands and Streams

Aerial Image Basemap

TILE 3

Franklin County, New York

Dec 18, 2006

Aerial Image Source:
NYS Department of State, Division of Coastal Resources, GIS Unit
NYS 2000 Digitally Enhanced Orthoimagry, 2000

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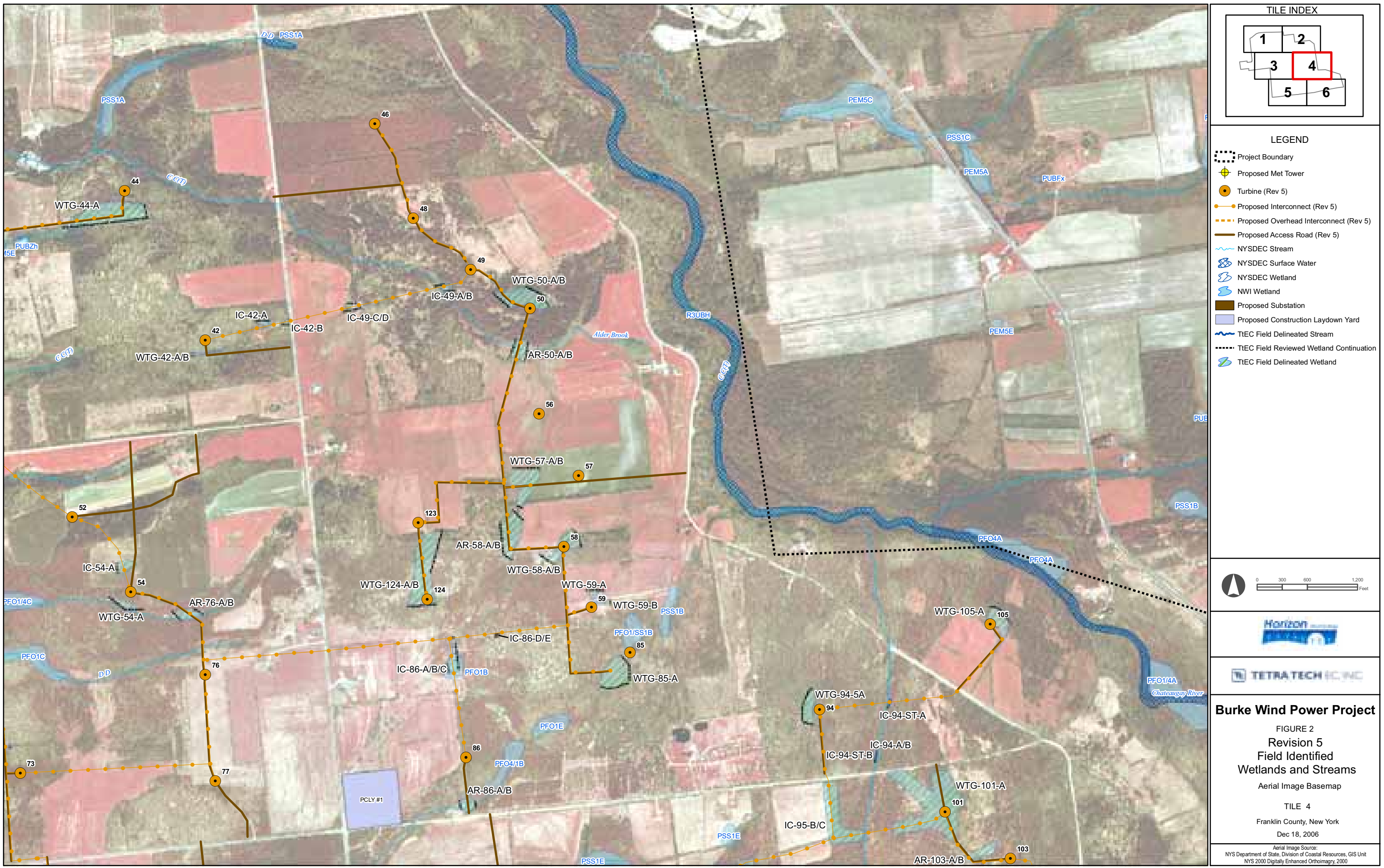

Burke Wind Power Project

FIGURE 2
Revision 5
Field Identified
Wetlands and Streams
Aerial Image Basemap

TILE 4

Franklin County, New York
Dec 18, 2006

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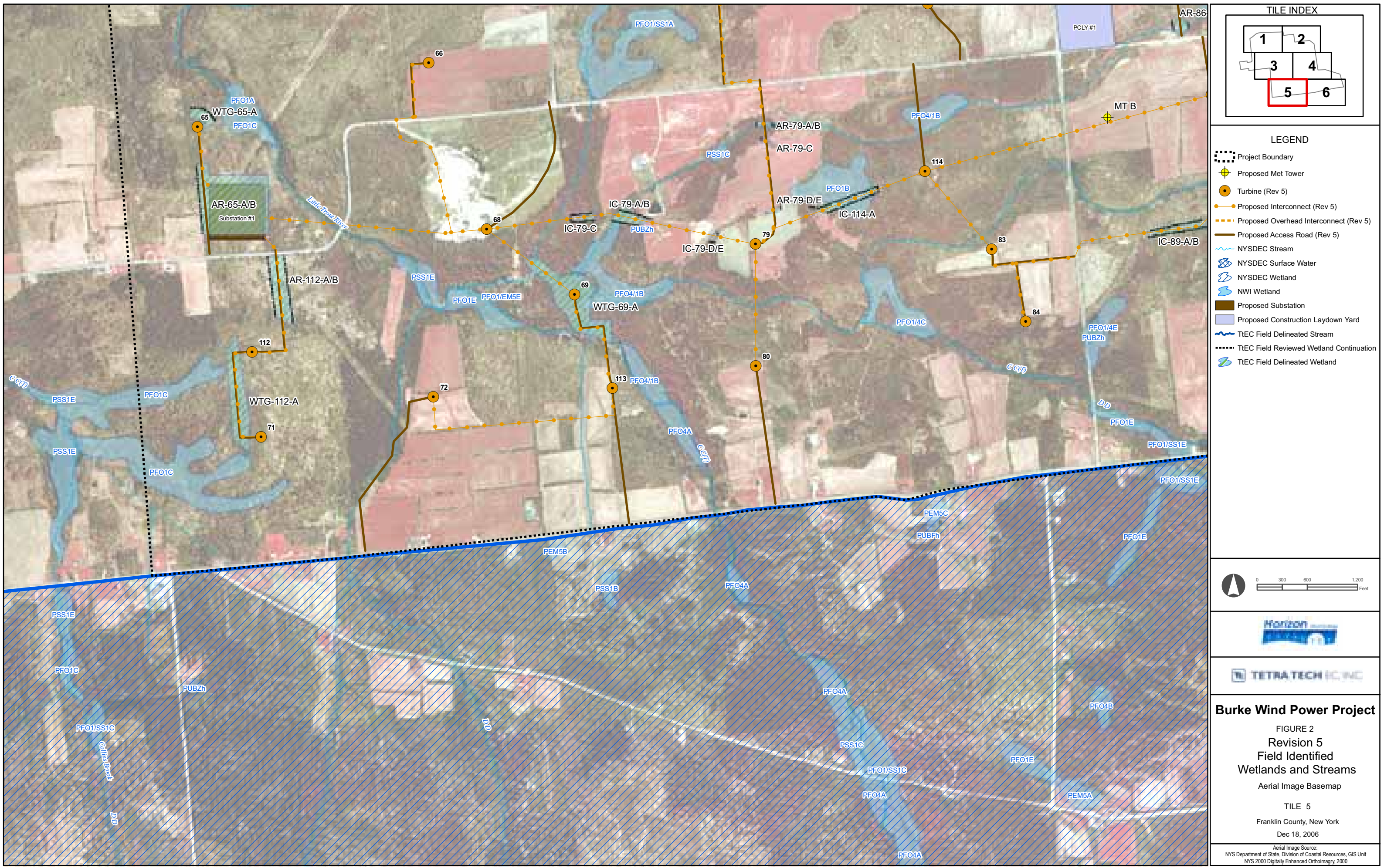

Burke Wind Power Project

FIGURE 2

Revision 5
Field Identified
Wetlands and Streams

Aerial Image Basemap

TILE 5

Franklin County, New York

Dec 18, 2006

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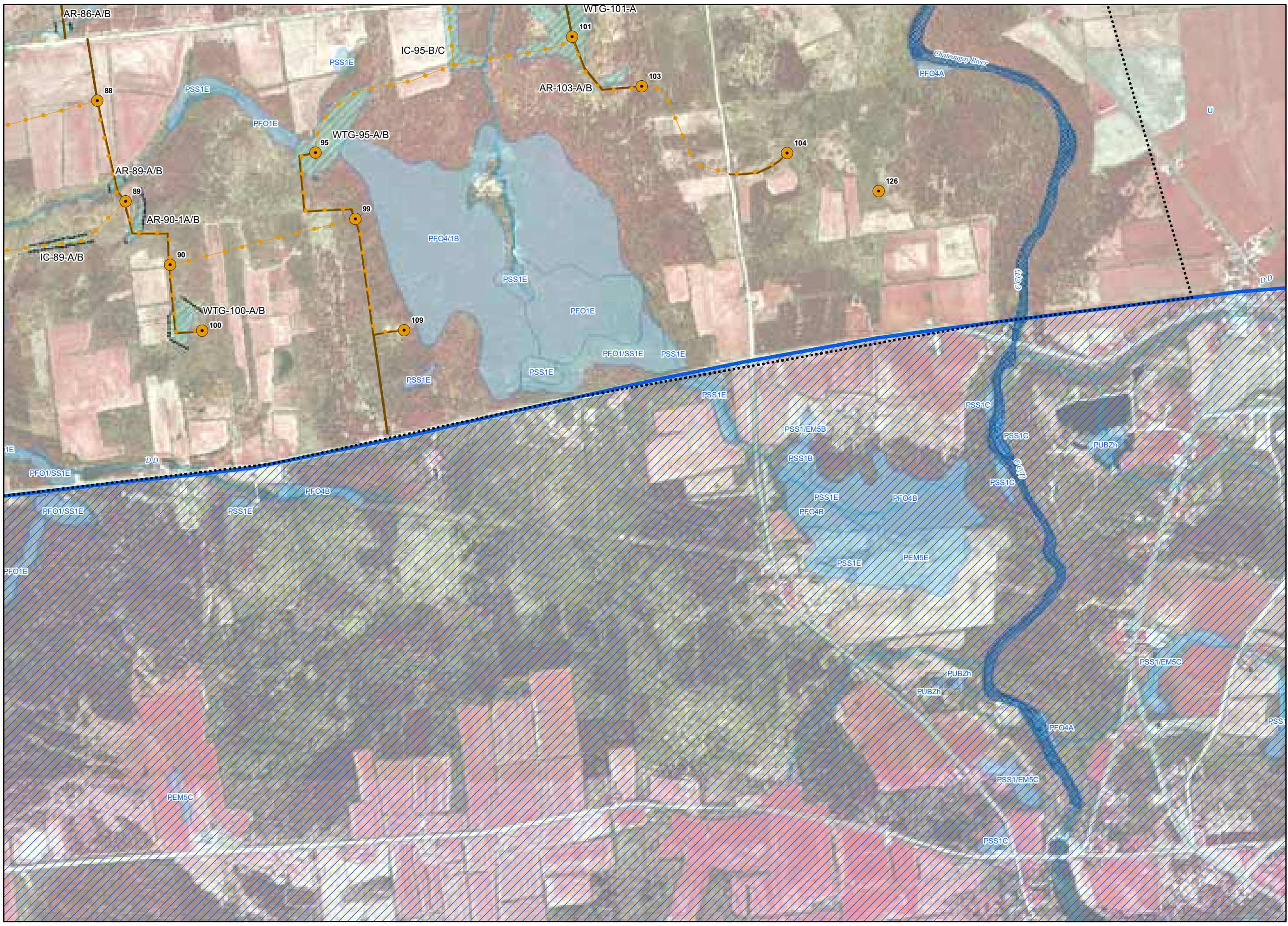

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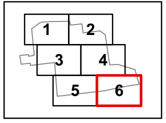

LEGEND

- ⬚ Project Boundary
- ⊕ Proposed Met Tower
- ⊙ Turbine (Rev 5)
- Proposed Interconnect (Rev 5)
- Proposed Overhead Interconnect (Rev 5)
- Proposed Access Road (Rev 5)
- NYSDEC Stream
- NYSDEC Surface Water
- NYSDEC Wetland
- NWI Wetland
- ■ Proposed Substation
- ■ Proposed Construction Laydown Yard
- TtEC Field Delineated Stream
- TtEC Field Reviewed Wetland Continuation
- TtEC Field Delineated Wetland

0 300 600 1,200 Feet

Burke Wind Power Project

FIGURE 2

Revision 5
Field Identified
Wetlands and Streams

Aerial Image Basemap

TILE 6

Franklin County, New York

Dec 18, 2006

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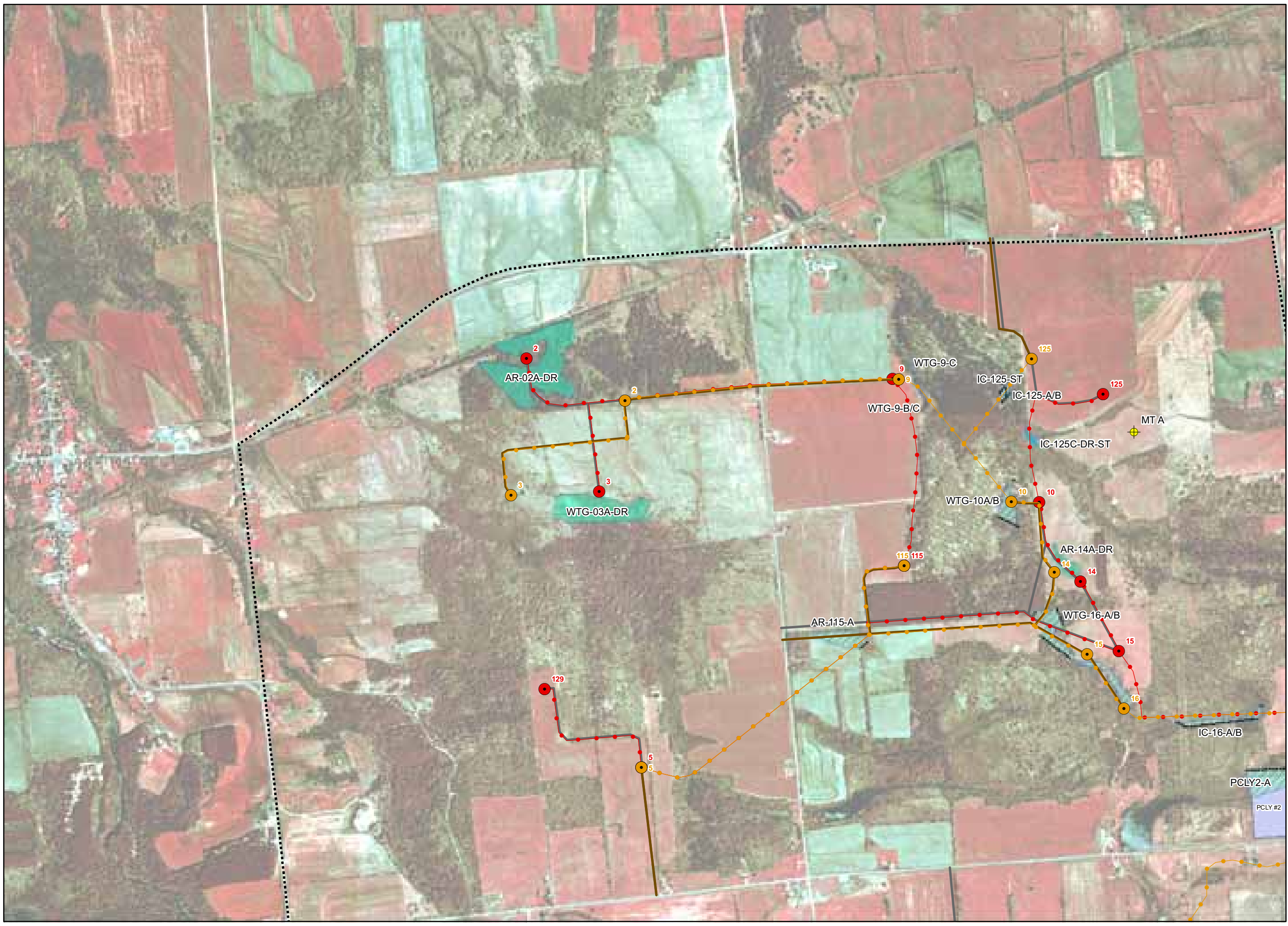

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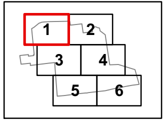

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0 300 600 1,200 Feet

Burke Wind Power Project

FIGURE 3

Comparison of Revision 5 and
Revision 6 Project Layouts Depicting
Wetland and Stream Surveys
Aerial Image Basemap

TILE 1

Franklin County, New York
Dec 18, 2006

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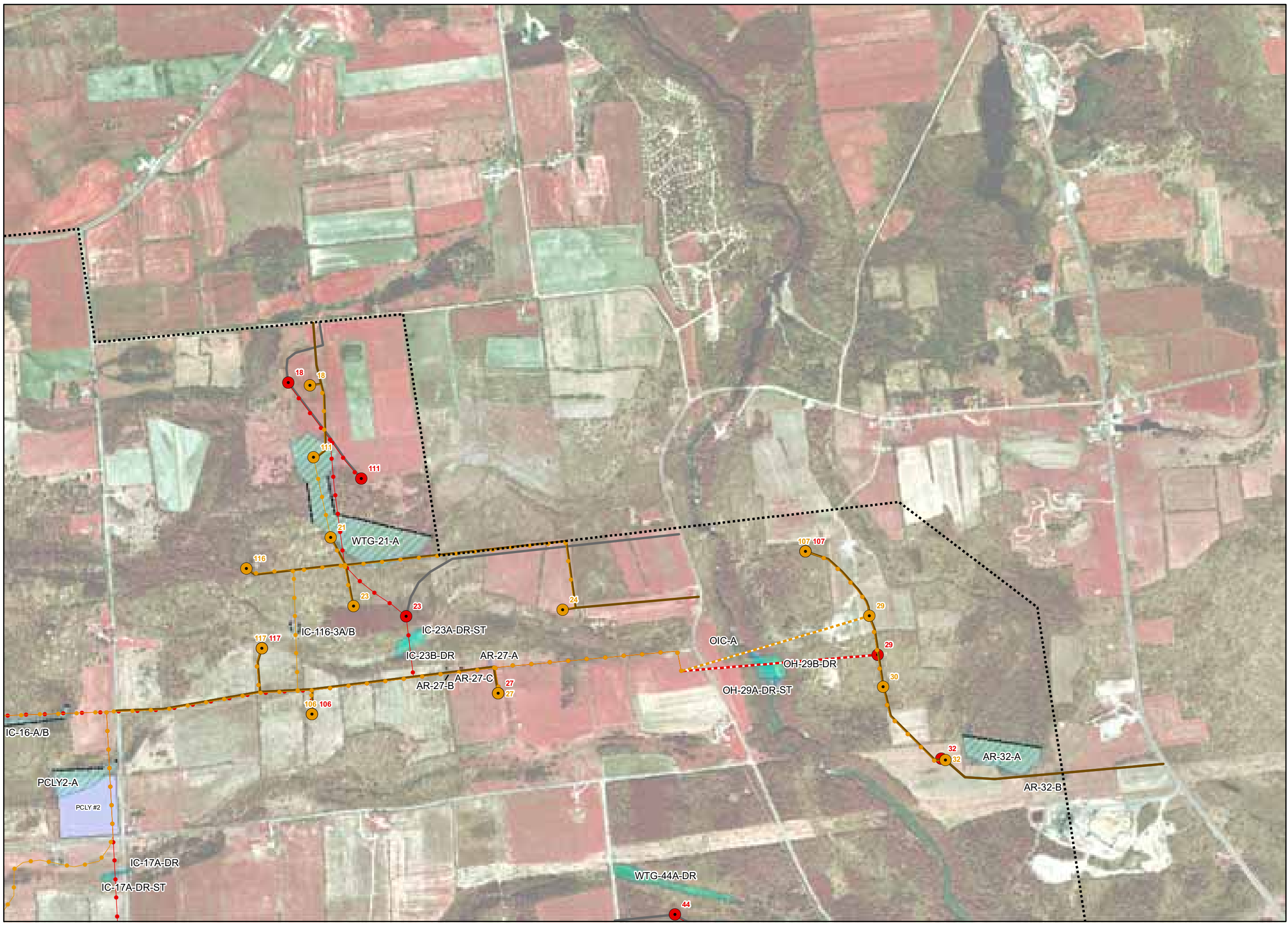

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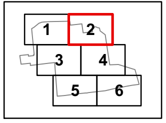

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Burke Wind Power Project

FIGURE 3

Comparison of Revision 5 and Revision 6 Project Layouts Depicting Wetland and Stream Surveys

Aerial Image Basemap

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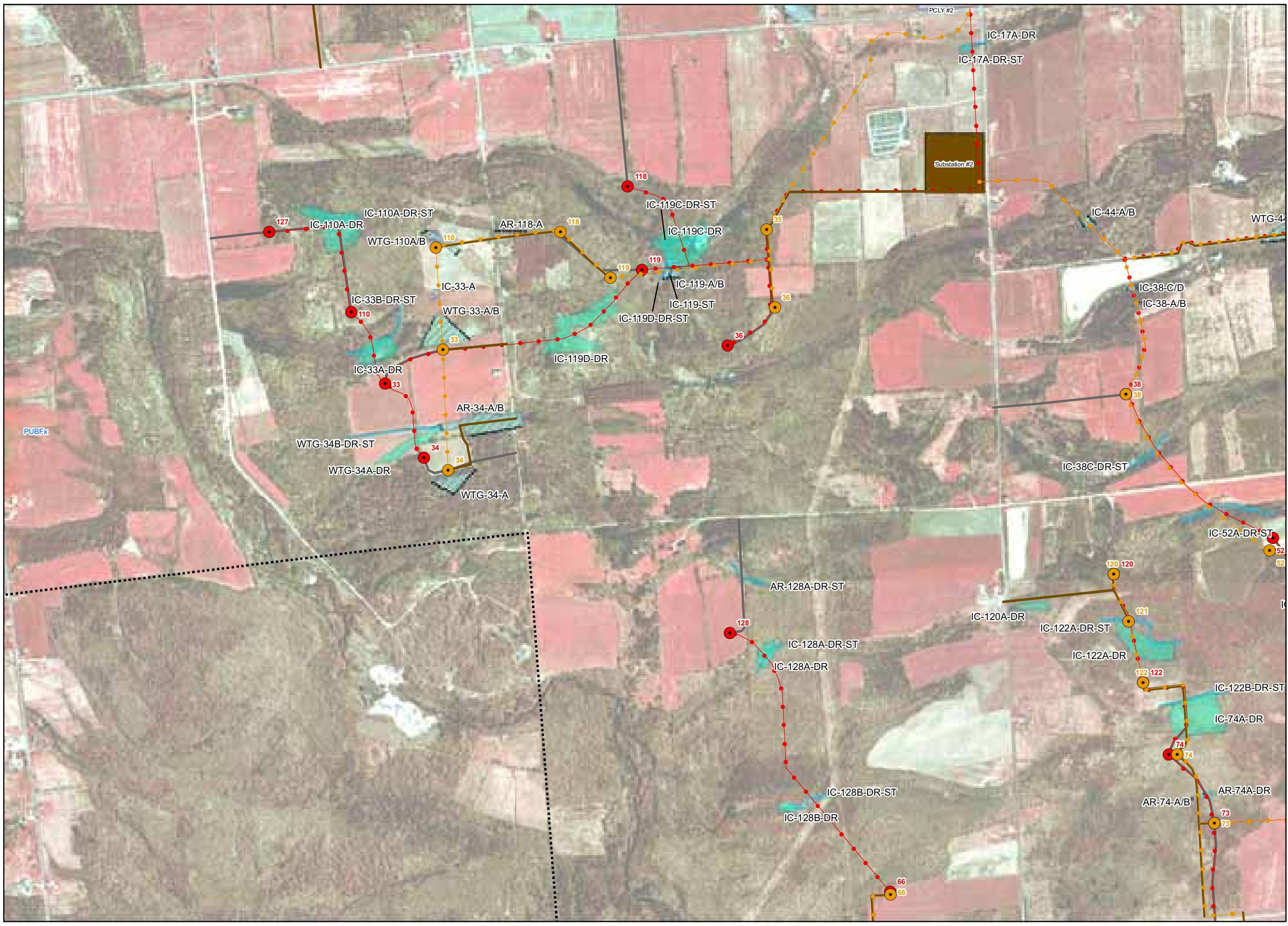

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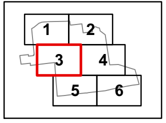

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Horizon

TETRA TECH EC, INC

Burke Wind Power Project

FIGURE 3

Comparison of Revision 5 and Revision 6 Project Layouts Depicting Wetland and Stream Surveys

Aerial Image Basemap

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Franklin County, New York
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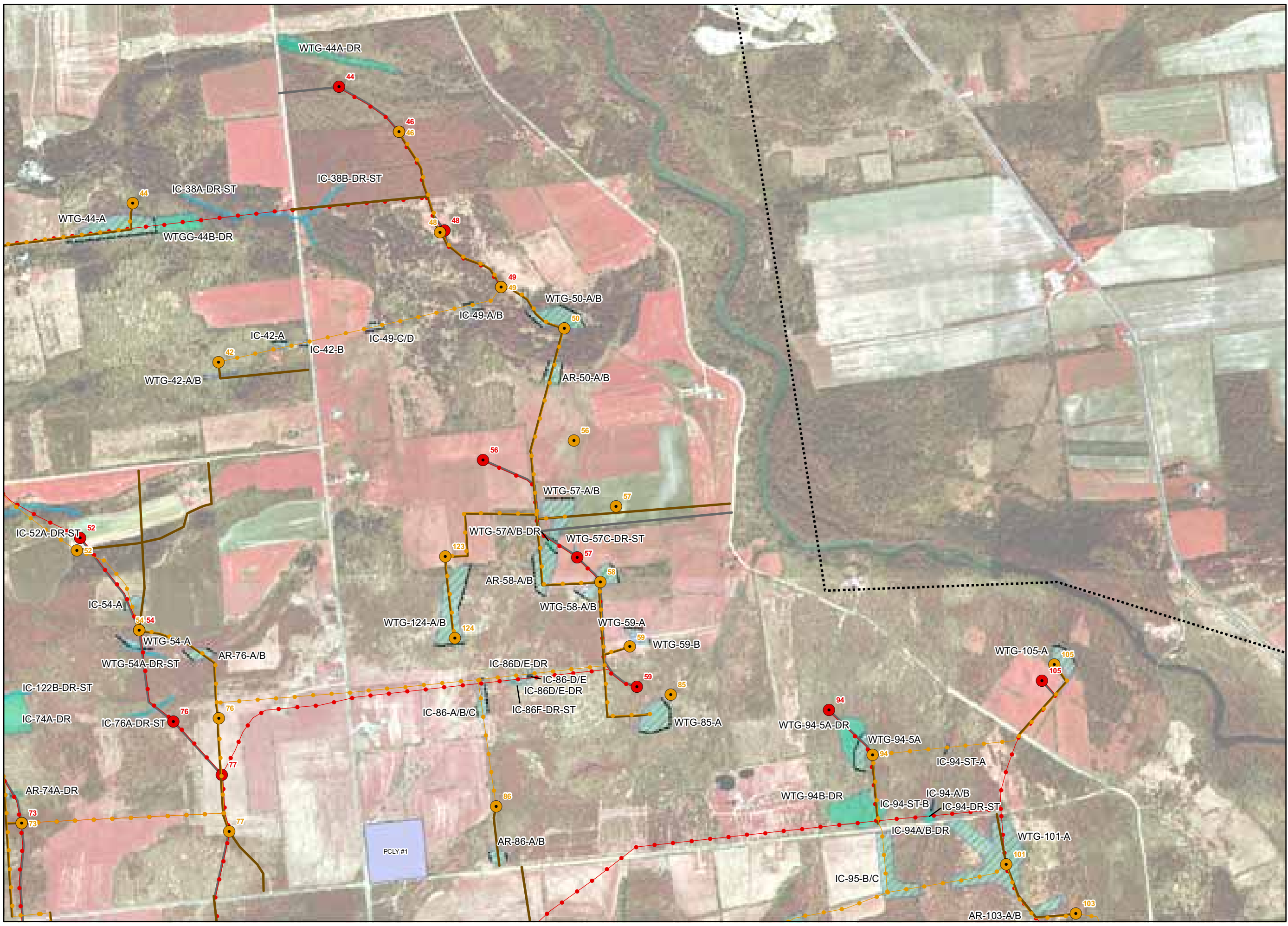

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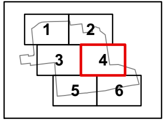

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0 300 600 1,200 Feet

Horizon

TETRA TECH EC, INC

Burke Wind Power Project

FIGURE 3

Comparison of Revision 5 and Revision 6 Project Layouts Depicting Wetland and Stream Surveys

Aerial Image Basemap

TILE 4

Franklin County, New York
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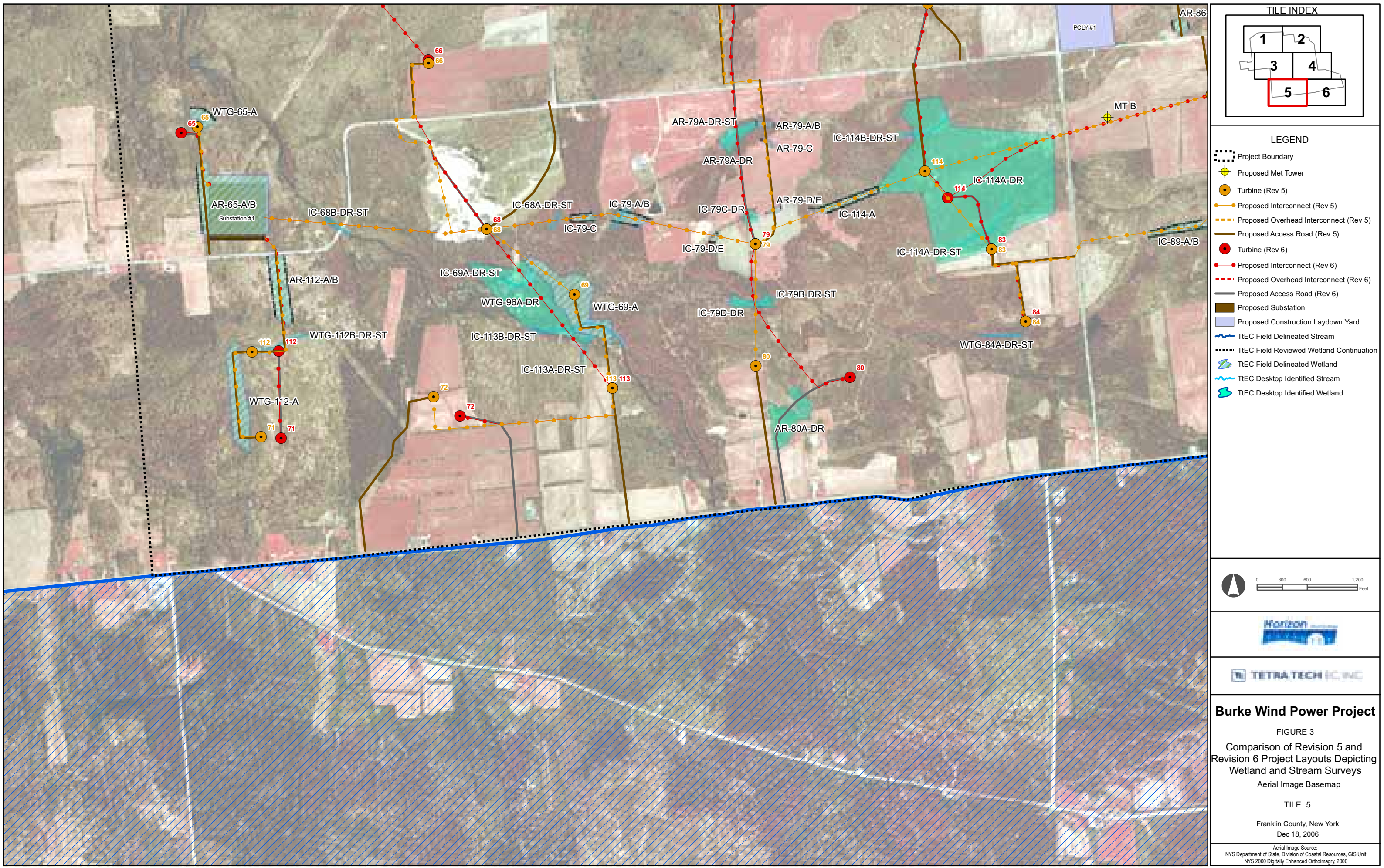

Burke Wind Power Project

FIGURE 3

Comparison of Revision 5 and
Revision 6 Project Layouts Depicting
Wetland and Stream Surveys

Aerial Image Basemap

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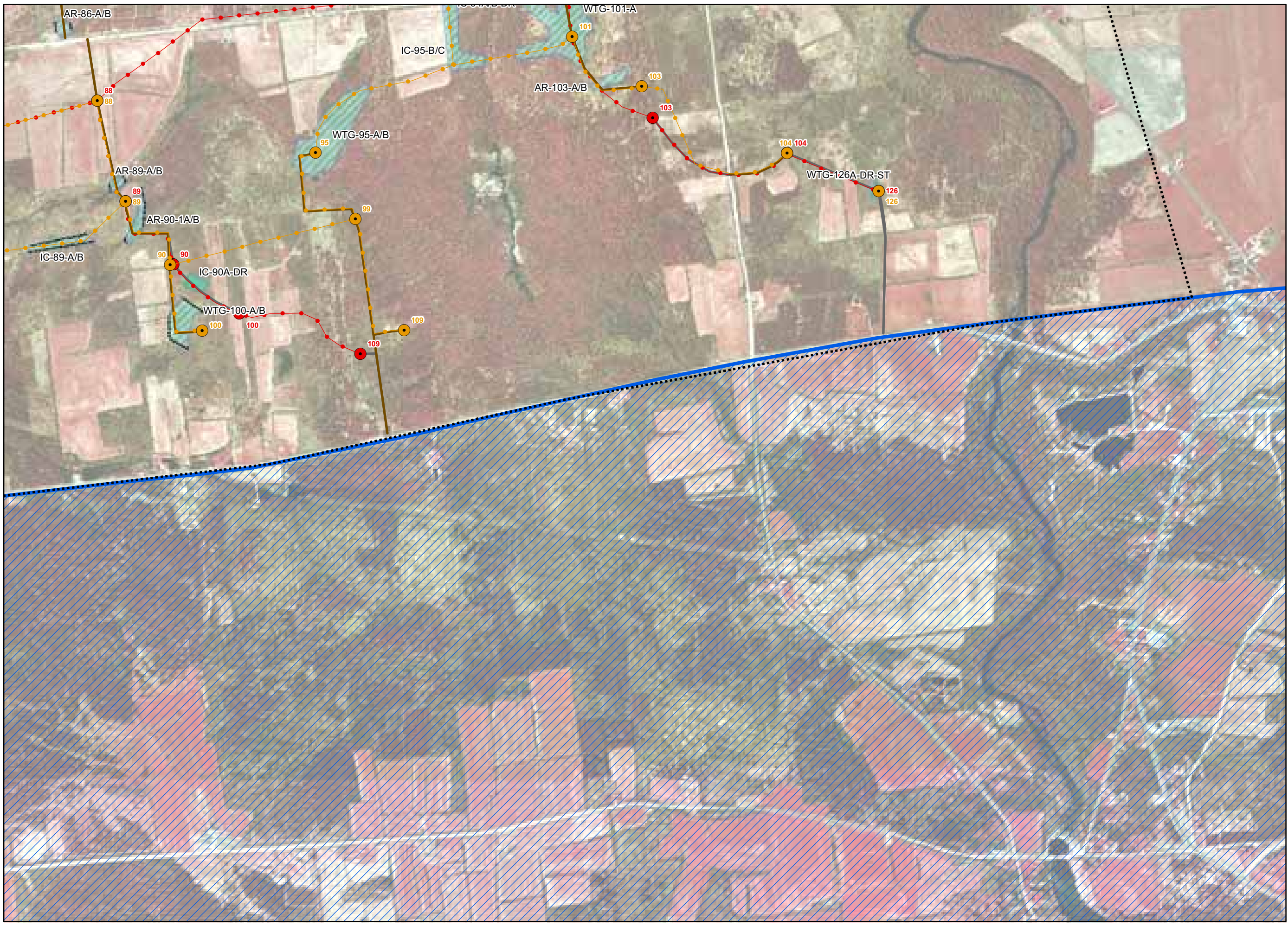

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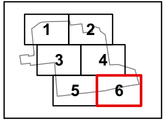

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Burke Wind Power Project

FIGURE 3

Comparison of Revision 5 and Revision 6 Project Layouts Depicting Wetland and Stream Surveys

Aerial Image Basemap

TILE 6

Franklin County, New York
Dec 18, 2006

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Tables

Table 1. Permanent and Temporary Project ROW Requirements.

FACILITY COMPONENT	SURVEYED AREA	PERMANENT IMPACTS	TEMPORARY IMPACTS
Turbine	250 ft radius	50 ft radius	200 ft radius
Access Road	40 ft width	20 ft width	40 ft width
Interconnect	15 ft width	0 ft width	15 ft witdth
Laydown Area	10.15 acres	-	10.15
Substation	10.0 acres	10.0 acres	-

Table 2. Revision 5 Field Reviewed Project Facilities

FACILITY	COMMENT	FACILITY	COMMENT	FACILITY	COMMENT
WTG 2	Field Review	WTG 56	Field Review	WTG 104	No Access
WTG 3	Field Review	WTG 57	Field Review	WTG 105	Field Review
WTG 5	Field Review	WTG 58	Field Review	WTG 106	Field Review
WTG 9	Field Review	WTG 59	Field Review	WTG 107	No Access
WTG 10	Field Review	WTG 65	Field Review	WTG 109	No Access
WTG 14	Field Review	WTG 66	Field Review	WTG 110	Field Review
WTG 15	Field Review	WTG 68	No Access	WTG 111	Field Review
WTG 16	Field Review	WTG 69	Field Review	WTG 112	Field Review
WTG 18	Field Review	WTG 71	Field Review	WTG 113	No Access
WTG 21	Field Review	WTG 72	Field Review	WTG 114	No Access
WTG 23	Field Review	WTG 73	Field Review	WTG 115	Field Review
WTG 24	Field Review	WTG 74	Field Review	WTG 116	Field Review
WTG 27	Field Review	WTG 76	Field Review	WTG 117	Field Review
WTG 29	No Access	WTG 77	Field Review	WTG 118	Field Review
WTG 30	No Access	WTG 79	Field Review	WTG 119	Field Review
WTG 32	Field Review	WTG 80	No Access	WTG 120	No Access
WTG 33	Field Review	WTG 83	No Access	WTG 121	No Access
WTG 34	Field Review	WTG 84	No Access	WTG 122	No Access
WTG 35	No Access	WTG 85	Field Review	WTG 123	Field Review
WTG 36	No Access	WTG 86	Field Review	WTG 124	Field Review
WTG 38	Field Review	WTG 88	Field Review	WTG 125	Field Review
WTG 42	Field Review	WTG 89	Field Review	WTG 126	No Access
WTG 44	Field Review	WTG 90	Field Review	Substation #1	Field Review
WTG 46	No Access	WTG 94	Field Review	Substation #2	No Access
WTG 48	Field Review	WTG 95	Field Review	Met Tower A	Field Review
WTG 49	Field Review	WTG 99	No Access	Met Tower B	Field Review
WTG 50	Field Review	WTG 100	Field Review	PCLY #1	Field Review
WTG 52	Field Review	WTG 101	Field Review	PLCY #2	Field Review
WTG 54	Field Review	WTG 103	Field Review		

Table 3. Revision 5 Field-inventoried Wetlands.

Wetland ID	Cover Class	NWI/DEC Wetland Intersections with Project Wetlands	Temporary Acreage within ROW	Permanent Acreage within ROW
Turbines				
AR-103-A/B	PFO1		0.11	-
AR-32-A	PFO1	PFO1E, CG-4 / Class 2	0.04	-
AR-89-A/B	PFO1		0.28	-
AR-90-1A/B	PFO1		0.43	-
WTG-100-A/B	PFO1		0.93	-
WTG-101-A	PFO4		3.70	0.18
WTG-105-A	PFO/PEM		1.24	0.13
WTG-10A/B	PFO4		1.16	0.10
WTG-110A/B	PSS		0.70	-
WTG-112-A	PFO1		1.32	-
WTG-124-A/B	PFO1		1.92	0.18
WTG-16-A/B	PFO4/PFO1		1.06	0.02
WTG-21-A	PFO4	PFO1/SS1A	6.04	0.21
WTG-33-A/B	PFO4/PFO1		1.57	-
WTG-34-A	PFO4		1.09	-
WTG-42-A/B	PFO1		0.21	-
WTG-44-A	PFO4		0.80	-
WTG-50-A/B	PFO1		1.78	0.06
WTG-54-A	PFO1		0.48	-
WTG-58-A/B	PSS		1.42	0.18
WTG-59-A	PEM		0.32	-
WTG-59-B	PEM		0.18	0.00
WTG-65-A	PFO1		0.98	0.02
WTG-69-A	PFO4	PFO4/1B, PFO1/4B	4.07	0.18
WTG-85-A	PFO1		0.65	-
WTG-94-5A	PFO1		1.15	-
WTG-95-A/B	PFO4	PFO1E, PFO4/1B	3.75	0.18
WTG-9-B/C	PFO1		0.03	-
WTG-9-C	PFO1		0.07	-
Access Roads				
AR-103-A/B	PFO1		0.03	0.03
AR-112-A/B	PFO1		0.36	0.36
AR-115-A	PFO/PSS		0.23	0.24
AR-27-A	PEM		0.01	0.02
AR-27-B	PEM		0.01	0.01
AR-27-C	PEM		0.01	0.01
AR-32-A	PFO1		0.00	-
AR-34-A/B	PFO1		0.32	0.31
AR-50-A/B	PEM		0.11	0.11
AR-58-A/B	PFO1		0.20	0.20
AR-65-A/B	PFO1		0.40	0.40
AR-74-A/B	PFO1		0.02	0.01
AR-76-A/B	PFO1		0.09	0.09
AR-79-D/E	PEM		0.02	0.02

(continued)

Table 3. Revision 5 Field-inventoried Wetlands (continued).

Wetland ID	Cover Class	NWI/DEC Wetland Intersections with Project Wetlands	Temporary Acreage within ROW	Permanent Acreage within ROW
AR-79-A/B	PFO1		0.02	0.02
AR-79-C	PFO1		0.02	0.02
AR-86-A/B	PFO1		0.08	0.09
AR-89-A/B	PFO1		0.01	0.05
AR-90-1A/B	PFO1		0.06	0.06
IC-54-A	PFO1		0.02	0.02
WTG-100-A/B	PFO1		0.14	0.19
WTG-101-A	PFO4		0.13	0.32
WTG-105-A	PFO/PEM		0.01	0.06
WTG-110A/B	PSS		-	0.04
WTG-112-A	PFO1		0.40	0.55
WTG-124-A/B	PFO1		0.19	0.29
WTG-16-A/B	PFO4/PFO1		0.13	0.14
WTG-21-A	PFO4		0.15	0.24
WTG-42-A/B	PFO1		-	0.01
WTG-44-A	PFO4		0.33	0.39
WTG-50-A/B	PFO1		0.07	0.13
WTG-57-A/B	PEM		0.10	0.10
WTG-58-A/B	PSS		-	0.03
WTG-69-A	PFO4		0.28	0.38
WTG-85-A	PFO1		0.06	0.05
WTG-95-A/B	PFO4		0.00	0.14
Interconnects				
AR-103-A/B	PFO1		0.00	-
AR-115-A	PFO/PSS		0.06	-
AR-34-A/B	PFO1		0.03	-
AR-65-A/B	PFO1		0.04	-
IC-114-A	PFO1	PFO1B	0.26	-
IC-116-3A/B	PSS/PEM		0.04	-
IC-119-A/B	PFO4		0.06	-
IC-125-A/B	PFO4		0.05	-
IC-16-A/B	PFO4		0.03	-
IC-33-A	PEM		0.01	-
IC-38-A/B	PFO4	PFO1/SS1A	0.01	-
IC-38-C/D	PEM		0.01	-
IC-42-A	PFO1		0.02	-
IC-42-B	PFO1		0.03	-
IC-44-A/B	PFO4	PSS1E	0.05	-
IC-49-A/B	PFO1		0.03	-
IC-49-C/D	PEM		0.05	-
IC-54-A	PFO1		0.04	-
IC-79-A/B	PFO1		0.13	-
IC-79-C	PFO1		0.09	-
IC-79-D/E	PFO4		0.02	-
IC-86-A/B/C	PFO4	PFO1B	0.09	-

(Continued)

Table 3. Revision 5 Field-inventoried Wetlands (continued).

WETLAND ID	**COVER CLASS**	**NWI/DEC WETLAND INTERSECTIONS WITH PROJECT WETLANDS**	**TEMPORARY ACREAGE WITHIN ROW**	**PERMANENT ACREAGE WITHIN ROW**
IC-89-A/B	PFO1		0.24	-
IC-94-A/B	PFO4		0.01	-
IC-95-B/C	PFO4		0.38	-
PCLY2-A, IC-PCLY2-A	PFO1		0.03	-
WTG-101-A	PFO4		0.33	-
WTG-21-A	PFO4	PFO1/SS1A	0.14	-
WTG-33-A/B	PFO4/PFO1		0.06	-
WTG-69-A	PFO4	PFO1/4B	0.16	-
WTG-95-A/B	PFO4		0.26	-
Laydown Area				
PCLY2-A	PFO1		1.59	-
Substation				
AR-65-A/B	PFO1		-	9.25
	Subtotal Turbines		37.48	1.43
	Subtotal Access Roads		4.01	5.12
	Subtotal Interconnects		2.76	-
	Subtotal Laydown Area		1.59	-
	Subtotal Substation		-	9.25
	Total Affected Acreage		**45.85**	**15.81**

Table 4. Revision 5 Interconnect Forested Wetlands with Potential Permanent Habitat Conversion.

WETLAND ID	COVER TYPE	ACRES
AR-103-A/B	PFO1	0.00
AR-34-A/B	PFO1	0.03
AR-65-A/B	PFO1	0.04
IC-114-A	PFO1	0.26
IC-119-A/B	PFO4	0.06
IC-125-A/B	PFO4	0.05
IC-16-A/B	PFO4	0.03
IC-38-A/B	PFO4	0.01
IC-42-A	PFO1	0.02
IC-42-B	PFO1	0.03
IC-44-A/B	PFO4	0.05
IC-49-A/B	PFO1	0.03
IC-54-A	PFO1	0.04
IC-79-A/B	PFO1	0.13
IC-79-C	PFO1	0.09
IC-79-D/E	PFO4	0.02
IC-86-A/B/C	PFO4	0.09
IC-89-A/B	PFO1	0.24
IC-94-A/B	PFO4	0.01
IC-95-B/C	PFO4	0.38
PCLY2-A	PFO1	0.03
WTG-101-A	PFO4	0.33
WTG-21-A	PFO4	0.14
WTG-33-A/B	PFO4/PFO1	0.06
WTG-69-A	PFO4	0.16
WTG-95-A/B	PFO4	0.26
Total Forested Wetlands		**2.59**

Table 5. Revision 5 Field Identified Streams Crossed by the Burke Wind Power Project.

STREAM ID	STREAM NAME	DEC CLASS	FLOW[1]	WIDTH (FT)	DEPTH (FT)	FLOW RATE	FLOW DIRECTION	SUBSTRATE	BANK VEGETATION	REGULATED BY ACOE
Access Roads										
IC-125-ST	Allen Brook	C(t)	P	4 - 7	0.8 - 1	Medium	N	Sand/Cobbles	Shrub	Yes
IC-119-ST	Alder Brook	C(t)	P	0.5	0.5 - 1	Medium	S	Sand/Cobbles	Forest	Yes
IC-94-ST-A	Chateaugay River (Trib)	C(t)	P	5 - 8	0.5 -1	Medium	N	Sand/Cobbles	Forest	Yes
IC-94-ST-B	Chateaugay River (Trib)	C(t)	P	7 - 10	0.5 - 1	Medium	N	Sand/Cobbles	Forest	Yes

[1] Flow is characterized as perennial, “P”, or intermittent, “I”.

Table 6. Revision 5 Vegetation Encountered in Wetlands.

SPECIES	SCIENTIFIC NAME	INDICATOR[1]
Balsam Fir	*Abies balsamea*	FAC
Red Maple	*Acer rubrum*	FAC
Sugar Maple	*Acer saccharum*	FACU
American Beech	*Fagus grandifolia*	FACU
Eastern Hemlock	*Tsuga canadensis*	FACU
Elm	*Ulmus* sp.	FAC or wetter
Alder	*Alnus* sp.	FACW
Grey Birch	*Betula populifolia*	FAC
Silky Dogwood	*Cornus amomum*	FACW
Winterberry	*Ilex verticillata*	FACW+
Willow sp.	*Salix* sp.	FAC
Meadowsweet	*Spiraea latifolia*	FAC+
Nannyberry	*Viburnum lentago*	FAC
Sedge sp.	*Carex* sp.	FACW
Joe Pye Weed	*Eupatorium maculatum*	FACW
Jewelweed	*Impatiens capensis*	FACW
Soft Rush	*Juncus effusus*	FACW+
Sensitive Fern	*Onoclea sensibilis*	FACW
Cinnamon Fern	*Osmunda cinnamomea*	FACW
Royal Fern	*Osmunda regalis*	OBL
Green Bulrush	*Scirpus atrovirens*	OBL
Woolgrass	*Scirpus cyperinus*	FACW+
Goldenrods	*Solidago* sp.	FACU- to OBL
Spagnum sp.	*Sphagnum* sp.	assumed OBL

[1] NWI Indicator Status from Reed (1988), using the following abbreviations for species occurrence in wetlands:

OBL (Obligate Wetland) – Occur almost always (estimated probability >99%) under natural conditions in wetlands.

FACW (Facultative Wetland) – Usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non wetlands.

FAC (Facultative) – Equally likely to occur in wetlands or non wetlands (estimated probability 34%-66%).

FACU (Facultative Upland) – Usually occur in non wetlands (estimated probability 67%-99%), but occasionally found on wetlands (estimated probability 1%-33%).

UPL (Obligate Upland) – Occur in wetlands in another region, but occur almost always (estimated probability >99%) under natural conditions in non wetlands on the region specified. If a species does not occur in wetlands in any region, it is not on the National List.

Table 7. Revision 6 Desktop Delineated and Field Inventoried Wetlands.

Wetland ID[1]	NWI Cover Class	NWI/DEC Wetland Intersections with Project Wetlands	Temporary Acreage within ROW	Permanent Acreage within ROW
Turbines				
AR-02A-DR	PFO		2.91	-
AR-14A-DR	PSS		0.54	-
IC-114A-DR	PFO	PFO4/1B	6.30	0.26
IC-23B-DR	PFO		0.30	-
IC-74C-DR	PFO	PFO1C	0.04	-
IC-90A-DR	PFO		0.12	-
WTG-03A-DR	PSS/PFO		1.72	-
WTG-34A-DR	PEM/PSS		0.62	-
WTG-57A/B-DR	PFO		0.01	-
WTG-94-5A-DR	PFO		0.23	-
AR-58-A/B	PFO1		0.03	-
AR-89-A/B	PFO1		0.28	-
AR-90-1A/B	PFO1		0.43	-
IC-119-A/B	PFO4		0.01	-
WTG-105-A	PFO/PEM		0.16	-
WTG-16-A/B	PFO4/PFO1		0.04	-
WTG-54-A	PFO1		0.45	-
WTG-65-A	PFO1		0.09	-
WTG-85-A	PFO1		0.02	-
WTG-9-B/C	PFO1		0.01	-
WTG-9-C	PFO1		0.06	-
Access Roads				
AR-02A-DR	PFO		0.03	0.10
AR-14A-DR	PSS		0.08	0.16
IC-110A-DR	PFO	PSS1E	0.21	0.21
IC-74C-DR	PFO	PFO1C	0.20	0.21
AR-74A-DR	PFO		0.02	0.02
WTG-57A/B-DR	PFO		0.04	0.05
WTG-94-5A-DR	PFO		0.09	0.13
IC-90A-DR	PFO		0.07	0.09
WTG-94B-DR	PFO		0.10	0.10
IC-114A-DR	PFO	PFO4/1B	0.22	0.41
AR-79A-DR	PFO	PSS1C	0.10	0.10
IC-79C-DR	PFO/PEM		0.07	0.07
AR-80A-DR	PFO		0.30	0.30
AR-112-A/B	PFO1		0.36	0.36
AR-27-A	PEM		0.01	0.02
AR-27-B	PEM		0.01	0.01
AR-27-C	PEM		0.01	0.01
AR-32-A	PFO1	PFO1E / CG-4 Class II	0.00	-
AR-65-A/B	PFO1		0.40	0.40
AR-74-A/B	PFO1		0.00	0.00
AR-89-A/B	PFO1		0.01	0.05
AR-90-1A/B	PFO1		0.06	0.06

(continued)

Table 7. Revision 6 Desktop Delineated and Field Inventoried Wetlands (continued).

Wetland ID[1]	NWI Cover Class	NWI/DEC Wetland Intersections with Project Wetlands	Temporary Acreage within ROW	Permanent Acreage within ROW
IC-54-A	PFO1		0.05	0.05
WTG-16-A/B	PFO4/PFO1		0.07	0.07
WTG-21-A	PFO4	PF01/SS1A	0.00	-
WTG-54-A	PFO1		-	0.03
WTG-57-A/B	PEM		0.07	0.06
WTG-58-A/B	PSS		0.07	0.07
WTG-94-5A	PFO1		0.06	0.06
Interconnects				
IC-114A-DR	PFO	PFO4/1B	0.77	-
IC-119C-DR	PFO	PSS1C	0.15	-
IC-119D-DR	PFO	PFO1E	0.21	-
IC-122A-DR	PFO		0.11	-
IC-128A-DR	PFO		0.07	-
IC-17A-DR	PSS		0.01	-
IC-23B-DR	PFO		0.04	-
IC-33A-DR	PFO	PFO1A	0.08	-
IC-79D-DR	PFO		0.02	-
IC-86D/E-DR	PFO		0.01	-
IC-94A/B-DR	PFO		0.04	-
OH-29B-DR	PFO		0.11	-
WTG-34A-DR	PEM/PSS		0.00	-
WTG-94B-DR	PFO		0.10	-
WTG-69A-DR	PFO4	PFO1/4B	0.39	-
WTG-44B-DR	PFO		0.18	-
AR-103-A/B	PFO1		0.02	-
AR-115-A	PFO/PSS		0.06	-
AR-65-A/B	PFO1		0.04	-
AR-90-1A/B	PFO1		0.00	-
IC-119-A/B	PFO4		0.04	-
IC-16-A/B	PFO4		0.03	-
IC-38-A/B	PFO4	PFO1/SS1A	0.01	-
IC-38-C/D	PEM		0.01	-
IC-44-A/B	PFO4	PFO4B/PSS1E	0.05	-
IC-79-A/B	PFO1		0.13	-
IC-79-C	PFO1		0.09	-
IC-79-D/E	PFO4		0.02	-
IC-86-A/B/C	PFO4	PFO1B	0.01	-
IC-86-D/E	PEM		0.00	-
PCLY2-A	PFO1		0.03	-
WTG-101-A	PFO4		0.28	-
WTG-21-A	PFO4	PFO1/SS1A	0.20	-
WTG-44-A	PFO4		0.32	-
Laydown Area				
PCLY2-A	PFO1		1.59	-

(continued)

Table 7. Revision 6 Desktop Delineated and Field Inventoried Wetlands (continued).

Wetland ID	NWI Cover Class	NWI/DEC Wetland Intersections with Project Wetlands	Temporary Acreage within ROW	Permanent Acreage within ROW
Substation				
AR-65-A/B	PFO1		-	9.25
		Subtotal Turbines	14.39	0.26
		Subtotal Access Roads	2.73	3.22
		Subtotal Interconnects	3.65	-
		Subtotal Laydown Area	1.59	-
		Subtotal Substation	-	9.25
		Total Affected Acreage	**22.37**	**12.73**

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[1] Desktop reviewed wetlands are distinguished from field-reviewed wetlands with the addition of "-DR" to the feature name.

Table 8. Revision 6 Interconnect Forested Wetlands with Potential Permanent Habitat Conversion

FORESTED INTERCONNECT SEGMENTS	COVER TYPE	ACREAGE
IC-114A-DR	PFO	0.77
IC-119C-DR	PFO	0.15
IC-119D-DR	PFO	0.21
IC-122A-DR	PFO	0.11
IC-128A-DR	PFO	0.07
IC-17A-DR	PSS	0.01
IC-23B-DR	PFO	0.04
IC-33A-DR	PFO	0.08
IC-79D-DR	PFO	0.02
IC-86D/E-DR	PFO	0.01
IC-94A/B-DR	PFO	0.04
OH-29B-DR	PFO	0.11
WTG-94B-DR	PFO	0.10
WTG-96A-DR	PFO4	0.39
WTG-44B-DR	PFO	0.18
AR-103-A/B	PFO1	0.02
AR-115-A	PFO/PSS	0.06
AR-65-A/B	PFO1	0.04
AR-90-1A/B	PFO1	0.00
IC-119-A/B	PFO4	0.04
IC-16-A/B	PFO4	0.03
IC-38-A/B	PFO4	0.01
IC-44-A/B	PFO4	0.05
IC-79-A/B	PFO1	0.13
IC-79-C	PFO1	0.09
IC-79-D/E	PFO4	0.02
IC-86-A/B/C	PFO4	0.01
PCLY2-A	PFO1	0.03
WTG-101-A	PFO4	0.28
WTG-21-A	PFO4	0.20
WTG-44-A	PFO4	0.32
Total Forested Wetlands		**3.63**

Table 9. Revision 6 Desktop Reviewed and Field Inventoried Streams.

STREAM ID[1]	STREAM NAME	DEC CLASSIFICATION	FLOW REGIME[2]
AR-128A-DR-ST	Little Trout River (Trib)	C(t)	Intermittent
AR-79A-DR-ST	Little Trout River (Trib)	C(t)	Intermittent
IC-113A-DR-ST	Little Trout River (Trib)	C(t)	Intermittent
IC-113B-DR-ST	Little Trout River	C(t)	Intermittent
IC-114A-DR-ST	Little Trout River (Trib)	C(t)	Intermittent
IC-114B-DR-ST	Little Trout River (Trib)	C(t)	Perennial
IC-119C-DR-ST	Alder Brook (Trib)	D	Perennial
IC-119-D-DR-ST	Adler Brook	C(t)	Perennial
IC-119-ST	Alder Brook (Trib)	C(t)	Perennial
IC-122A-DR-ST	Little Trout River (Trib)	D	Perennial
IC-122B-DR-ST	Little Trout River (Trib)	D	Intermittent
IC-125C-DR-ST	Allen Brook	C(t)	Perennial
IC-125-ST	Allen Brook	C(t)	Perennial
IC-128A-DR-ST	Little Trout River (Trib)	D	Intermittent
IC-128B-DR-ST	Little Trout River (Trib)	C(t)	Intermittent
IC-17A-DR-ST	Alder Brook (Trib)	D	Perennial
IC-23A-DR-ST	Chateaugay River	C(t)	Perennial
IC-33B-DR-ST	Little Trout River (Trib)	N/A	Intermittent
IC-38A-DR-ST	Alder Brook	C(t)	Perennial
IC-38B-DR-ST	Alder Brook	C(t)	Perennial
IC-38C-DR-ST	Alder Brook (Trib)	C(t)	Perennial
IC-52A-DR-St	Alder Brook (Trib)	C(t)	Perennial
IC-68A-DR-ST	Little Trout River (Trib)	C(t)	Perennial
IC-68B-DR-ST	Little Trout River	C(t)	Perennial
IC-69A-DR-ST	Little Trout River (Trib)	C(t)	Perennial
IC-76A-DR-ST	Little Trout River (Trib)	D	Intermittent
IC-79-A/B-DR-ST	Little Trout River (Trib)	C(t)	Intermittent
IC-79B-DR-ST	Little Trout River (Trib)	C(t)	Intermittent
IC-86F-DR-ST	Chateaugay River (Trib)	N/A	Intermittent
IC-94-DR-ST	Chateaugay River (Trib)	C(t)	Perennial
IC-94-ST-A	Chateaugay River (Trib)	C(t)	Perennial
IC-94-ST-B	Chateaugay River (Trib)	C(t)	Perennial
OH-29A-DR-ST	Chateaugay River	C(t)	Perennial
WTG-112B-DR-ST	Little Trout River (Trib)	N/A	Intermittent
WTG-126A-DR-ST	Chateaugay River (Trib)	C(t)	Intermittent
WTG-34B-DR-ST	Little Trout River (Trib)	B(t)	Perennial
WTG-54A-DR-ST	Little Trout River (Trib)	C(t)	Perennial
WTG-57C-DR-ST	Alder Brook (Trib)	N/A	Intermittent
WTG-84A-DR-ST	Little Trout River (Trib)	C(t)	Intermittent

[1] Desktop reviewed streams are distinguished from field-reviewed streams by the addition of “-DR” to the feature name.

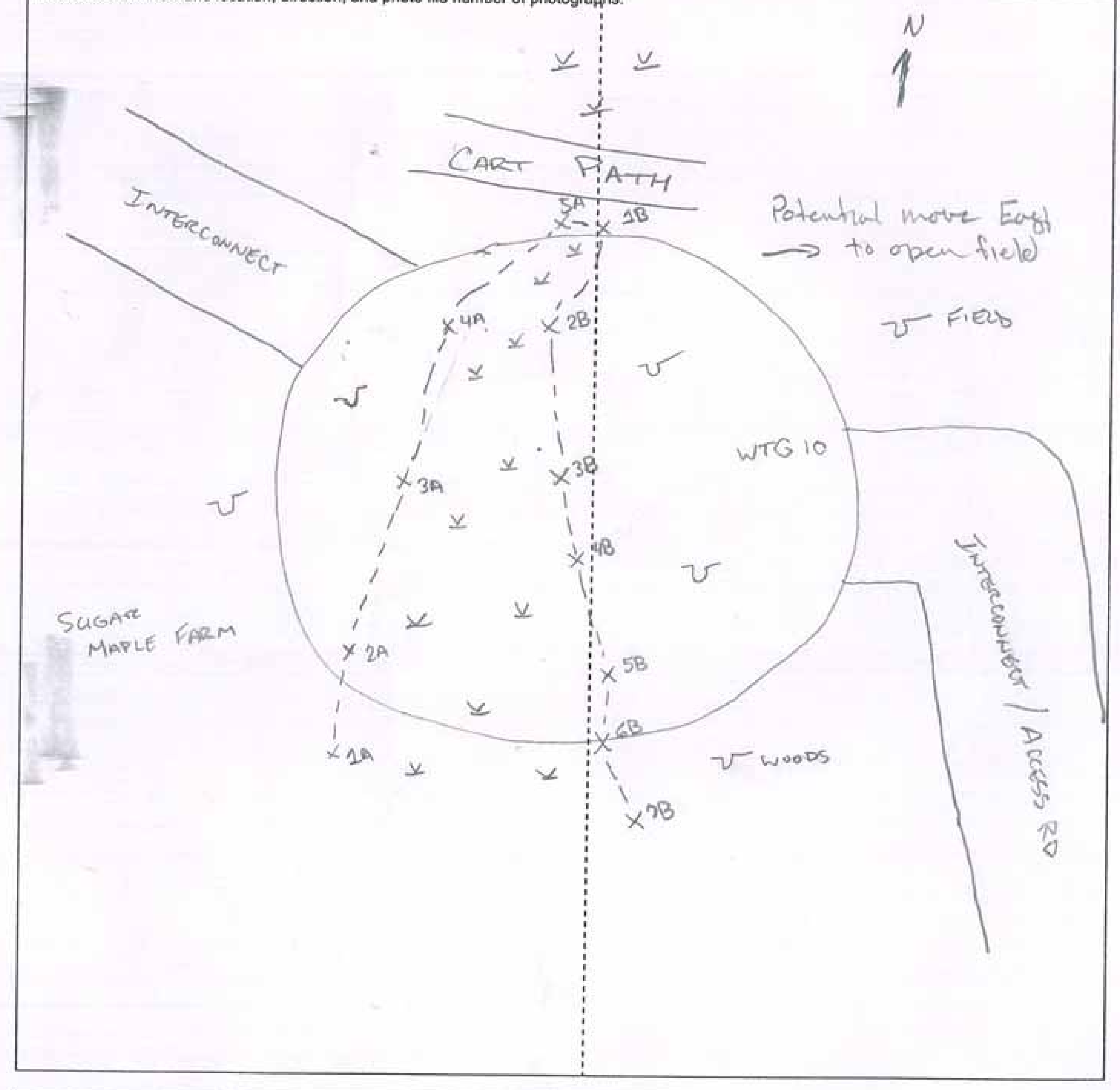
[2] Flow Regime determined from USGS topographic maps

Appendix A

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-10-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/27/06	TIME:
PHOTO ID: SEE LOG BOOK	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩡	Wetland
▭	Sample Station	Ʊ	Upland
-------	Centerline	⟶	Perennial Stream
△	Flag	-▸-·-·-▸	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 10/27/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO 4 Transect ID: WTG-10 A/B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Sap/Shrub: 20.0 Herb: 38.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Red Maple	Sap.	FAC	11.		
4. Sensitive Fern	Herb	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 4/4

Remarks:

Wetland w/in sugar maple forest.

Sphagnum sp. w/in plot

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

[✓ No Recorded Data Available]

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- [✓ Saturated]
- ___ Water Marks
- [✓ Drift lines]
- ___ Sediment Deposits
- [✓ Drainage Patterns In Wetlands]

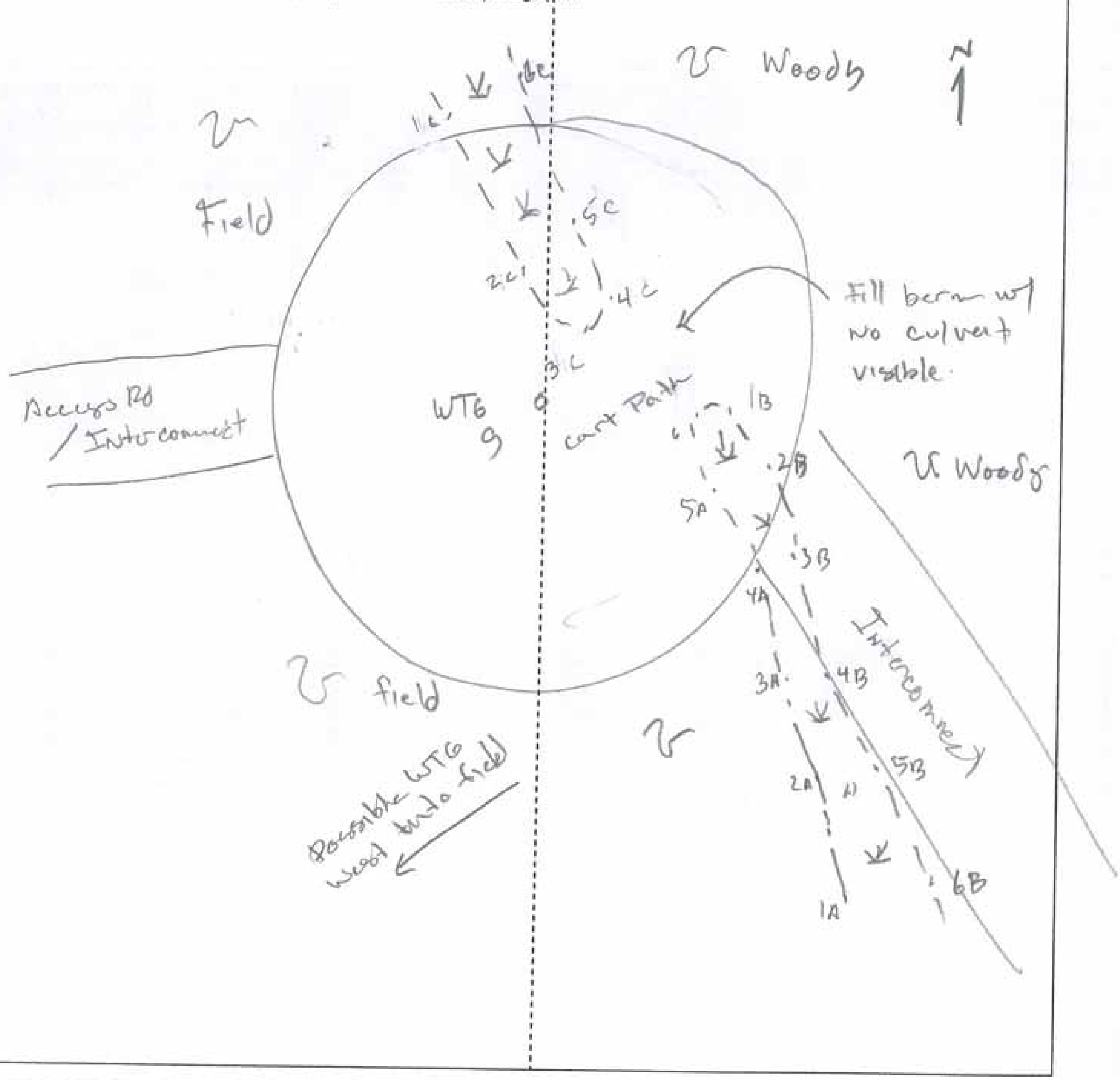
Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- [✓ Water-Stained Leaves]
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-9-A/B/C	PROJECT: Burke Wind Farm – 3335.0002.0006.00000
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/27/06 TIME:
PHOTO ID: SEE LOG BOOK	Franklin County, NY

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	ᑌ	Upland
- - - - - -	Centerline	——▸——	Perennial Stream
△	Flag	-·▸-·-·-▸	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 10/27/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PFO / PSS
Transect ID: WTG 9A / 3
Plot ID:
PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 63.0 Shrub: 10 Herb: 63.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Grey Birch	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Balsam Fir	T	FAC	11.		
4. Golden rod *	H	FAC	12.		
5. Sensitive Fern	H	FACW	13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
* Unable to ID due to seasonal conditions assumed FAC

HYDROLOGY

___ Recorded Data (Describe in Remarks):
 ___ Stream, Lake, or Tide Gauge
 ___ Aerial Photographs
 ___ Other
✓ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): >12"

Depth to Saturated Soil (in.): >12"

Wetland Hydrology Indicators:
Primary Indicators:
 ___ Inundated
 ___ Saturated
 ___ Water Marks
 ___ Drift lines
 ___ Sediment Deposits
 X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
 ___ Oxidized Root Channels in Upper 12 inches
 X Water-Stained Leaves
 ___ Local Soil survey Data
 ___ FAC-Neutral Test
 ___ Other (Explain in Remarks)

Remarks: Swale area adjacent open field, | U.S. GS. depicts intermittent stream

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 10/27/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: 3f
Transect ID:
Plot ID: WTG9-C
PHOTO ID:

VEGETATION

Plant Community Classification: Swp/
Percent Canopy Cover: Tree: 63.0 Shrub: 10.5 Herb: 20.6 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Sugar Maple	T	FACU	9.		
2. Elm	S	FAC	10.		
3. Sugar Maple	S	FACU	11.		
4. Jewelweed	H	FACW	12.		
5. Sensitive Fern	H	FACW	13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 3/5 = 60

Remarks:

Shallow swale, wetland veg. w/in swale

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): >12"

Depth to Saturated Soil (in.): >12"

Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  ___ Saturated
  ___ Water Marks
  X Drift lines
  ___ Sediment Deposits
  X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

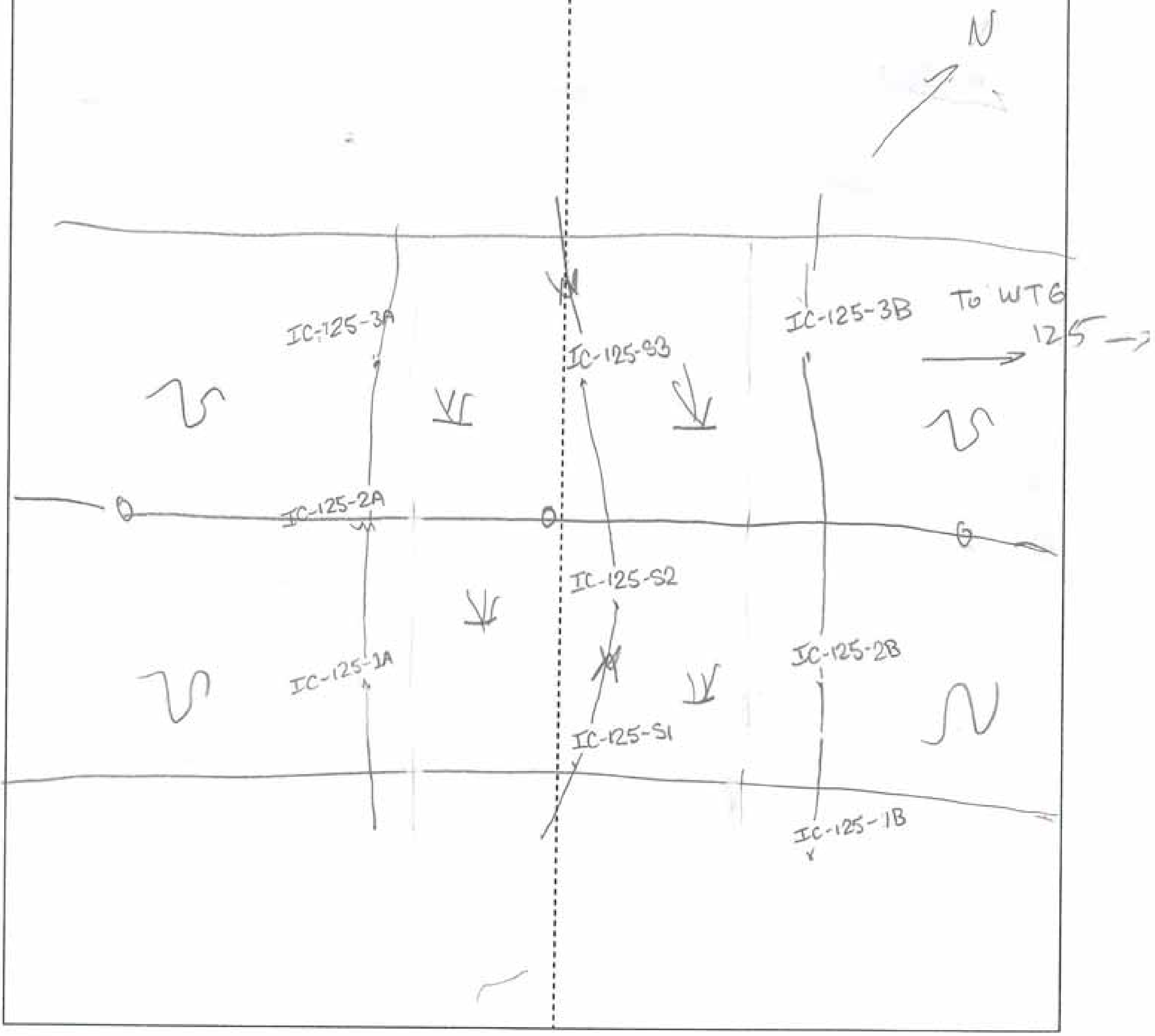
Remarks:

Wetland w/i swale, appears to experience limit seasonal flow, USGS depicts int. stream

SKETCH FORM

WETLAND ID/ROUTE ID: IC-125-1A/1B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/27/06	TIME:
PHOTO ID: SEE LOG BOOK	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction		Wetland
▭	Sample Station		Upland
--------	Centerline	→	Perennial Stream
△	Flag	-·-▶-·-▶	Intermittent Stream

STREAM DATA

PROJECT: BURKE WIND FARM

DATE: 10/27/06

OWNER/APPLICANT: Horizon Wind

LOCATION: Franklin Co., NY

FIELD CREW: B. Raftery

PHOTO FILE #: See Field Wksh

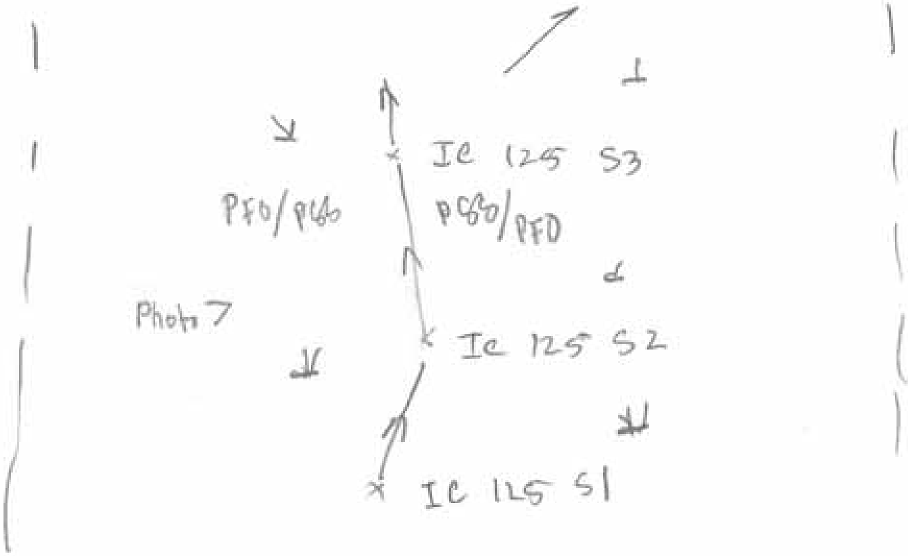
FIELD BOOK AND PAGE: Field Book 1 / Page 1

STREAM CROSSING DATA

CHANNEL ID	IC 125		
NAME (OR TRIB TO)	Allen Brook		
TYPE OF STREAM			
PERENNIAL/INTERMIT	Perennial		
WIDTH (OBSERV/OHW)	4 ft / 7 ft		
DEPTH (OBSER/OHW)	10" / 12"		
FLOW RATE [1]	med.		
FLOW DIRECTION	North		
SUBSTRATE	sand/cobbles		
BANK VEGETATION	PSS.		

[1] DRY/STAGNANT/LOW/MEDIUM/HIGH

SKETCH: INCLUDE NORTH, LOCATION OF PHOTO STATION, LOCATION OF DATA PLOTS, ANY OTHER FEATURES



FISH AND WILDLIFE OBSERVATIONS:
- Deer, song birds, squirrels, raccoon

NOTES: Perennial stream in ravine area, USGS Maps, shallow banks, clear water

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 10/27/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO4 Transect ID: IC 125 A/B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Shrub: 63.0 Herb: 20.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red maple	T	FAC	10.		
3. Elm	T	FAC	11.		
4. Alder	S	FACW	12.		
5. Sensitive Fern	H	FACW	13.		
6. Goldenrod	H	FAC*	14.		
7. Carex sp.	H	FACW*	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
*Unable to positive ID due to seasonal conditions

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 12"

Depth to Saturated Soil (in.): 12"

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated
- _X_ Water Marks
- ___ Drift lines
- ___ Sediment Deposits
- _X_ Drainage Patterns In Wetlands

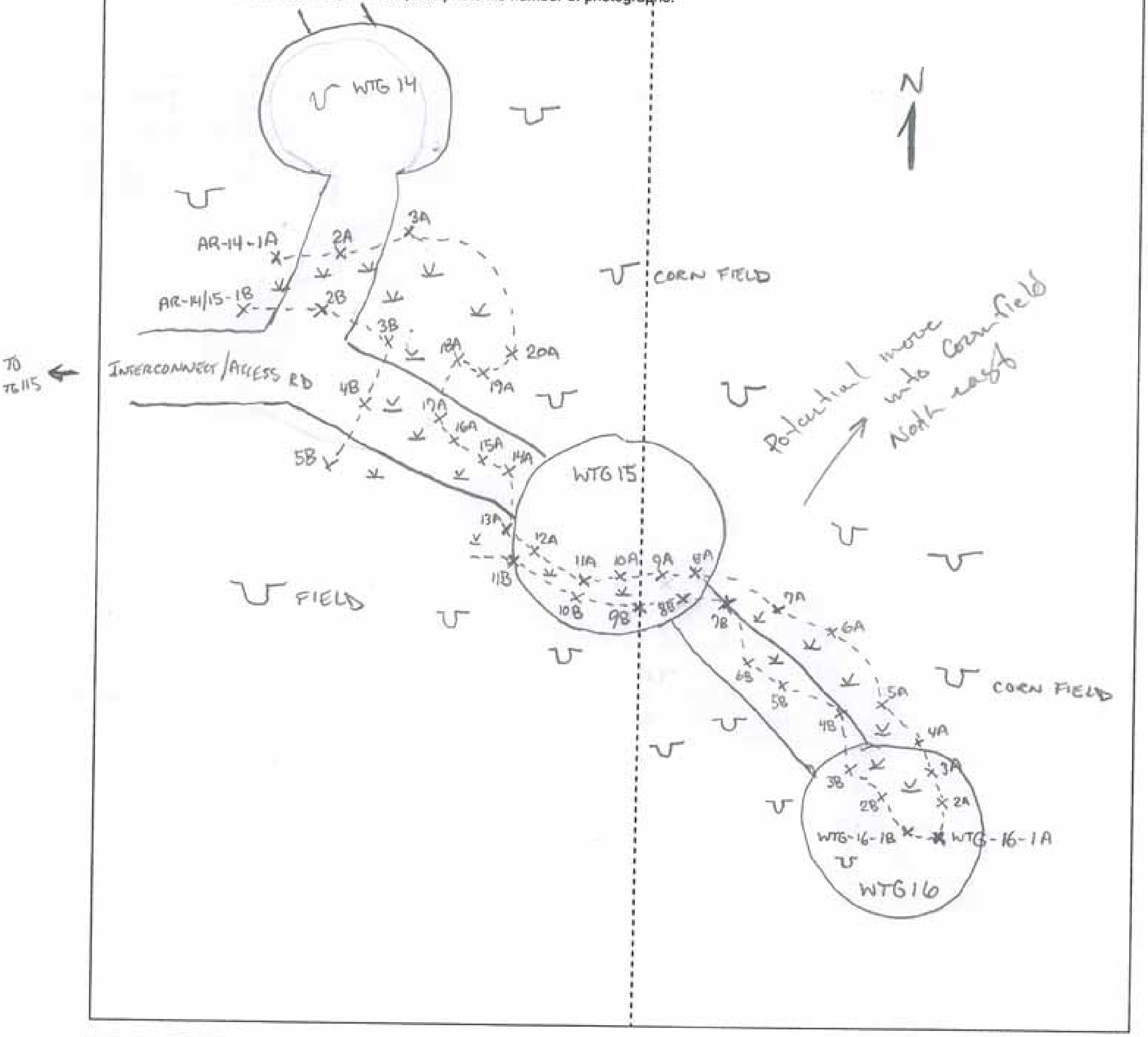
Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- _✓_ Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
→ Adjacent Stream channel of Allen Brook,
USGS Depicts perennial stream

SKETCH FORM

WETLAND ID/ROUTE ID: AR-14-A, AR-14/15-B, WTG-16-AB	PROJECT: Burke Wind Farm – 3335.0002.0006.00000
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/28/06 TIME:
PHOTO ID: SEE LOG BOOK	Franklin County, NY

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	⊍	Upland
- - - - -	Centerline	―▸―	Perennial Stream
△	Flag	-▸- · -▸	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 10|28|06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1/PFO4 Transect ID: AR14-A, AR14/15B. Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Sap Shrub: 20.5 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Grey Birch	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Balsam Fir	T	FAC	11.		
4. Grey Birch	Sap.	FAC.	12.		
5. Sensitive Fern	H	FACW	13.		
6. Carex Sp.	H	FACW*	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks: * Unable to ID due to seasonal conditions assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other X No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: ___ Inundated X Saturated ___ Water Marks ___ Drift lines ___ Sediment Deposits X Drainage Patterns In Wetlands Secondary Indicators (2 or more required): ___ Oxidized Root Channels in Upper 12 inches X Water-Stained Leaves ___ Local Soil survey Data ___ FAC-Neutral Test ___ Other (Explain in Remarks)
Field Observations: Depth of Surface Water (in.): 0 Depth to Free Standing Water in Pit (in.): 12" Depth to Saturated Soil (in.): 12"	

Remarks:

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 10/28/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO4 / PFO1 Transect ID: Plot ID: WT6 16A/B PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 85.5 Sap/ Shrub: 20.5 Herb: 20.5 Vine: 0.

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Red Maple	T	FAC	11.		
4. Balsam Fir	Sap.	FAC	12.		
5. Red Maple	Sap	FAC	13.		
6. Sensitive Fern	H	FACW	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 12"

Depth to Saturated Soil (in.): 12"

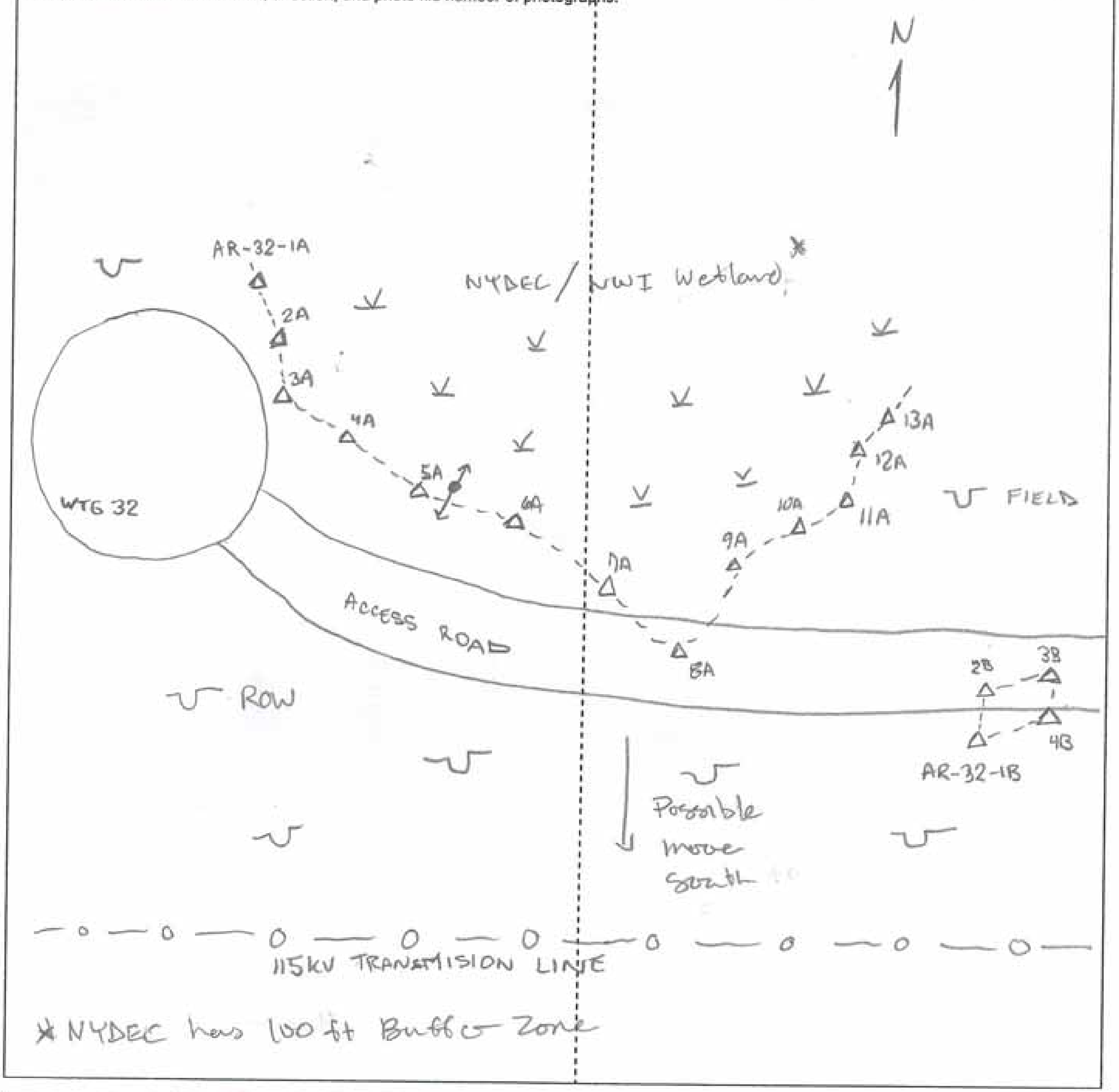
Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  X Saturated
  X Water Marks
  ___ Drift lines
  X Sediment Deposits
  ___ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: AR-32-A|B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/29/06 TIME:
PHOTO ID: SEE LOG BOOK	Franklin County, NY

include North Arrow and location, direction, and photo file number of photographs.



* NYDEC has 100 ft Buffer Zone

LEGEND

●→	Photo Location / Direction		Wetland
▭	Sample Station		Upland
- - - - - -	Centerline	——▶——	Perennial Stream
△	Flag	- -▶- - -▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 6/29/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1/4 Transect ID: W2 32 W Plot ID: PHOTO ID:

VEGETATION

NYDEC mapped wetland

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Shrub: 20.5 Herb: 36.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red maple	T	FAC	9.		
2. Balsam Fir	T	FAC	10.		
3. Grey Birch	T	FAC	11.		
4. Alder	S	FAC	12.		
5. Viburnum	S	FAC	13.		
6. Carex sp.	H	FACW*	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

* UNID assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated
_X_ Saturated
_X_ Water Marks
___ Drift lines
___ Sediment Deposits
_X_ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12 inches
_X_ Water-Stained Leaves
___ Local Soil survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks:

NYDEC mapped / NWI mapped wetland

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 6/29/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEM Transect ID: A2-32B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Sensitive fern	H	FACW	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 1/1 = 100

Remarks:
Poorly drained patch of ferns adjacent overhead powerline, & stone wall

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
_✓_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

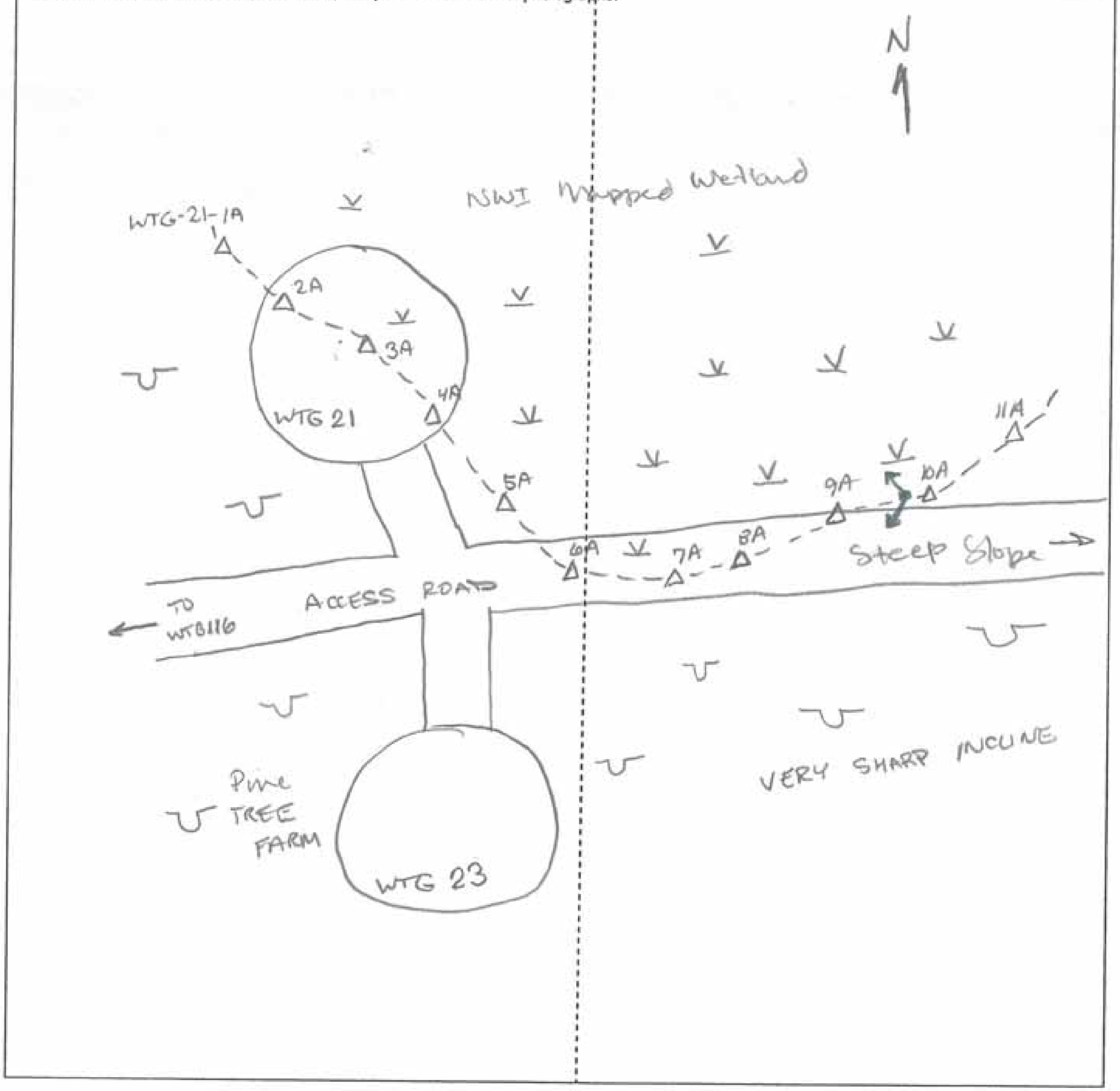
Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  _X_ Saturated
  ___ Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  _X_ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  _X_ Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:
Poorly drained area bordering powerlines and stone wall

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-21-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/29/06	TIME:
PHOTO ID: SEE LOG BOOK	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - -	Centerline	——▶——	Perennial Stream
△	Flag	-·▶·-··-·▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 10/29/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PFO4
Transect ID: WTG 21A
Plot ID:
PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 85.5 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	Tree	9.		
2. Red maple	T	Tree	10.		
3. Carex Sp	H	FACW	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100%

Remarks:
UnID - assumed FACW
Sphagnum w/ in plot.

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

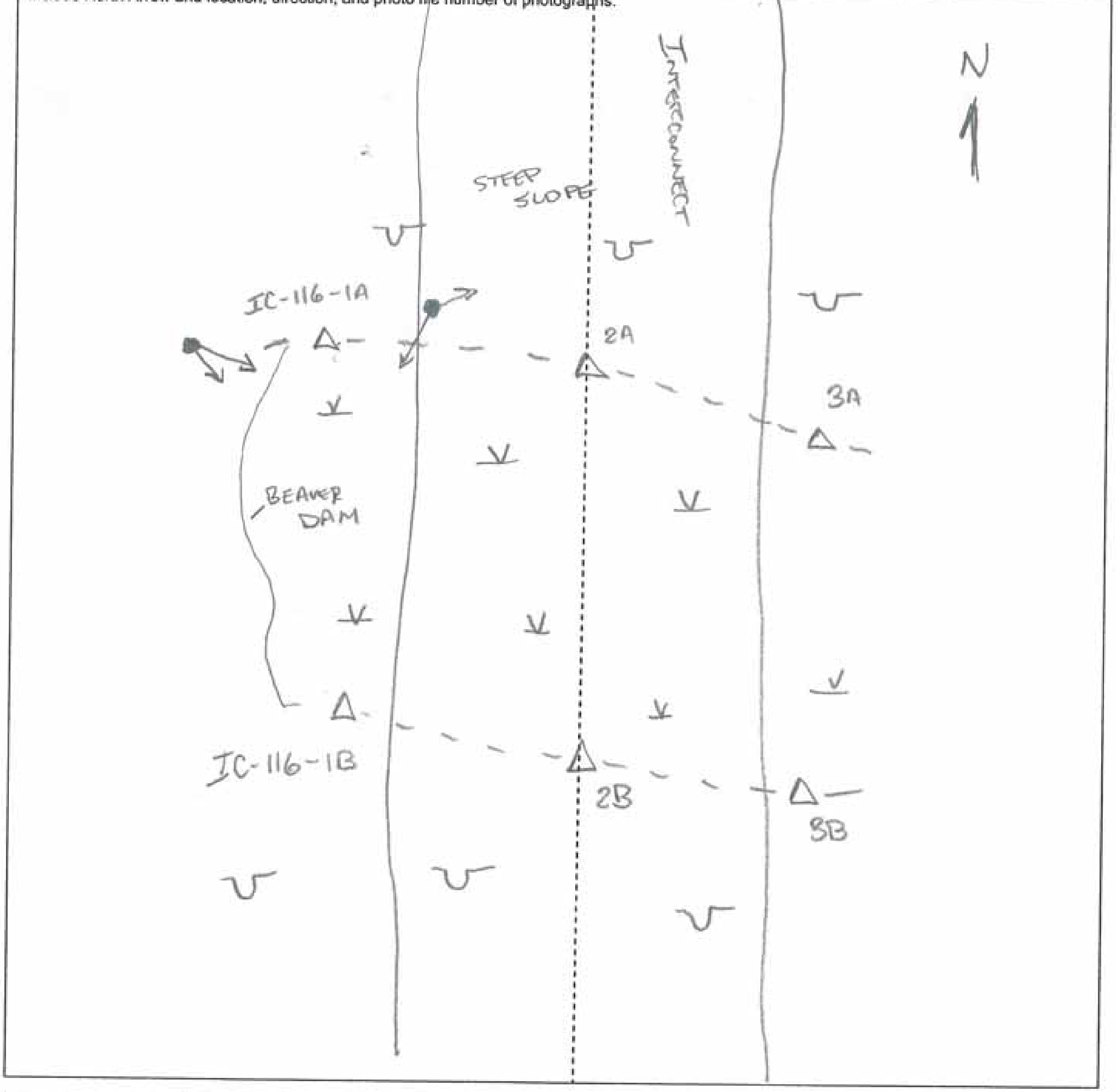
Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated
_X_ Saturated
___ Water Marks
___ Drift lines
___ Sediment Deposits
_X_ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12 inches
_X_ Water-Stained Leaves
___ Local Soil survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: IC-116-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/29/06 TIME:
PHOTO ID: SEE LOG BOOK	Franklin County, NY

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	Ʊ	Upland
--------	Centerline	───▶	Perennial Stream
△	Flag	-·▶-·-·▶	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 10/29/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] * Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PSS/PEM Transect ID: IC 116 A Plot ID: B PHOTO ID:

VEGETATION Beaver Activity

Plant Community Classification:
Percent Canopy Cover: Tree: 10.5 Shrub: 63.0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Grey Birch	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Meadowsweet	S	FAC	11.		
4. Greenbulrush	H	FACW	12.		
5. Carex sp. *	H.	FACW	13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-):

Remarks:
* Un-ID - assumed FACW, Season condition

HYDROLOGY

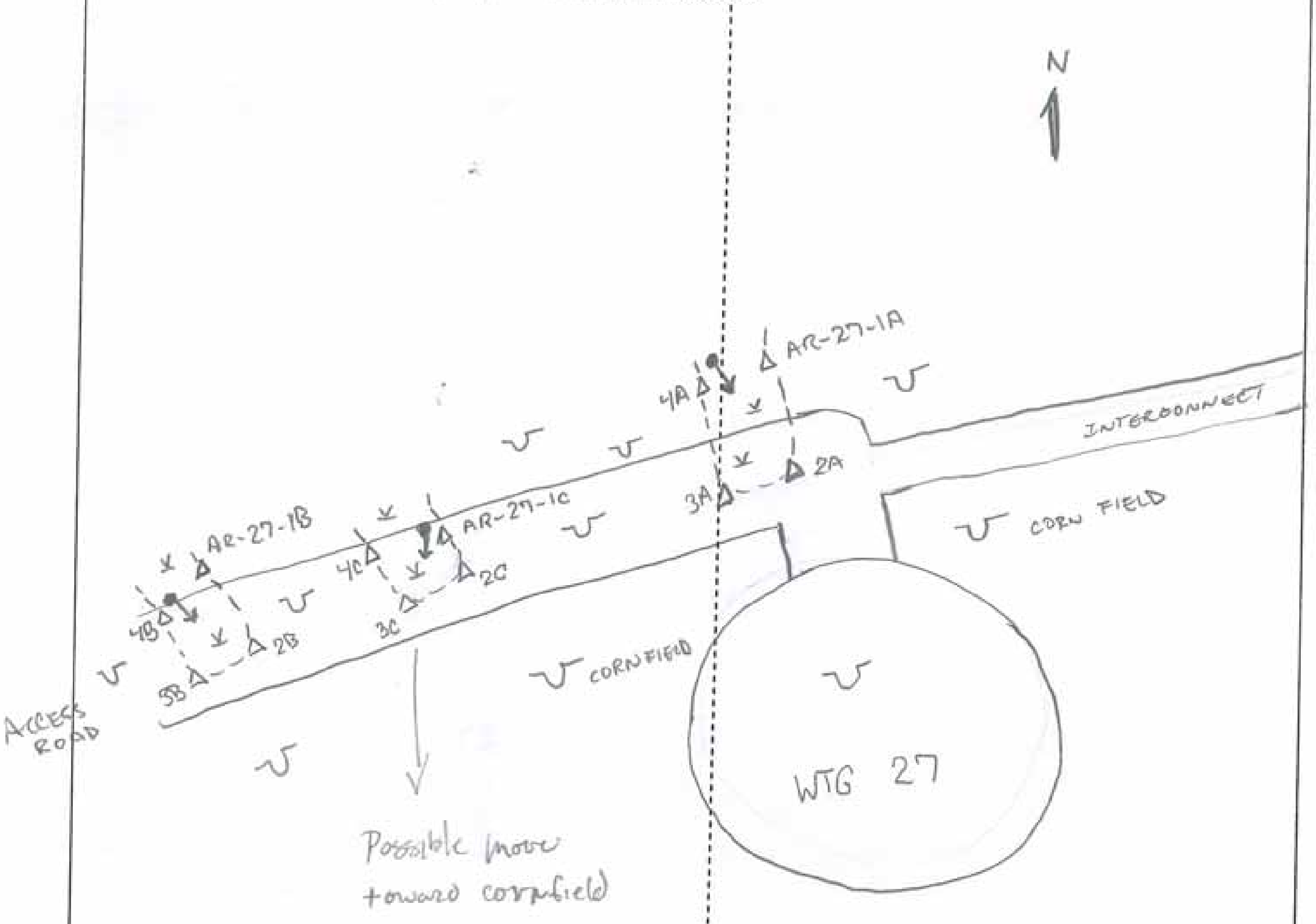
___ Recorded Data (Describe in Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other X No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: ___ Inundated ___ Saturated ___ Water Marks ___ Drift lines ___ Sediment Deposits ___ Drainage Patterns In Wetlands Secondary Indicators (2 or more required): ___ Oxidized Root Channels in Upper 12 inches ___ Water-Stained Leaves ___ Local Soil survey Data ___ FAC-Neutral Test ___ Other (Explain in Remarks)
Field Observations: Depth of Surface Water (in.): 0 Depth to Free Standing Water in Pit (in.): Surface Depth to Saturated Soil (in.): Surface	

Remarks:
Area partially w/in beaver pond

SKETCH FORM

WETLAND ID/ROUTE ID: AR-27-A, AR-27-B, AR-27-C	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/30/06	TIME:
PHOTO ID: 100-0020, 100-0021, 100-0022	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



Possible move toward cornfield

LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	℧	Upland
-------	Centerline	——→——	Perennial Stream
△	Flag	-·▶·-·-·▶	Intermittent Stream

Data Form is for 3 areas
AR 27 A, B, & C

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

AR 27 A, B & C

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 10/30/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No * Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEM Transect ID: AR 27 A, B & C Plot ID: PHOTO ID:

* Cow Pasture

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Soft Rush	H	FACW	9.		
2. Assorted Grasses	H	FAC	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
*UNIs due to seasonal conditions & cow grazing

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 12"

Depth to Saturated Soil (in.): 12"

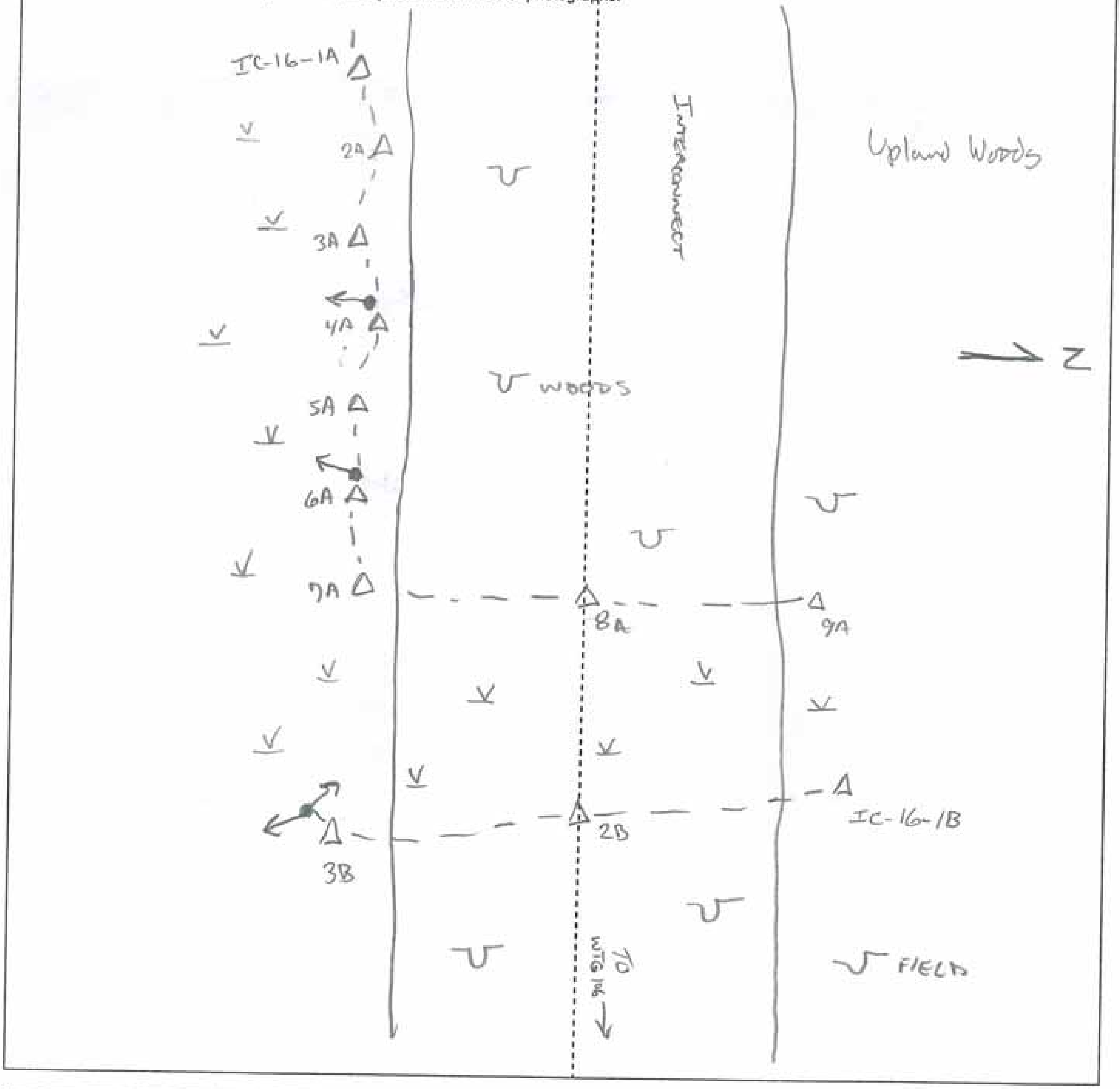
Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  X Saturated
  ___ Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: IC-16-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/30/06	TIME:
PHOTO ID: 100-0023, 100-0024, 100-0025, 100-0026	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→ Photo Location / Direction

▭ Sample Station

------- Centerline

△ Flag

Wetland

Upland

Perennial Stream

Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 10/30/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO4 Transect ID: IC 16 A/B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 85.5 Shrub: Sap 10.5 Herb: 3.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Gray Birch	T	FAC	11.		
4. Red Maple	Sap	FAC	12.		
5. Gray Birch	Sap	FAC	13.		
6. Assorted Grass	H	FAC	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

- UnID due to seasonal conditions assumed FAC.
- Sphagnum w/in plot

HYDROLOGY

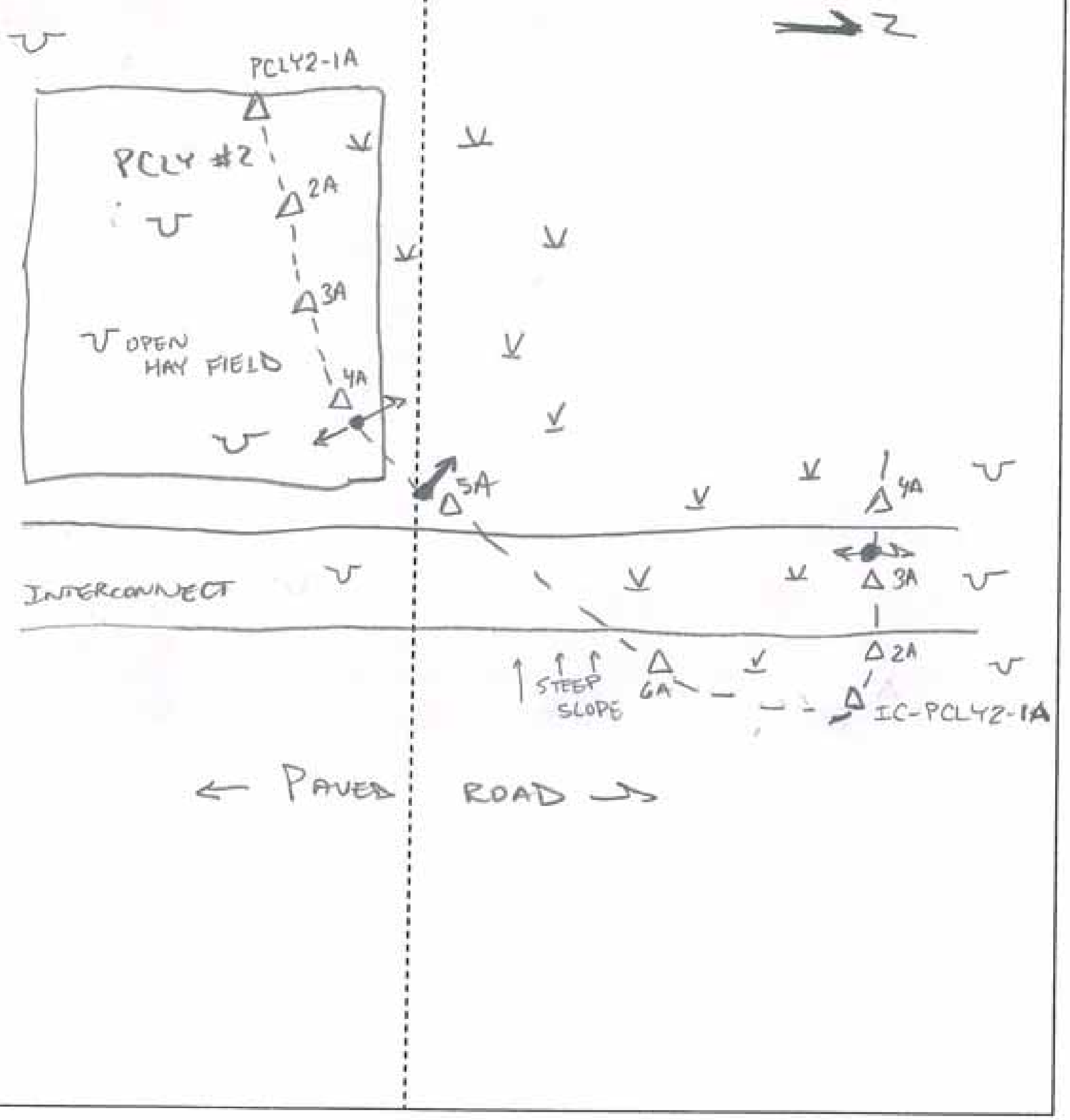
___ Recorded Data (Describe in Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other X No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: ___ Inundated X Saturated 10" ___ Water Marks ___ Drift lines ___ Sediment Deposits X Drainage Patterns In Wetlands Secondary Indicators (2 or more required): ___ Oxidized Root Channels in Upper 12 inches X Water-Stained Leaves ___ Local Soil survey Data ___ FAC-Neutral Test ___ Other (Explain in Remarks)
Field Observations: Depth of Surface Water (in.): 0 Depth to Free Standing Water in Pit (in.): 10" Depth to Saturated Soil (in.): 10"	

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: PCL42-A, IC-PCL42-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/30/06	TIME:
PHOTO ID: 100-0027, 100-0028, 100-0029, 100-0030, 100-0031	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	ᐯ	Wetland
▭	Sample Station	ᑌ	Upland
- - - -	Centerline	→→	Perennial Stream
△	Flag	- ▸ - - ▸	Intermittent Stream

Data Form for PCLY 2-2 A & IC PCLY2 A

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 6/30/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1 Transect ID: IC PCLY2/ Plot ID: PHOTO ID: PCLY

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 63.0 Sap/Shrub: 38.0 Herb: 36.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Balsam Fir	T	FAC	10.		
3. Red maple	Sap	FAC	11.		
4. Sedges *	H	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
* Un ID due to seasonal conditions assumed FACW

HYDROLOGY

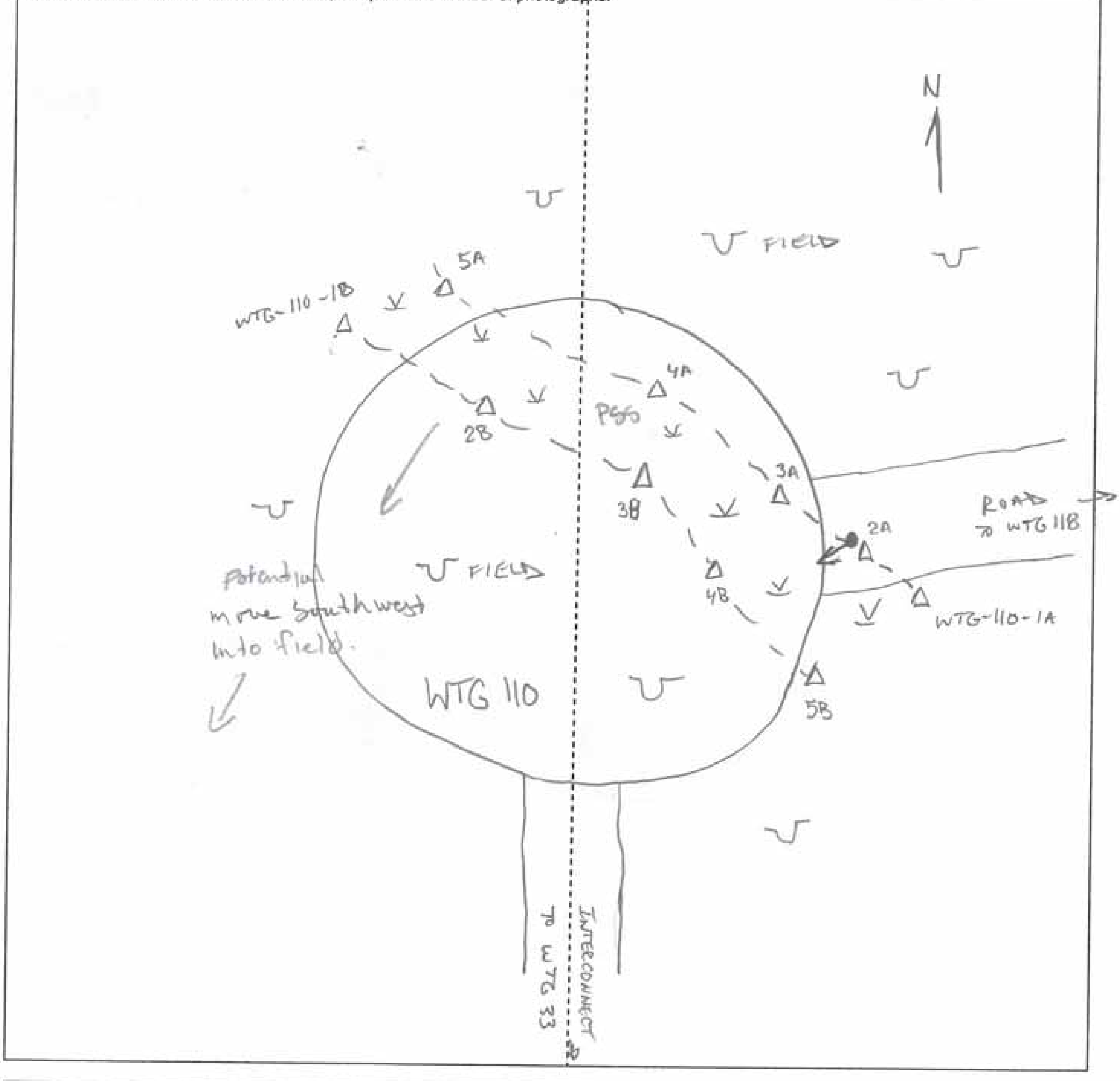
___ Recorded Data (Describe in Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other ___ No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: ___ Inundated ___ Saturated ___ Water Marks ___ Drift lines ___ Sediment Deposits ___ Drainage Patterns In Wetlands
Field Observations: Depth of Surface Water (in.): Depth to Free Standing Water in Pit (in.): Depth to Saturated Soil (in.):	Secondary Indicators (2 or more required): ___ Oxidized Root Channels in Upper 12 inches ___ Water-Stained Leaves ___ Local Soil survey Data ___ FAC-Neutral Test ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTC-110-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/31/06 TIME:
PHOTO ID: 100-0032	Franklin County, NY

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	ᑌ	Upland
- - - - - -	Centerline	⟶	Perennial Stream
△	Flag	-·▶-··-·▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 10/31/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PSS Transect ID: WTG #10 A/B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 20.5 Shrub: 85.5 Herb: 63.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Willow	S	FAC	11.		
4. meadowsweet	S	FAC	12.		
5. Soft Rush	H	FACW	13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated to Surface
- ___ Water Marks
- ___ Drift lines
- X Sediment Deposits
- X Drainage Patterns In Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

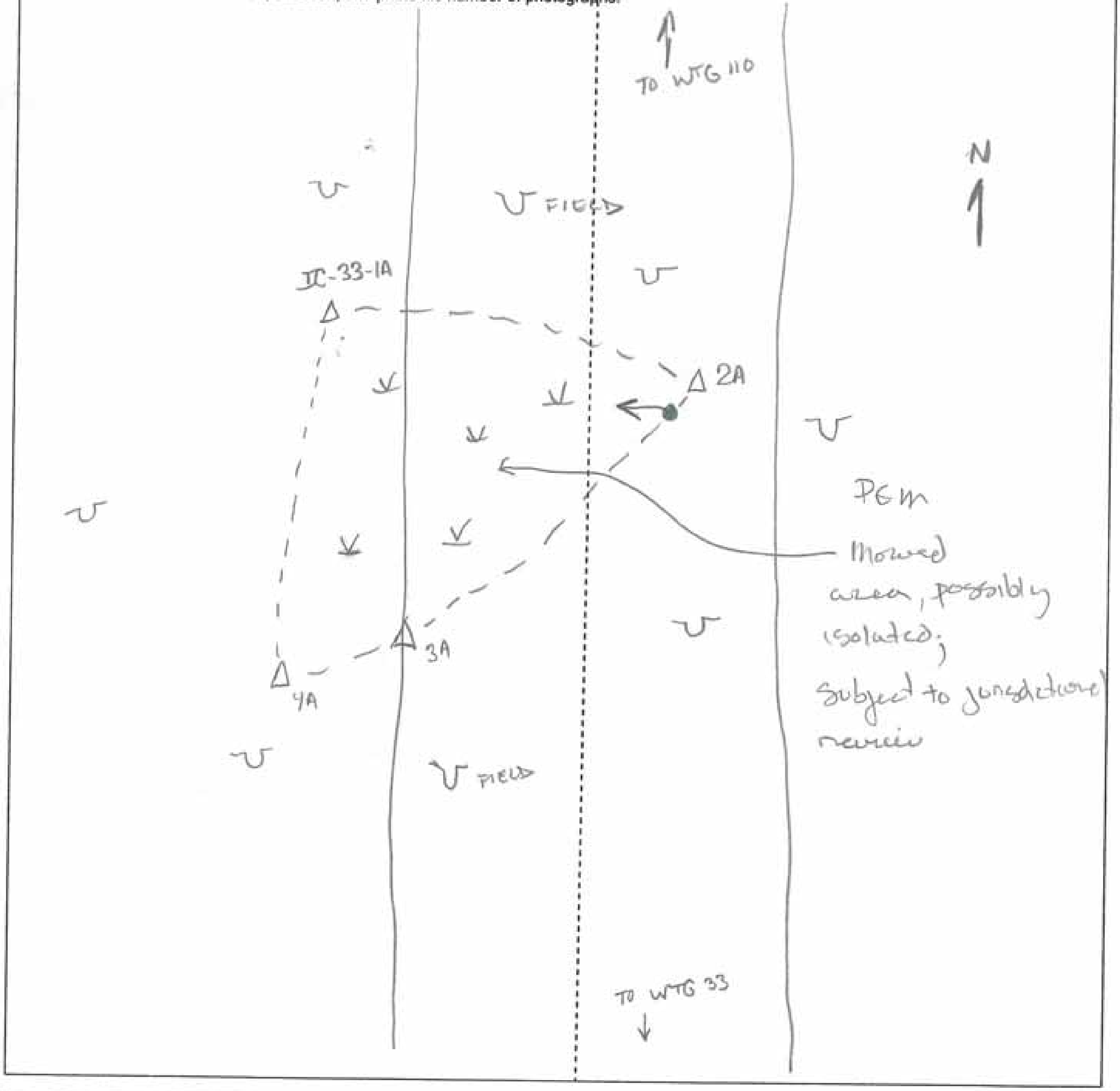
Remarks:

NWI mapped wetland.

SKETCH FORM

WETLAND ID/ROUTE ID: IC-33-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/31/06	TIME:
PHOTO ID: 100-0033	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



PEM mowed area, possibly isolated; subject to jurisdictional review

LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	℧	Upland
- - - - - -	Centerline	—►—	Perennial Stream
△	Flag	-►-·-·-►	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 10/31/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No * Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEM Transect ID: JC 33A Plot ID: PHOTO ID:

* mowed Hay field / subject to jurisdictional review

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Soft Rush	H	FACW	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
Recent mowed hay field, poorly drained

HYDROLOGY

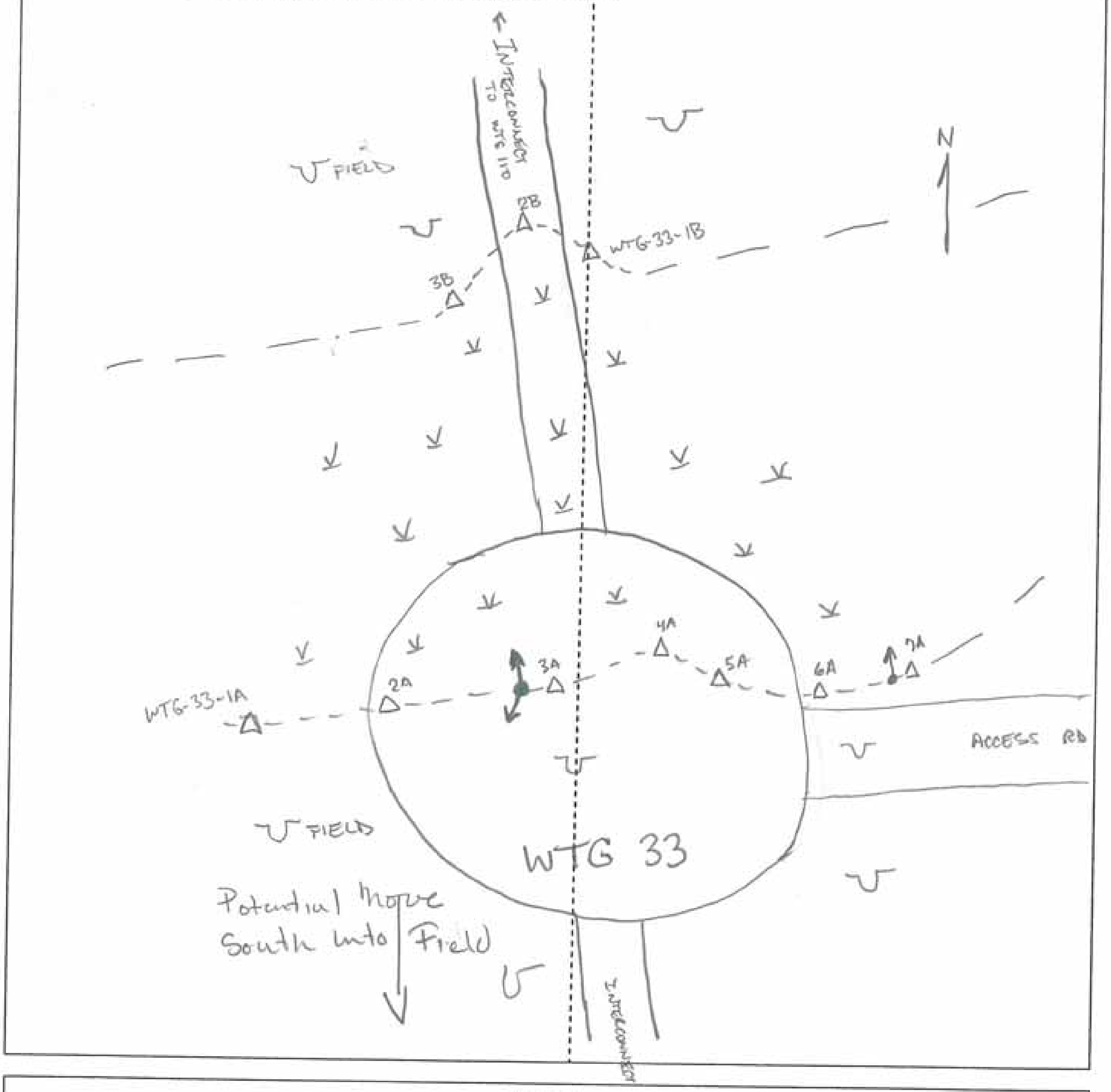
___ Recorded Data (Describe in Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other X No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: ___ Inundated X Saturated to Surface ___ Water Marks ___ Drift lines ___ Sediment Deposits X Drainage Patterns In Wetlands Secondary Indicators (2 or more required): ___ Oxidized Root Channels in Upper 12 inches X Water-Stained Leaves ___ Local Soil survey Data ___ FAC-Neutral Test ___ Other (Explain in Remarks)
Field Observations: Depth of Surface Water (in.): 0 Depth to Free Standing Water in Pit (in.): Surface Depth to Saturated Soil (in.): Surface	

Remarks: Possibly isolated;

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-33-A/B	PROJECT: Burke Wind Farm – 3335:0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/31/06	TIME:
PHOTO ID: 100-0034, 100-0035, 100-0036	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	ѱ	Wetland
▭	Sample Station	ᑌ	Upland
- - - - -	Centerline	——▶——	Perennial Stream
△	Flag	-▶- -·- -▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 10/31/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PFO1
Transect ID: WTG 33 A/B
Plot ID:
PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 63.0 Sap/Shrub: 10 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Red Maple	Sap	FAC	11.		
4. Grey Birch	Sap	FAC	12.		
5. Soft Rush	H	FACW	13.		
6. Sensitive Fern	H	FACW	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
Primary Indicators:
- ___ Inundated
- X Saturated
- ___ Water Marks
- ___ Drift lines
- ___ Sediment Deposits
- X Drainage Patterns In Wetlands

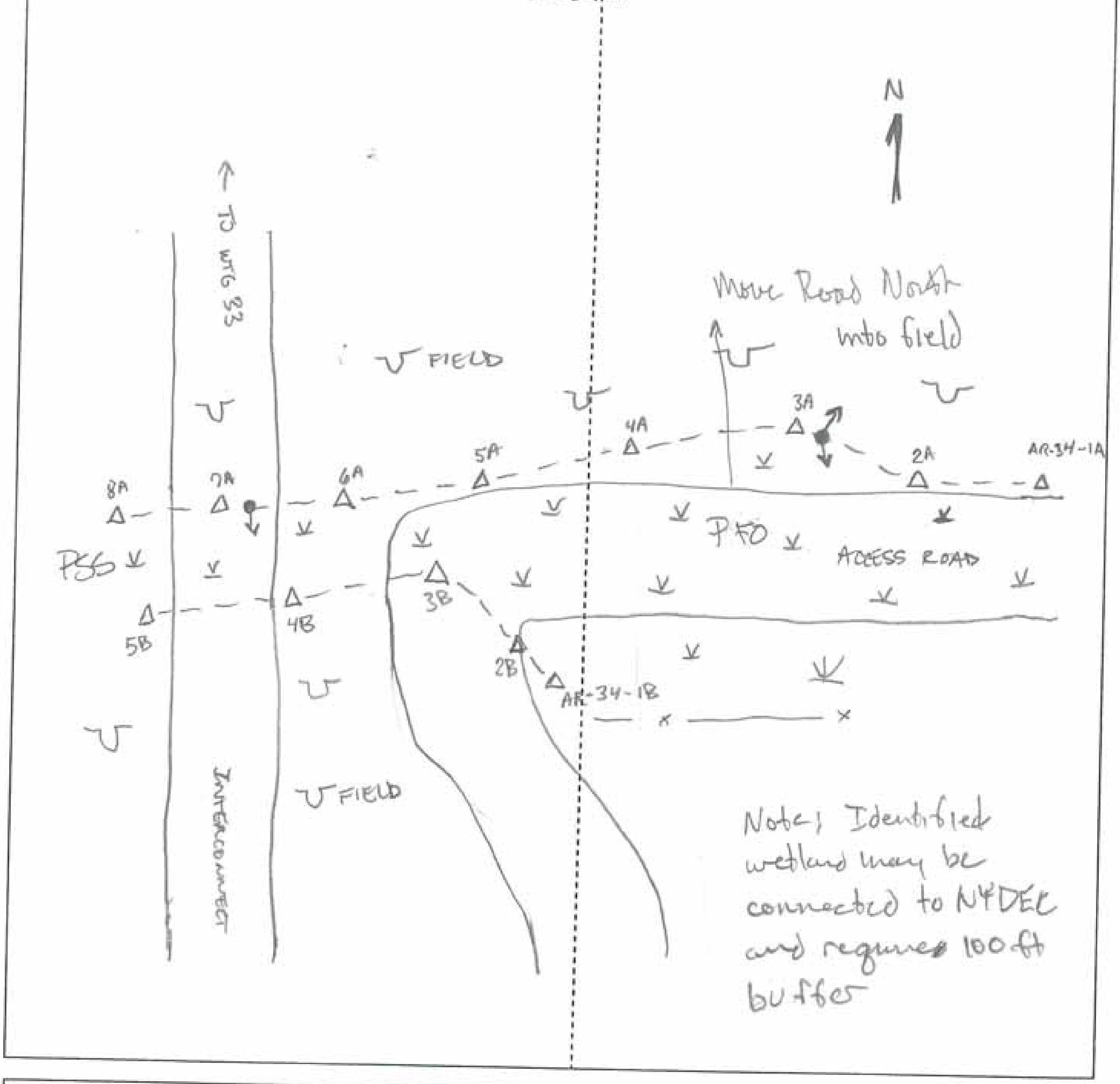
Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: AR-34-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/31/06	TIME:
PHOTO ID: 100-0037, 100-0038, 100-0039	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



Move Road North into field

Note; Identified wetland may be connected to NYDEC and requires 100 ft buffer

LEGEND

●→ Photo Location / Direction
▭ Sample Station
- - - - - - - Centerline
△ Flag
Wetland
Upland
→ Perennial Stream
-·▸-·-·▸ Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 10/31/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PFO4/PSS
Transect ID: A2 34 A/B
Plot ID:
PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 85 Shrub: 20.6 Herb: 10.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Alder	S	FACW	11.		
4. Willow	S	FAC	12.		
5. Soft Rush	H	FACW	13.		
6. Sensitive Fern	H	FACW	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
 ___ Stream, Lake, or Tide Gauge
 ___ Aerial Photographs
 ___ Other
_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
Primary Indicators:
 ___ Inundated
 _x_ Saturated to Surface
 ___ Water Marks
 ___ Drift lines
 ___ Sediment Deposits
 _x_ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
 ___ Oxidized Root Channels in Upper 12 inches
 _X_ Water-Stained Leaves
 ___ Local Soil survey Data
 ___ FAC-Neutral Test
 ___ Other (Explain in Remarks)

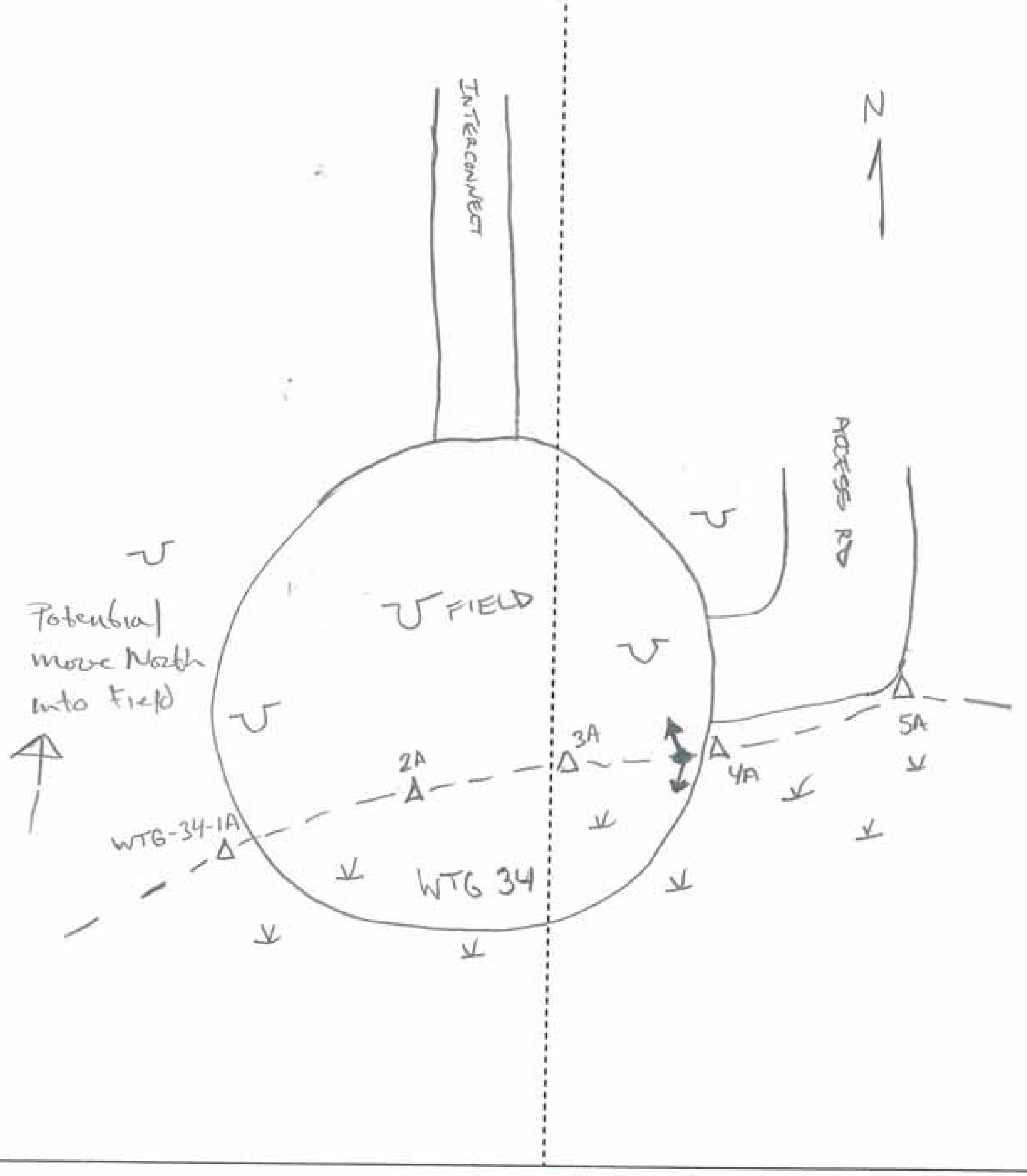
Remarks:

Adjacent Stream

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-34-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/31/06	TIME:
PHOTO ID: 100-0040, 100-0041	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩡	Wetland
▭	Sample Station	Ʊ	Upland
-------	Centerline	—►—	Perennial Stream
△	Flag	-·►-·-·►	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 10/31/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PF04 Transect ID: WT6 34 A Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 85.5 Shrub: Sap/ 10.5 Herb: 0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Red Maple	Sap	FAC	11.		
4. Balsam Fir	Sap	FAC	12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

Sphagnum sp. w/in plot.

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

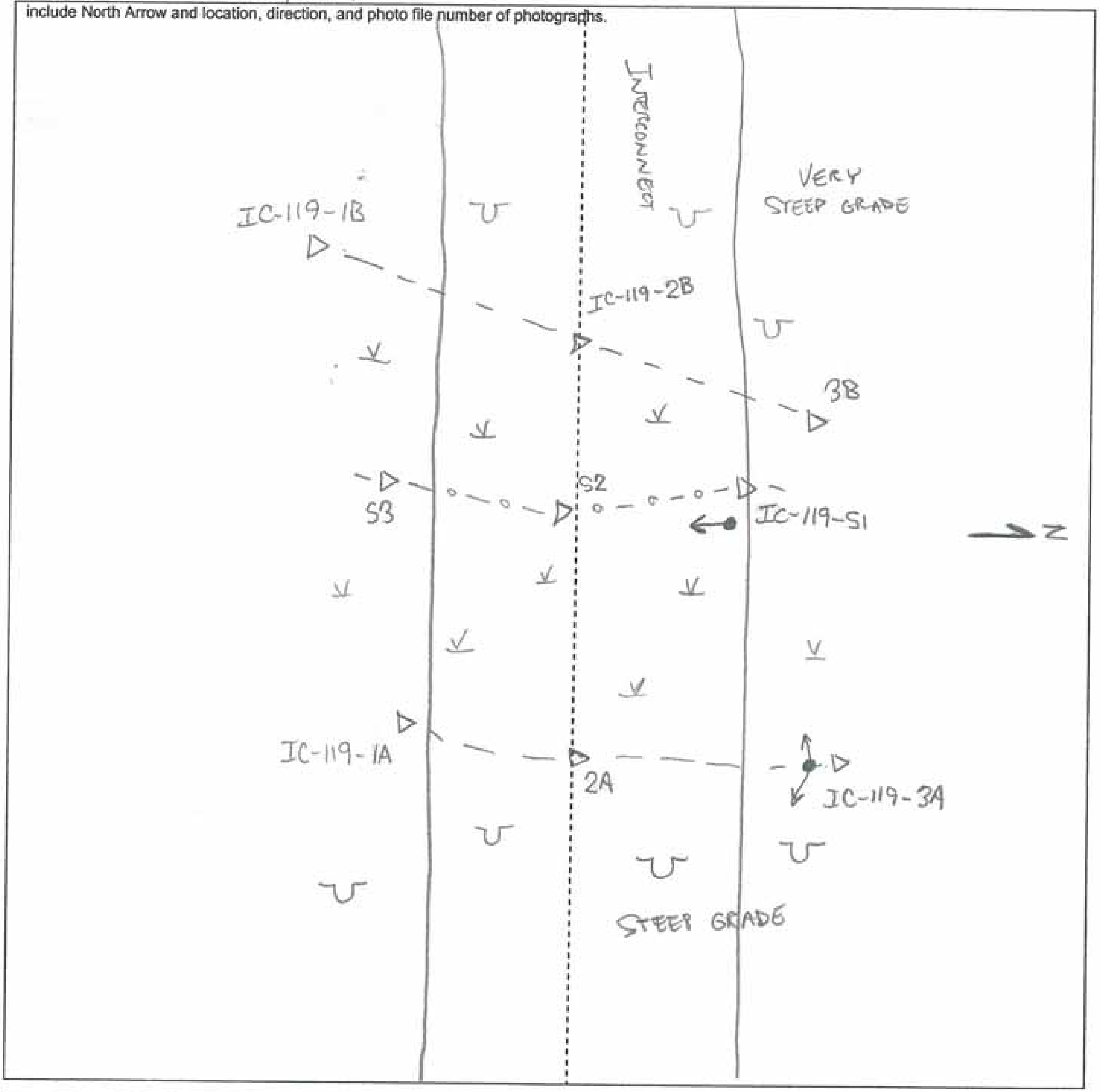
Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  X Saturated Surface
  ___ Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: IC-119-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/31/06	TIME:
PHOTO ID: 100-0042, 100-0043, 100, 0044	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - -	Centerline	→—	Perennial Stream
△	Flag	-▸-·-▸	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 10/31/0 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO4 Transect ID: JC 119 A/B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 85.5 Shrub: 0 Herb: 30 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam fir	T	FAC	9.		
2. Hemlock	T	FAC*	10.		
3. Sensitive Fern	H	FACW	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 66

Remarks: *Shallow roots

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated Surface
- ___ Water Marks
- X Drift lines
- ___ Sediment Deposits
- X Drainage Patterns In Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
USGS mapped Stream - Alder Brook

STREAM DATA

PROJECT: BURKE WIND FARM

DATE: 10/31/06

OWNER/APPLICANT: Horizon Wind

LOCATION: Franklin Co., NY

FIELD CREW: B. Raftery

PHOTO FILE #: See Sketch Sheet

FIELD BOOK AND PAGE: See Sketch Sheet

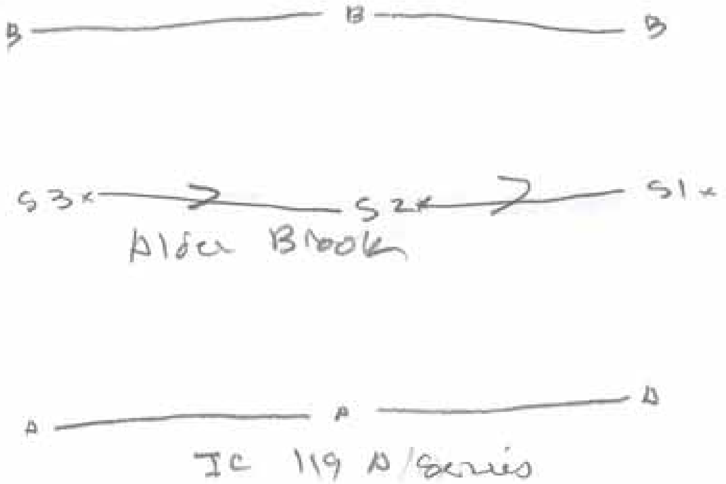
IC 119 A/B

STREAM CROSSING DATA

CHANNEL ID	IC 119 A/B S-1 thru S1		
NAME (OR TRIB TO)	Alder Brook		
TYPE OF STREAM	Unk		
PERENNIAL/INTERMIT	Perennial		
WIDTH (OBSERV/OHW)	6"		
DEPTH (OBSER/OHW)	6"– 1 ft		
FLOW RATE [1]	med		
FLOW DIRECTION	N to S.		
SUBSTRATE	Cobbles / Sand.		
BANK VEGETATION	Balsam Fir		

[1] DRY/STAGNANT/LOW/MEDIUM/HIGH

SKETCH: INCLUDE NORTH, LOCATION OF PHOTO STATION, LOCATION OF DATA PLOTS, ANY OTHER FEATURES



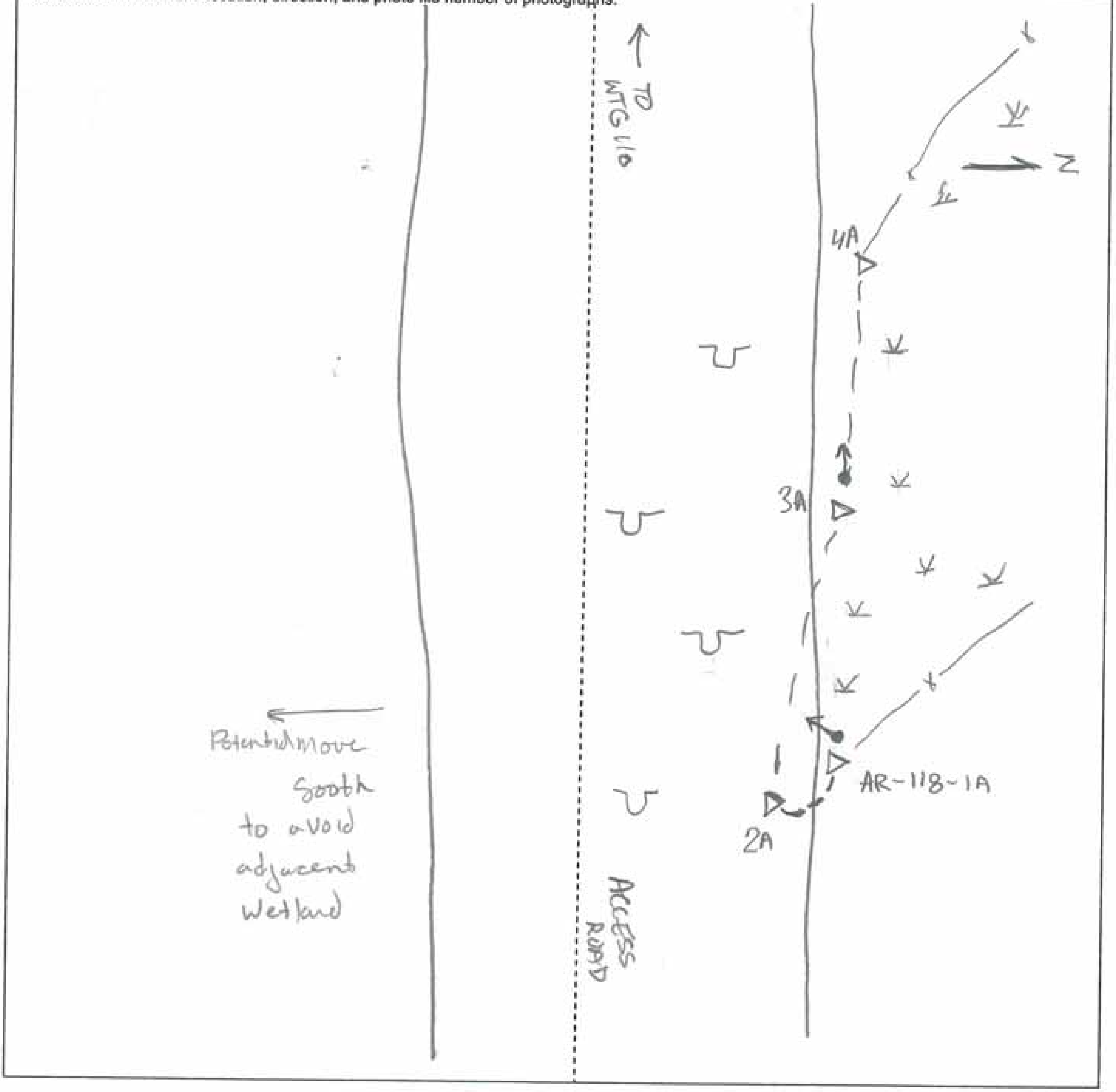
FISH AND WILDLIFE OBSERVATIONS: Beaver activity down stream
Chip munk, squirrel, song birds, possible fish habitat

NOTES: Steep slopes, dominated by Balsam Fir / Hemlock overstory

SKETCH FORM

WETLAND ID/ROUTE ID: AR-118-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000
INITIALS OF DELINEATORS: B. Raftery	DATE: 10/31/06 TIME:
PHOTO ID: 100-0046, 100-0045	Franklin County, NY

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - - -	Centerline	—▶—	Perennial Stream
△	Flag	-·▶-·-·-▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 10/31/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PFO1
Transect ID: AR118 A
Plot ID:
PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 85.5 Shrub: Sapl 20.5 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Balsam Fir	T	FAC	11.		
4. Nannyberry	Sh	FAC	12.		
5. Red Maple	Sap	FAC	13.		
6. Carex *	H	FACW	14.		
7. Sensitive fern	H	FACW	15.		
8 Grasses *	H	FACW	16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
* Un ID due to seasonal conditions assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
Primary Indicators:
- ___ Inundated
- x Saturated to Surface
- ___ Water Marks
- ___ Drift lines
- x Sediment Deposits
- x Drainage Patterns In Wetlands

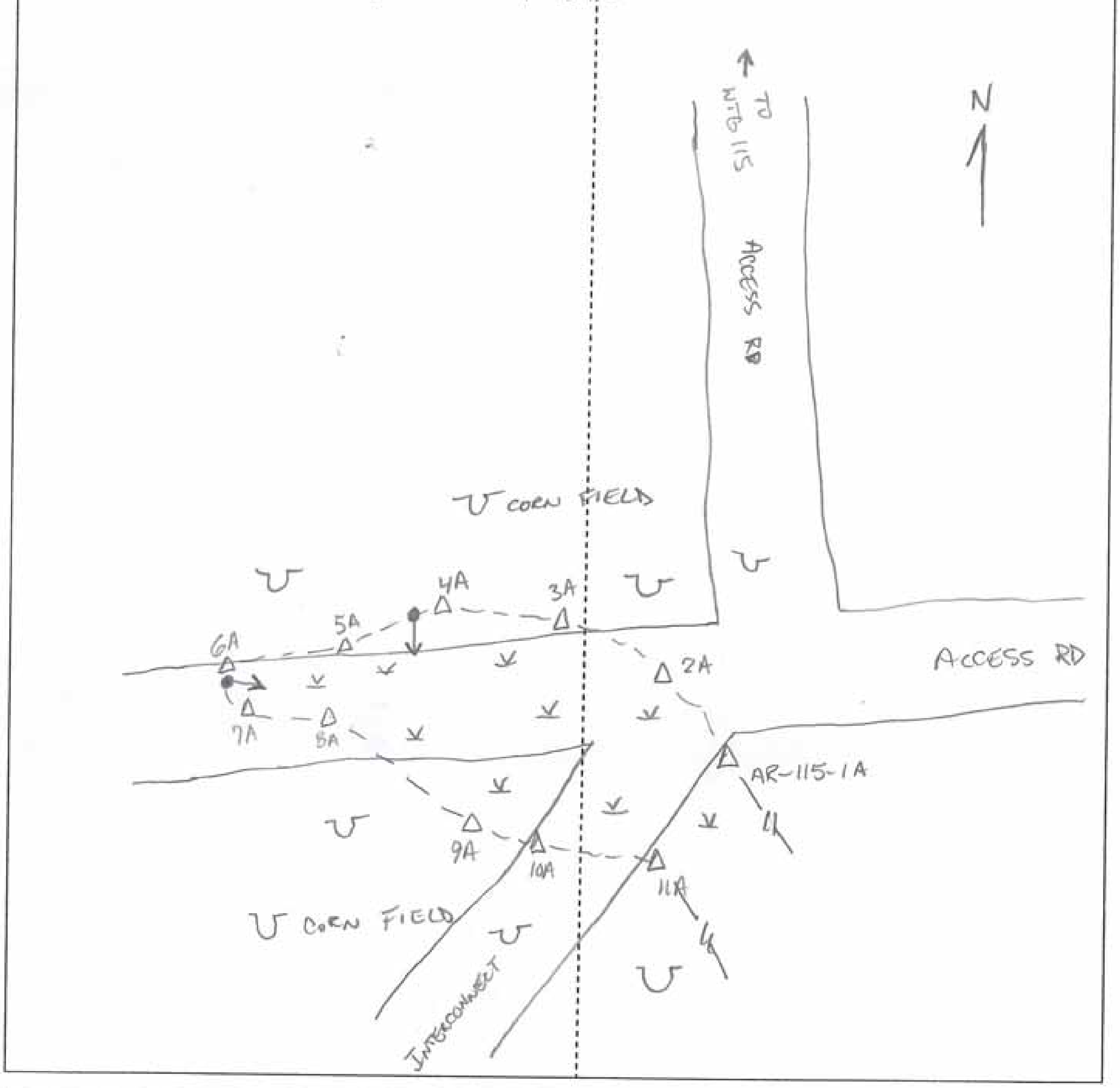
Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- x Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
NWI mapped wetland

SKETCH FORM

WETLAND ID/ROUTE ID: AR-115-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/1/06	TIME:
PHOTO ID: 100-0047, 100-0048	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	ѱ	Wetland
▭	Sample Station	Ʊ	Upland
-------	Centerline	⟶	Perennial Stream
△	Flag	-·►-·-►	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/1/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] * Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEM/PSS Transect ID: AR115-A Plot ID: PHOTO ID:

*Portion of Wetland subject to farming.

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 20.5 Shrub: 63.0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Gray Birch	T	FAC	10.		
3. Willow	S	FACW	11.		
4. Meadow	S	FAC	12.		
5. Soft Rush	H	FACW	13.		
6. Sensitive Fern	H	FACW	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- _x_ Saturated Surface
- ___ Water Marks
- ___ Drift lines
- ___ Sediment Deposits
- _x_ Drainage Patterns In Wetlands

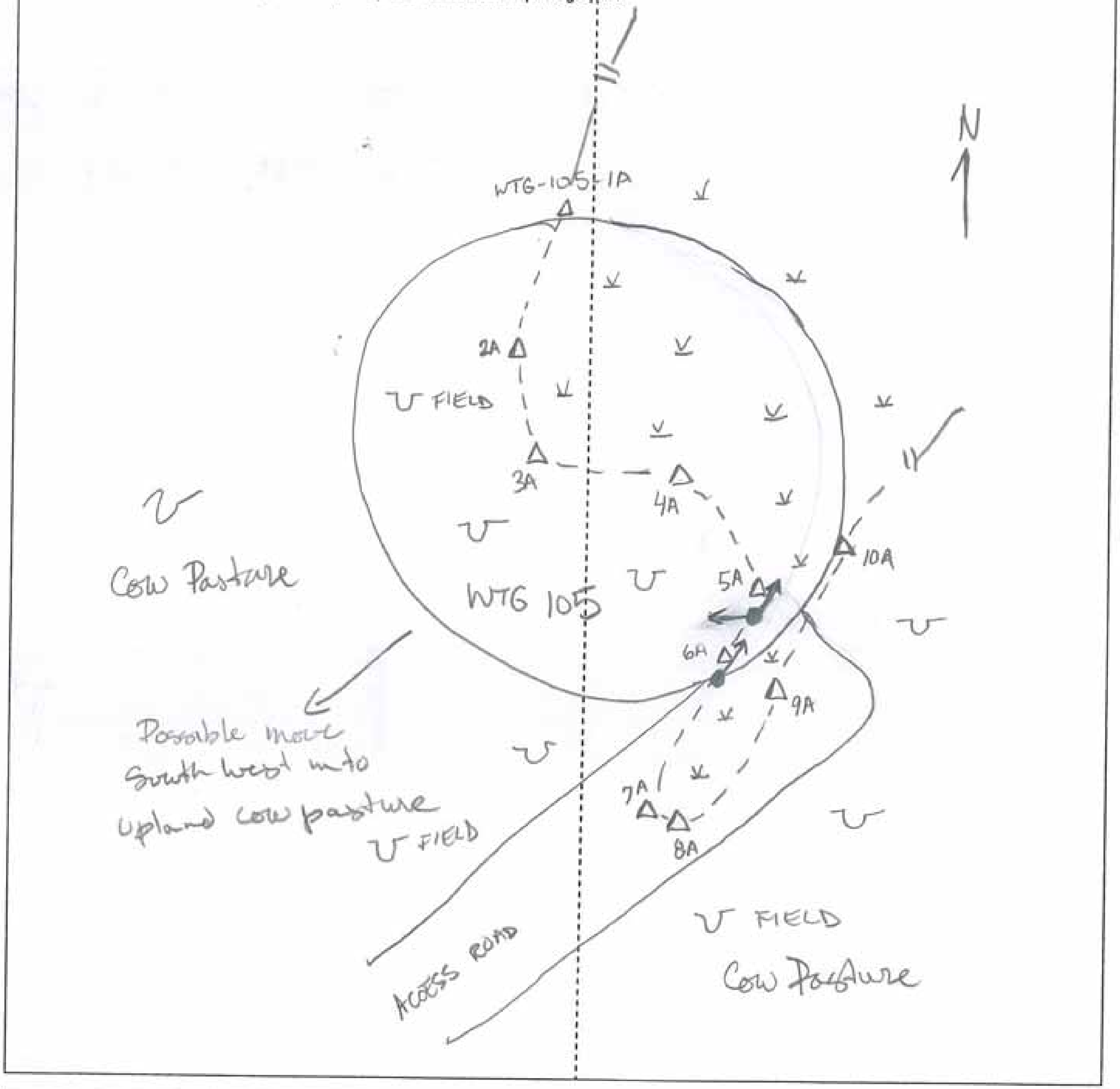
Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- _X_ Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-105-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/1/06 TIME:
PHOTO ID: 100-0049, 100-0050, 100-0051	Franklin County, NY

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	∪	Upland
--------	Centerline	——▶——▶	Perennial Stream
△	Flag	- -▶- -·-▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 11/1/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] *
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PEM/PFO4
Transect ID: WEG 105 A
Plot ID:
PHOTO ID:

VEGETATION

* Active cow pasture

Plant Community Classification:
Percent Canopy Cover: Tree: 58.0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Balsam Fir	T	FAC	11.		
4. Soft Rush	H	FACW	12.		
5. Carex Sp. *	H	FAC	13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

*Un-ID due to seasonal conditions assumed FAC

HYDROLOGY

☒ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
Primary Indicators:
- ___ Inundated
- X Saturated to surface
- ___ Water Marks
- ___ Drift lines
- ___ Sediment Deposits
- X Drainage Patterns In Wetlands

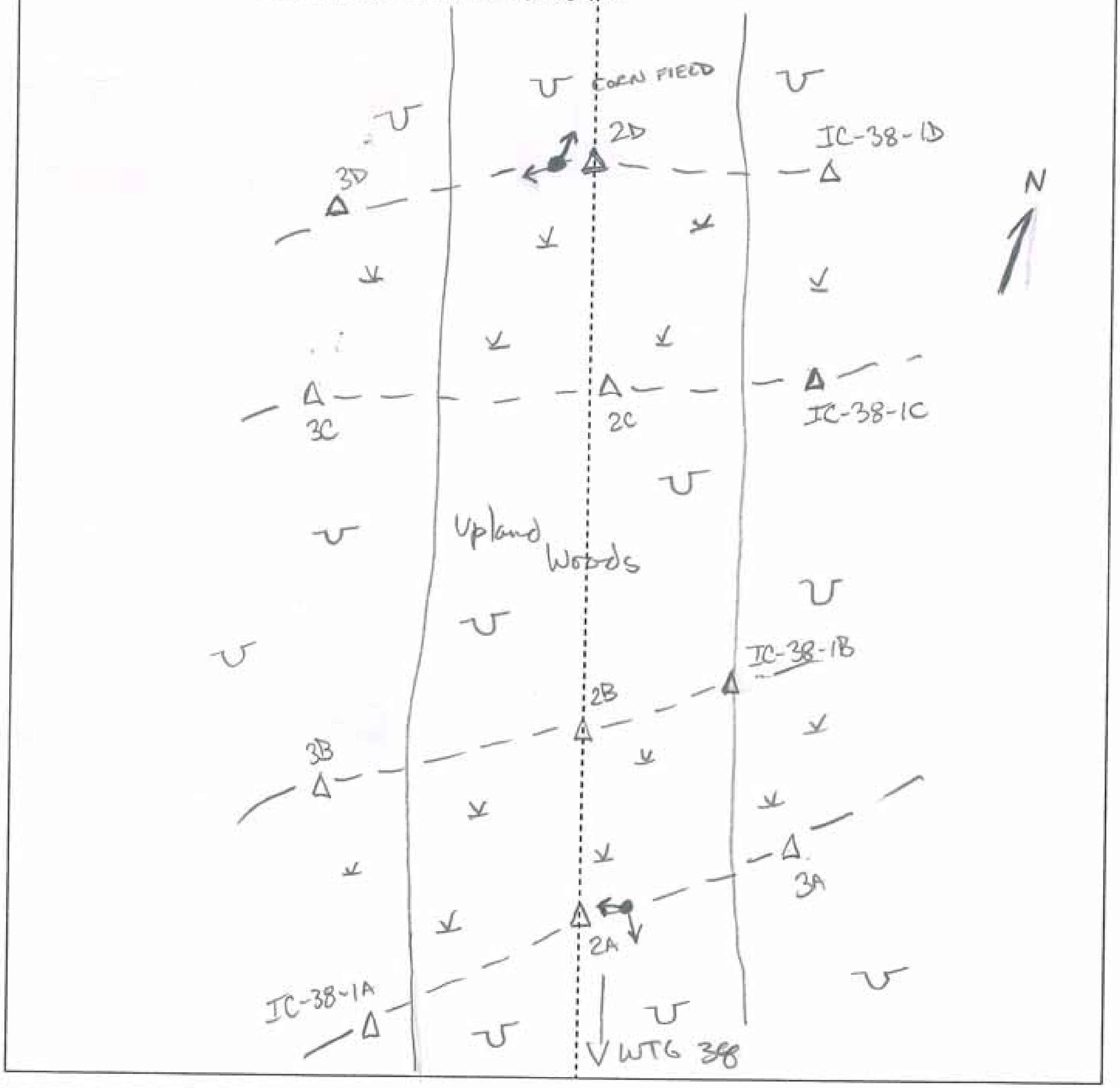
Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: IC-38-A/B/C/D	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/1/06	TIME:
PHOTO ID: 100-0054, 100-0055, 100-0056, 100-005	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	⋃	Upland
- - - - - -	Centerline	——→	Perennial Stream
△	Flag	-▸-·-·-▸	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 11/1/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PFO4
Transect ID: IC 3B A/B
Plot ID:
PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 85.5 Shrub: 0 Herb: 20.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsm Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Sensitive Fern	H	FACW	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

Sphagnum sp. w/in plot

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  X Saturated Surface
  ___ Water Marks
  ___ Drift lines
  X Sediment Deposits
  ___ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/1/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEM Transect ID: IC 38 C/D Plot ID: PHOTO ID:

VEGETATION Emergent area adjacent Cornfield

Plant Community Classification:

Percent Canopy Cover: Tree: 20.5 Shrub: 0 Herb: 85.5 Vine: 8

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Soft Rush	H	FACW	9.		
2. Sensitive Fern	H	FACW	10.		
3. Red Maple	T	FAC	11.		
4. Balsam Fir	T	FAC	12.		
5. Grass Sp.	H	FAC	13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-):

Remarks:
UnID due to seasonal conditions assumed FAC

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☒ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.):

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☒ Saturated Surface
- ☐ Water Marks
- ☐ Drift lines
- ☐ Sediment Deposits
- ☒ Drainage Patterns In Wetlands

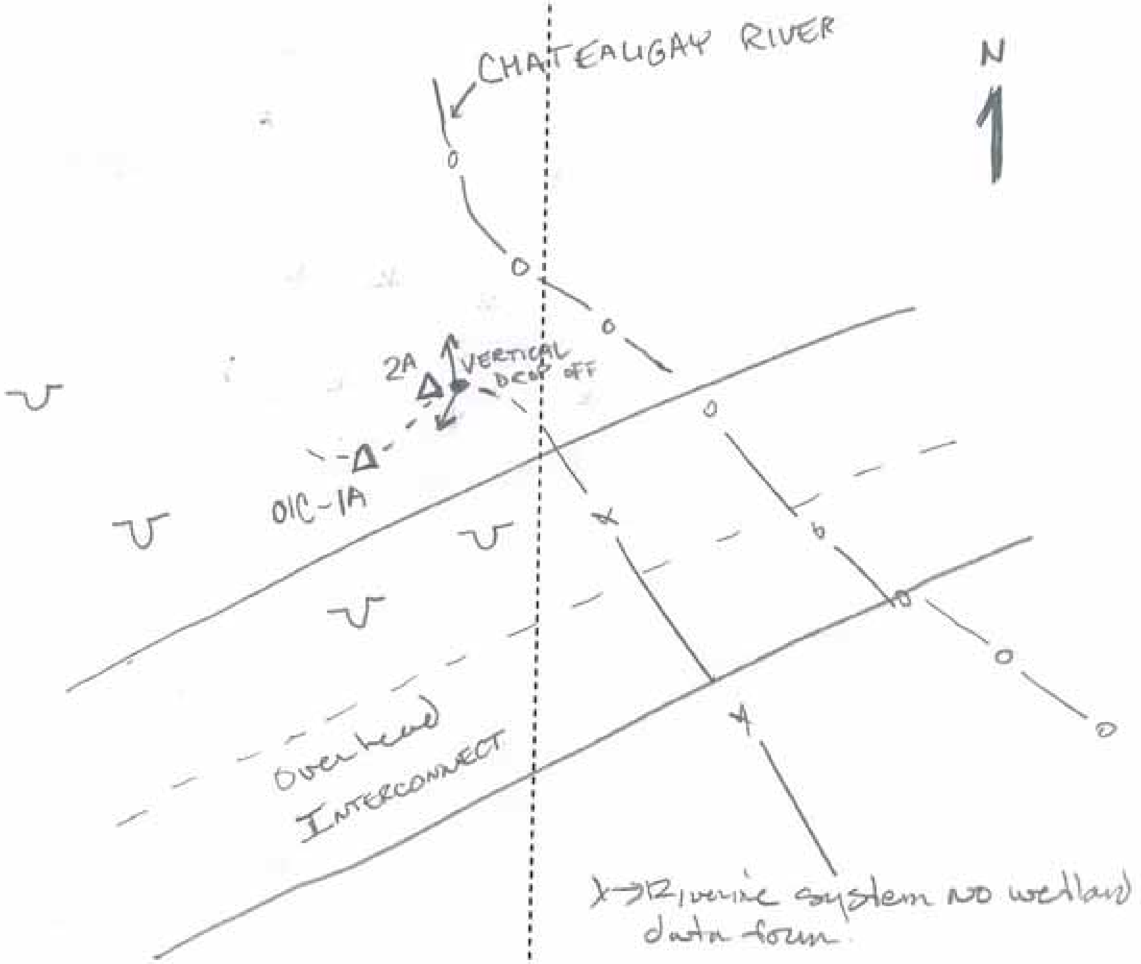
Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12 inches
- ☒ Water-Stained Leaves
- ☐ Local Soil survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: OIC-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/1/06 TIME:
PHOTO ID: 100-0052, 100-0053	Franklin County, NY

include North Arrow and location, direction, and photo file number of photographs.



X→Riverine system no wetland data form.

X→Deep Steep Ravine, GPS Sats. impossible to get.

X→USGS delineation of River appears accurate.

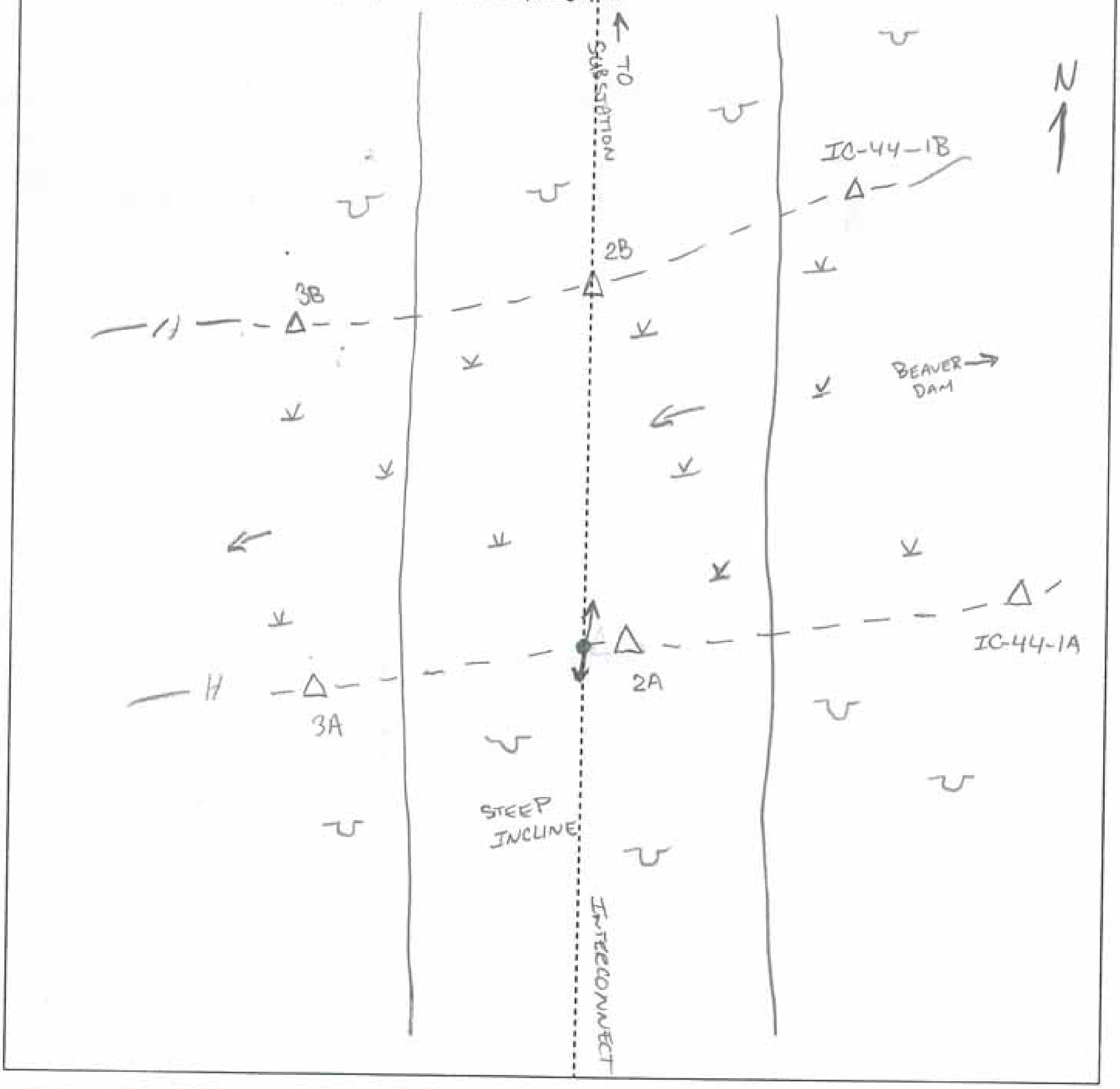
LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	ᘁ	Upland
- - - - -	Centerline	——▶——	Perennial Stream
△	Flag	-▶-·-·-▶	Intermittent Stream

SKETCH FORM

WETLAND ID/ROUTE ID: IC-44-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/2/06	TIME:
PHOTO ID: SEE LOG BOOK	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction		Wetland
▭	Sample Station		Upland
-------	Centerline	→	Perennial Stream
△	Flag	-·▸-·-·▸	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/2/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? * Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO 4 Transect ID: JC 44 A/B Plot ID: PHOTO ID:

* Beaver activity

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 85.5 Shrub: 0 Herb: 10.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Grey Birch	T	FAC	11.		
4. Sensitive Fern	H	FACW	12.		
5. Carex sp *	H	FACW	13.		
6. Grass sp *	H	FACW	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

UnID due to seasonal conditions assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

✓ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated
- X Water Marks
- ___ Drift lines
- ___ Sediment Deposits
- X Drainage Patterns In Wetlands

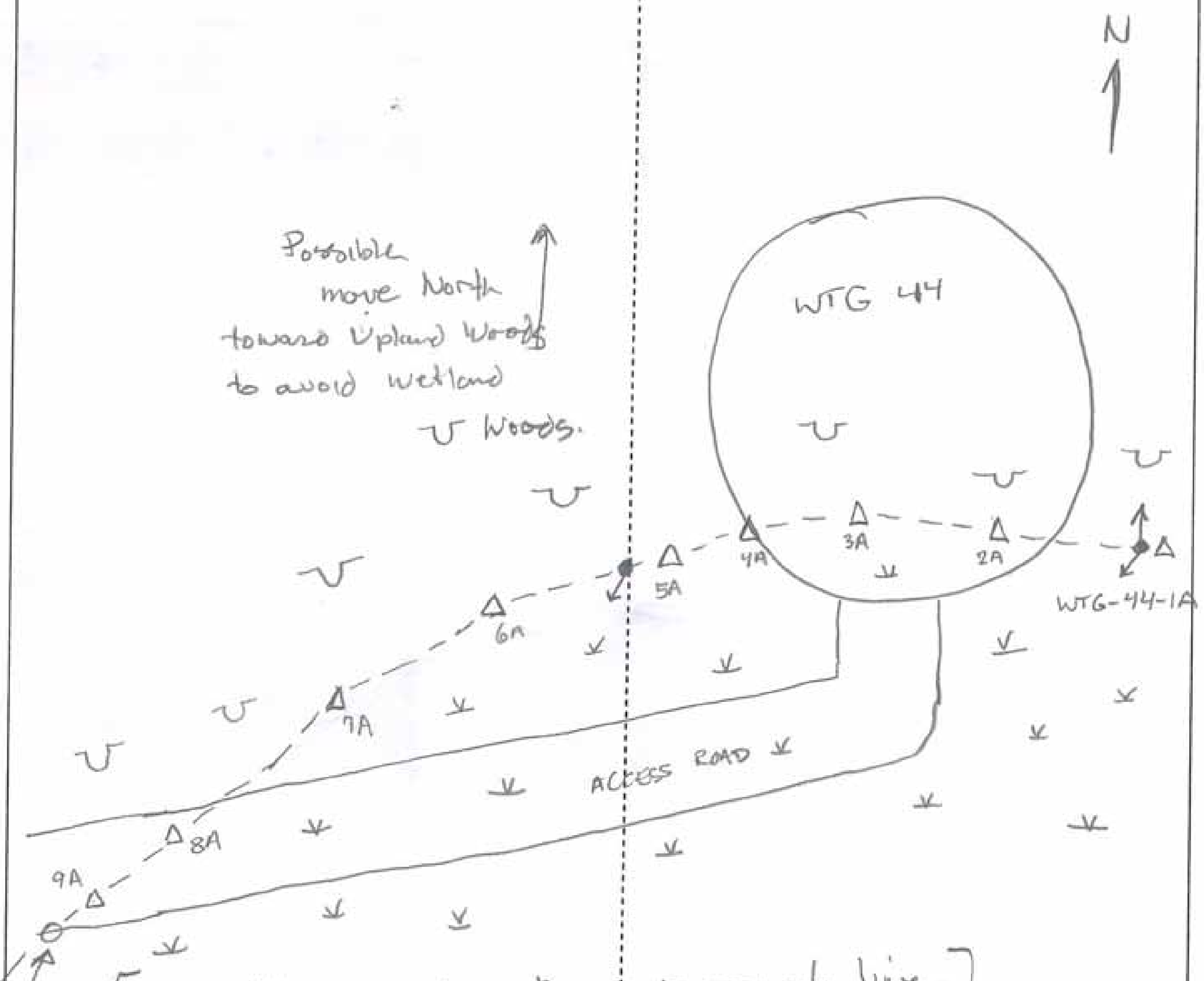
Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-44-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/2/06	TIME:
PHOTO ID: 100-0058, 100-0059, 100-0060	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



Possible move North toward Upland Woods to avoid wetland
∪ Woods.

This wetland boundary attached to property line, No additional flags add, adjoining property is a off limits Noble Property.

LEGEND

●→ Photo Location / Direction
▭ Sample Station
-------- Centerline
△ Flag
Wetland
Upland
→ Perennial Stream
-▸-·-·-▸ Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/2/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO4 Transect ID: WTG 44 A Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 85.5 Sap/ Shrub: 20.5 Herb: 38.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Gray Birch	T	FAC	11.		
4. Balsam Fir	Sap	FAC	12.		
5. Red Maple	Sap	FAC	13.		
6. Carex sp *	H	FACW	14.		
7. Coreopsis sp *	H	FACW	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100 %

Remarks:

HYDROLOGY

__ Recorded Data (Describe in Remarks):
__ Stream, Lake, or Tide Gauge
__ Aerial Photographs
__ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 12"

Depth to Saturated Soil (in.): 12"

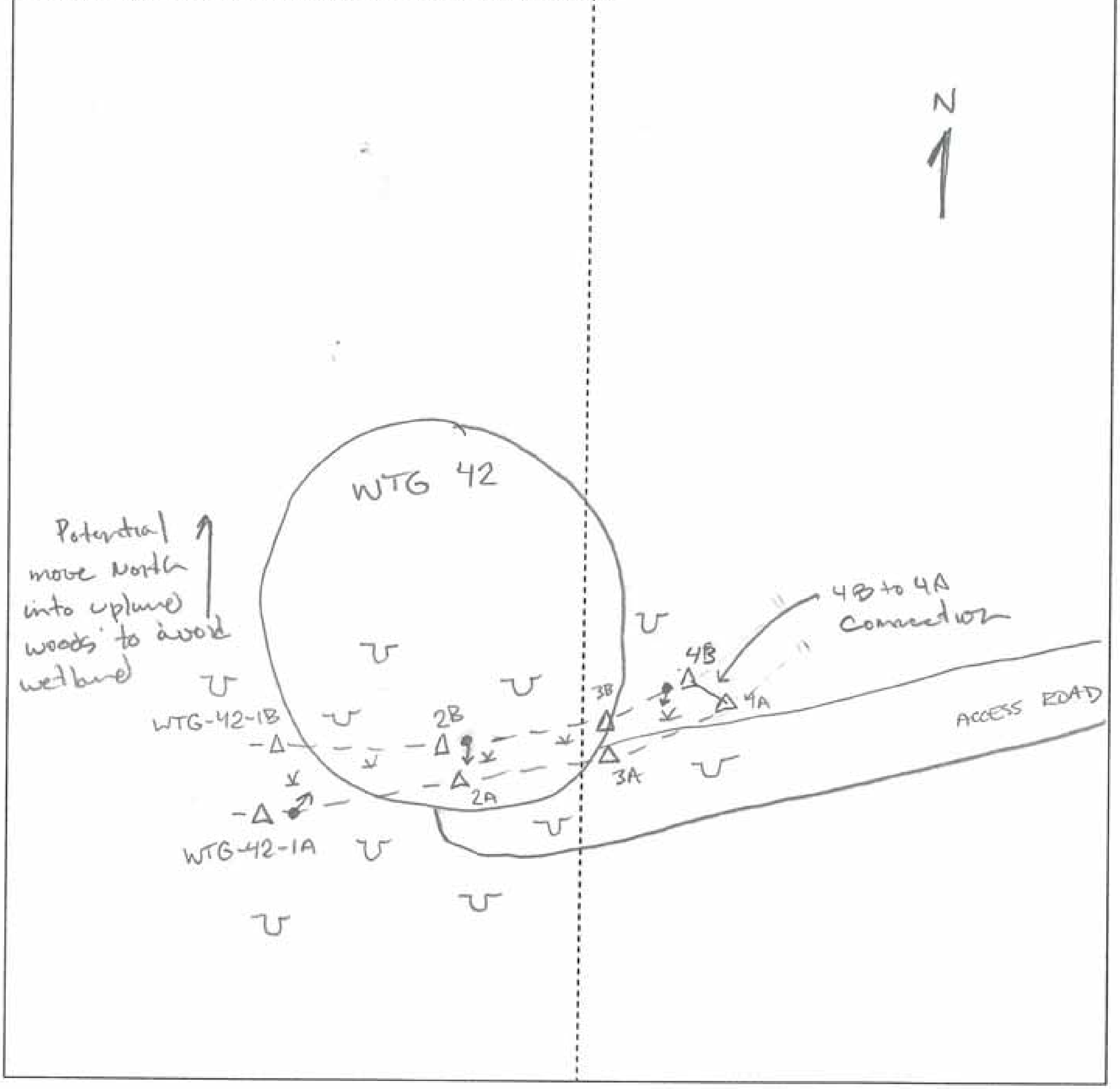
Wetland Hydrology Indicators:
Primary Indicators:
__ Inundated
x Saturated w/in 12"
x Water Marks
__ Drift lines
__ Sediment Deposits
x Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
__ Oxidized Root Channels in Upper 12 inches
X Water-Stained Leaves
__ Local Soil survey Data
__ FAC-Neutral Test
__ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-42-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/2/06 TIME:
PHOTO ID: 100-0001, 100-0002, 100-0003	Franklin County, NY

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - - -	Centerline	——▶	Perennial Stream
△	Flag	-·▶-·-·▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/2/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1 Transect ID: WT642 A/B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Shrub: 0 Herb: 0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
Poorly drain area, extremely rocky w/ area w/ some standing H2O (11/2/06), swale shape w/ Red Maples

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated to Surface
- X Water Marks
- ___ Drift lines
- ___ Sediment Deposits
- X Drainage Patterns In Wetlands

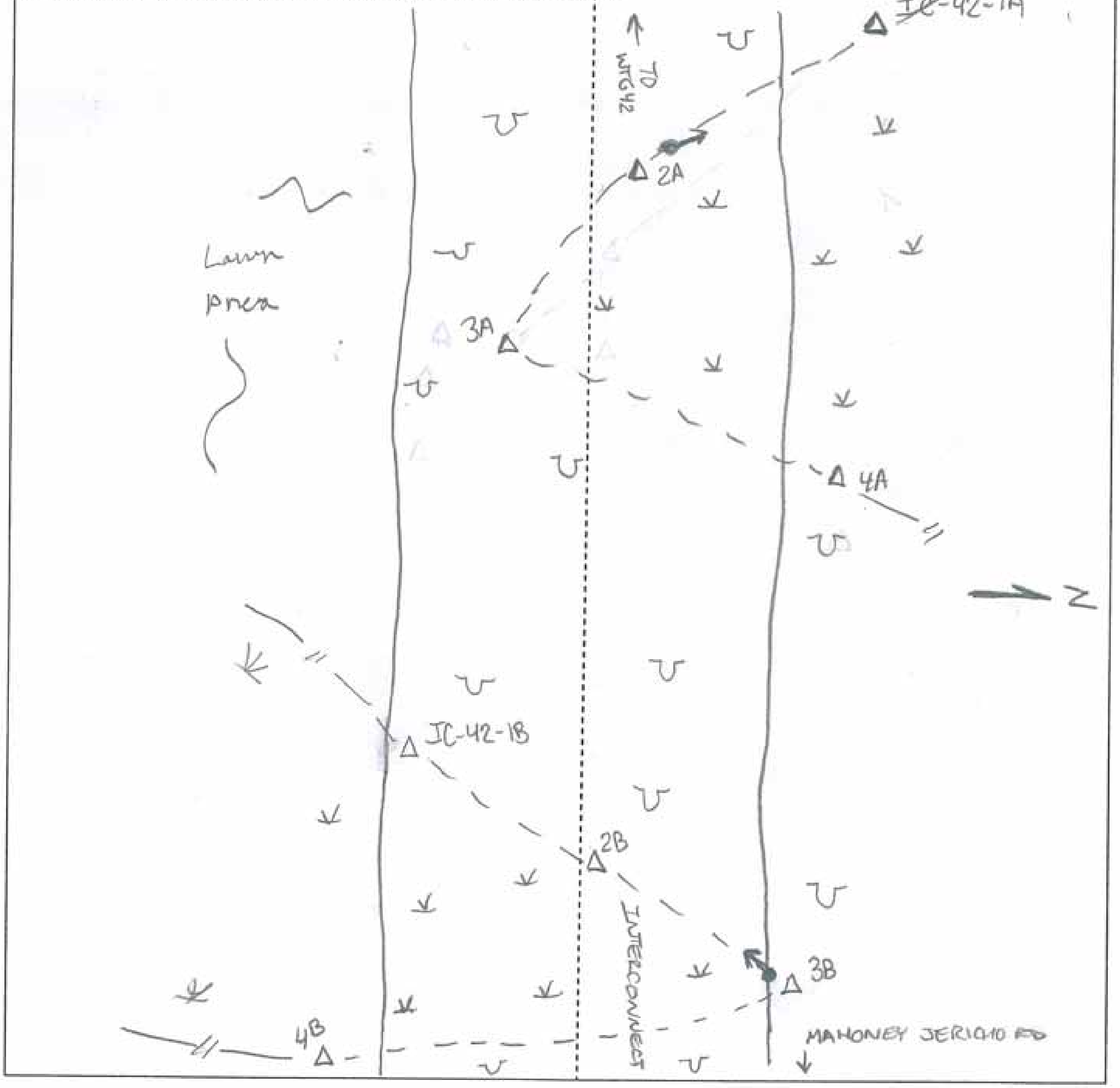
Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: IC-42-AB	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/2/06	TIME:
PHOTO ID: 100-0004, 100-0005	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction		Wetland
▭	Sample Station		Upland
- - - - -	Centerline	▸→	Perennial Stream
△	Flag	- ▸ - - ▸	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 11/2/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No *
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] *
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: FF01
Transect ID: IC 42 A & B
Plot ID:
PHOTO ID:

VEGETATION

* Ditching and tree clearing by home owner

Plant Community Classification:
Percent Canopy Cover: Tree: 63.0 Sap/Shrub: 38.0 Herb: 38.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red maple	T	FAC	9.		
2. Birch	T	FAC	10.		
3. Red maple	Sap	FAC	11.		
4. Birch	Sap	FAC	12.		
5. Meadow Sweet	S	FAC	13.		
6. Soft Rush	H	FACW	14.		
7. Sensitive Fern	H	FACW	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

Tree Clearing

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 12"

Depth to Saturated Soil (in.): 12"

Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  _X_ Saturated 12"
  _X_ Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  _X_ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  _X_ Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

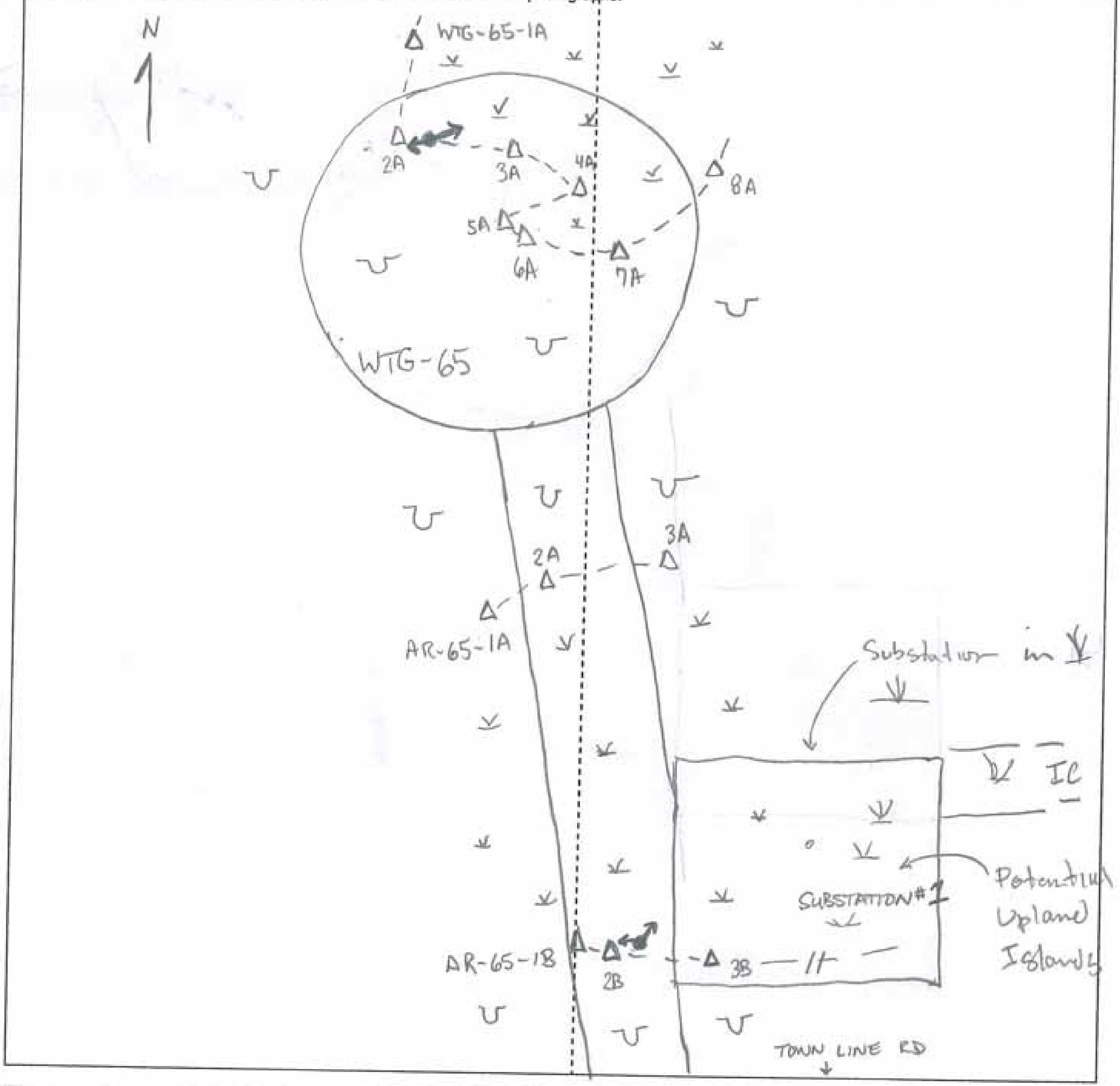
Remarks:

* Home owner performed ditching in yard

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-65-A, AR-65-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/3/06	TIME:
PHOTO ID: 100-0006, 100-0007, 100-0008, 100-0009	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - - -	Centerline	——▶——	Perennial Stream
△	Flag	- ▶ - - - ▶	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 4/3/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: RF01 Transect ID: WTG 65 A Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Shrub: Sap 38.0 Herb: 20.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Red Maple	Sap	FAC	11.		
4. Grey Birch	Sap	FAC	12.		
5. Sensitive Fern*	H	FACW	13.		
6.* Carex sp.*	H	FAC	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
* UN ID due to seasonal conditions assumed FAC

HYDROLOGY

___ Recorded Data (Describe in Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other X No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: ___ Inundated X Saturated w/in 12" ___ Water Marks ___ Drift lines ___ Sediment Deposits X Drainage Patterns In Wetlands Secondary Indicators (2 or more required): ___ Oxidized Root Channels in Upper 12 inches X Water-Stained Leaves ___ Local Soil survey Data ___ FAC-Neutral Test ___ Other (Explain in Remarks)
Field Observations: Depth of Surface Water (in.): 0 Depth to Free Standing Water in Pit (in.): 12" Depth to Saturated Soil (in.): 12"	

Remarks:

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/3/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO/PSS Transect ID: AR 65 A/B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Shrub: 63.0 Herb: 20.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Grey Birch	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Nanny Berry	S	FAC	11.		
4. Sensitive Fern	H	FACW	12.		
5. Carex sp. *	H	FACW	13.		
6. Grasses sp *	H	FACW	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

*UNID due to seasonal conditions assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 12"

Depth to Saturated Soil (in.): 12"

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated w/in 12'
- ___ Water Marks
- ___ Drift lines
- ___ Sediment Deposits
- X Drainage Patterns In Wetlands

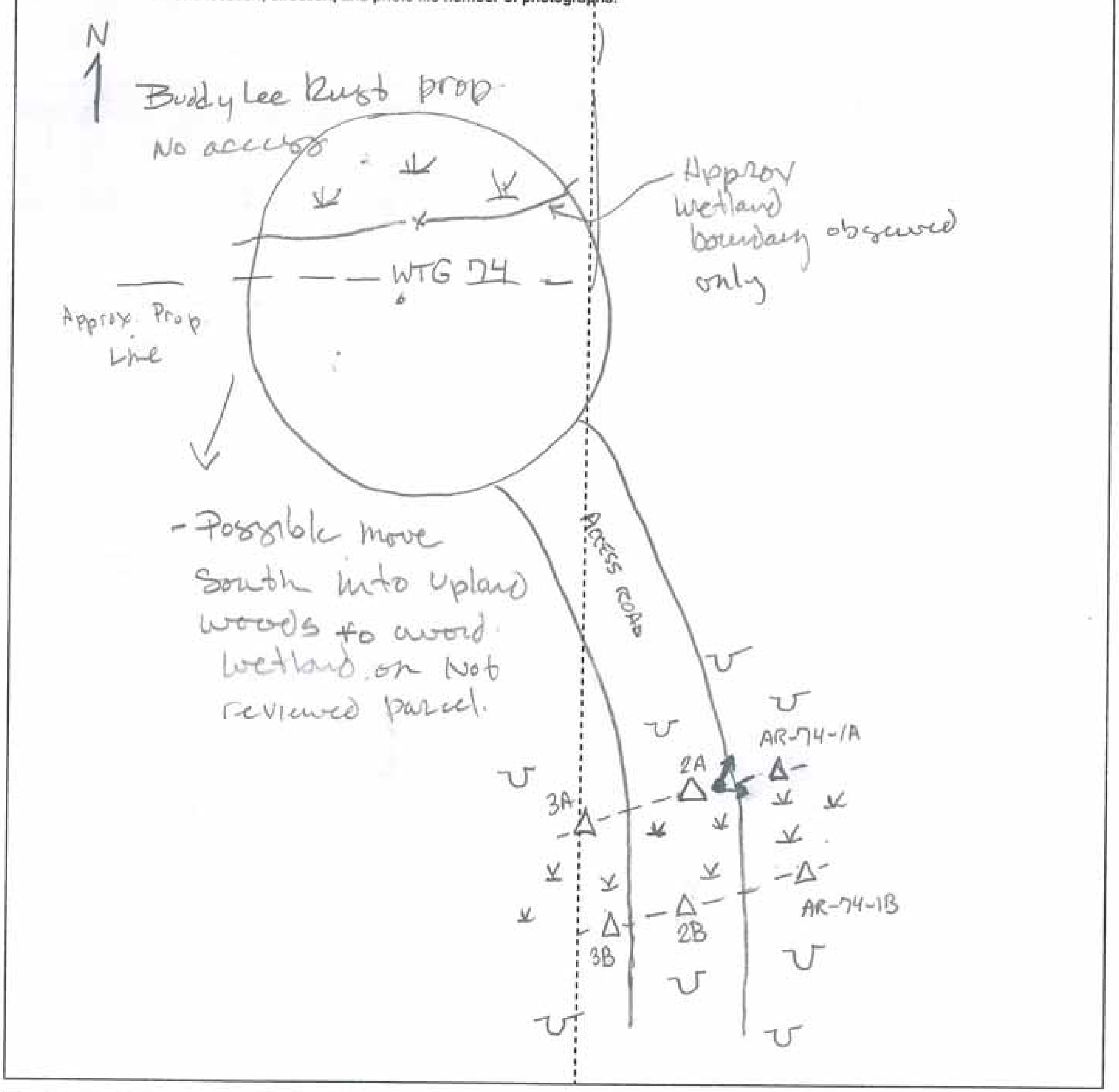
Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: AR-74-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/3/06	TIME:
PHOTO ID: 100-0010, 100-0011	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



- Possible move South into upland woods to avoid wetland on Not reviewed parcel.

LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	ᑌ	Upland
- - - - -	Centerline	——▶——	Perennial Stream
△	Flag	--▶--·--▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/3/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1 Transect ID: AR 74 PB Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Shrub: 0 Herb: 26.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Jewel Weed	H	FACW	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 6"

Depth to Saturated Soil (in.): 6"

Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  X Saturated w/ 6"
  ___ Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

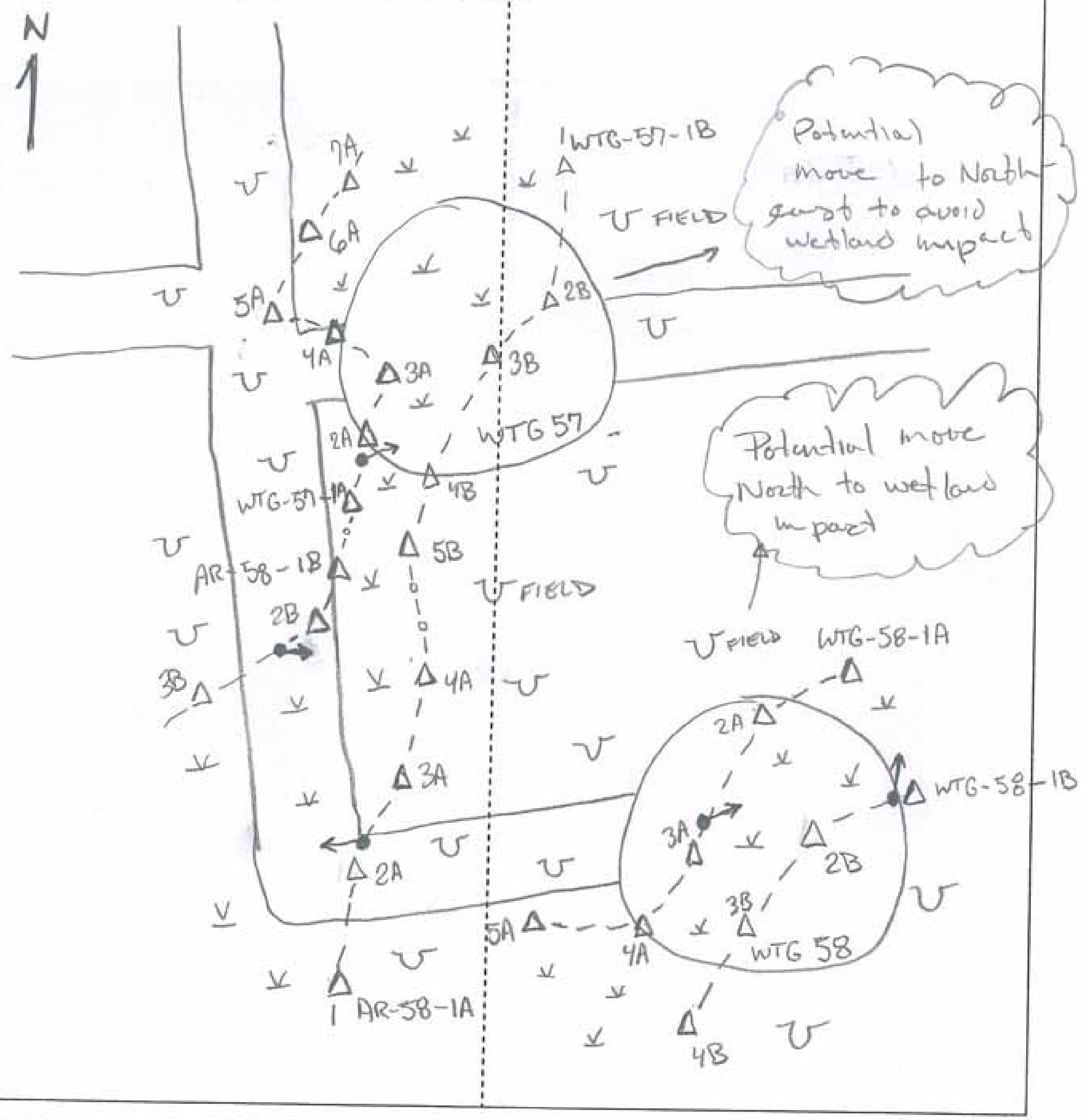
Remarks:

Depression / Swale

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-58-A/B, WTG-57 A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery AR-58-A/B	DATE: 11/4/06	TIME:
PHOTO ID: 100-0016, 100-0017, 100-0018, 100-0019, 100-0020	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - - -	Centerline	——→	Perennial Stream
△	Flag	-·▸-·-·-▸	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 11/4/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PFO/PSS
Transect ID:
Plot ID: A258A/B
PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 63.0 Sap/Shrub: 63.0 Herb: 63.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Red Maple	Sap	FAC	11.		
4. Grey Birch	Sap	FAC	12.		
5. Meadow Sweet	S	FAC	13.		
6. Soft Rush	H	FACW	14.		
7. Sensitive	H	FACW	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
 ___ Stream, Lake, or Tide Gauge
 ___ Aerial Photographs
 ___ Other
_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated
_X_ Saturated to Surface
_X_ Water Marks
___ Drift lines
___ Sediment Deposits
_X_ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12 inches
_X_ Water-Stained Leaves
___ Local Soil survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks:

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/4/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEM Transect ID: WTG 57 A/B Plot ID: PHOTO ID:

VEGETATION

* Grazed & mowed wet meadow

Plant Community Classification:

Percent Canopy Cover: Tree: 0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Soft Rush	H	FACW	9.		
2. Carex spp *	H	FACW	10.		
3. Wool Grass	H	FACW	11.		
4. Grasses Spp *	H	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

*VNID due to seasonal conditions assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 6"

Depth to Saturated Soil (in.): 6"

Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated
_X_ Saturated w/in 6"
___ Water Marks
___ Drift lines
___ Sediment Deposits
_X_ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12 inches
_X_ Water-Stained Leaves
___ Local Soil survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks:

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 11/4/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PFO/PSS
Transect ID: WTG 58 A/B
Plot ID:
PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 63.0 Shrub: 63.0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Grey Birch	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Balsam Fir	T	FAC	11.		
4. Silky Dogwood	S	FACW	12.		
5. Meadow Sweet	S	FAC	13.		
6. Soft Rush	H	FACW	14.		
7. Sensitive Fern	H	FACW	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 6"

Depth to Saturated Soil (in.): 6"

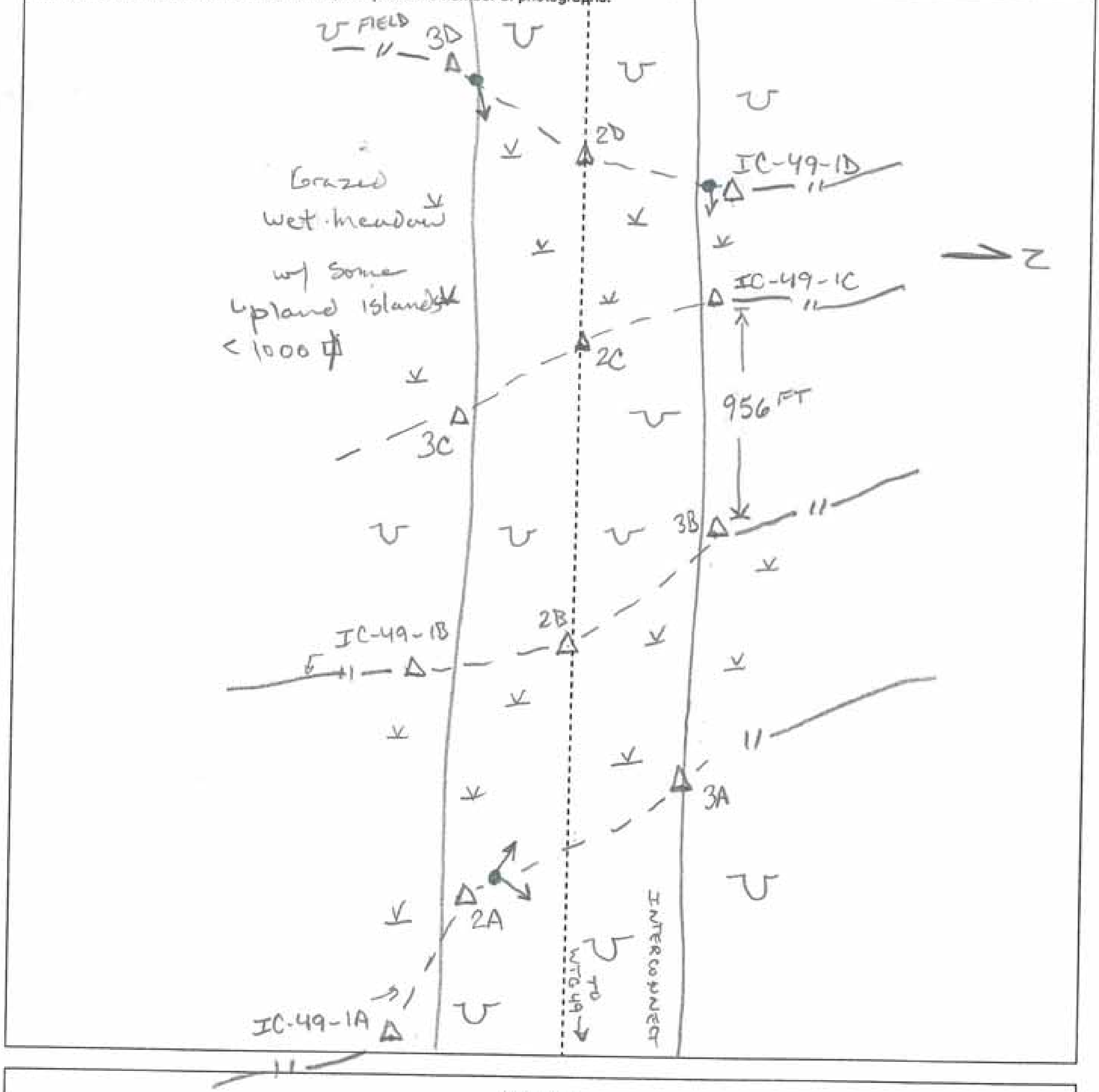
Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  ✓ Saturated <6"
  ___ Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  ✓ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  ✓ Water-Stained Leaves
  ✓ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: IC-49-A/B/C/D	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/4/06	TIME:
PHOTO ID: 100-0012, 100-0013, 100-0014, 100-0015	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩡	Wetland
▭	Sample Station	Ʊ	Upland
-------	Centerline	——▶——	Perennial Stream
△	Flag	-▶-·-·-▶	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 11/4/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PFO/PSS
Transect ID: IC49 A/B
Plot ID:
PHOTO ID:

*Old Beaver activity

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 63.0 Sap/Shrub: 20.5 Herb: 10.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Balsam Fir	T	FAC	11.		
4. Red Maple	Sap	FAC	12.		
5. Grey Birch	Sap	FAC	13.		
6. Grass sp. *	H	FACW	14.		
7. Carex sp. *	H	FACW	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

* UnID due to seasonal condition FACW+

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
  ☐ Stream, Lake, or Tide Gauge
  ☐ Aerial Photographs
  ☐ Other
☒ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 6

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
Primary Indicators:
  ☐ Inundated
  ☒ Saturated Surface
  ☒ Water Marks
  ☐ Drift lines
  ☒ Sediment Deposits
  ☐ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ☐ Oxidized Root Channels in Upper 12 inches
  ☒ Water-Stained Leaves
  ☐ Local Soil survey Data
  ☐ FAC-Neutral Test
  ☐ Other (Explain in Remarks)

Remarks:

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 11/4/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] *
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PEM
Transect ID: IC49 C/D
Plot ID:
PHOTO ID:

* Grazed wet meadow

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Soft Rush	H	FACW	9.		
2. Wool Grass	H	FACW	10.		
3. Carex sp. *	H	FACW	11.		
4. Grasses *	H	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

Wetland contains area of upland < 1000 sq ft (approx)
* Un ID due to seasonal conditions assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

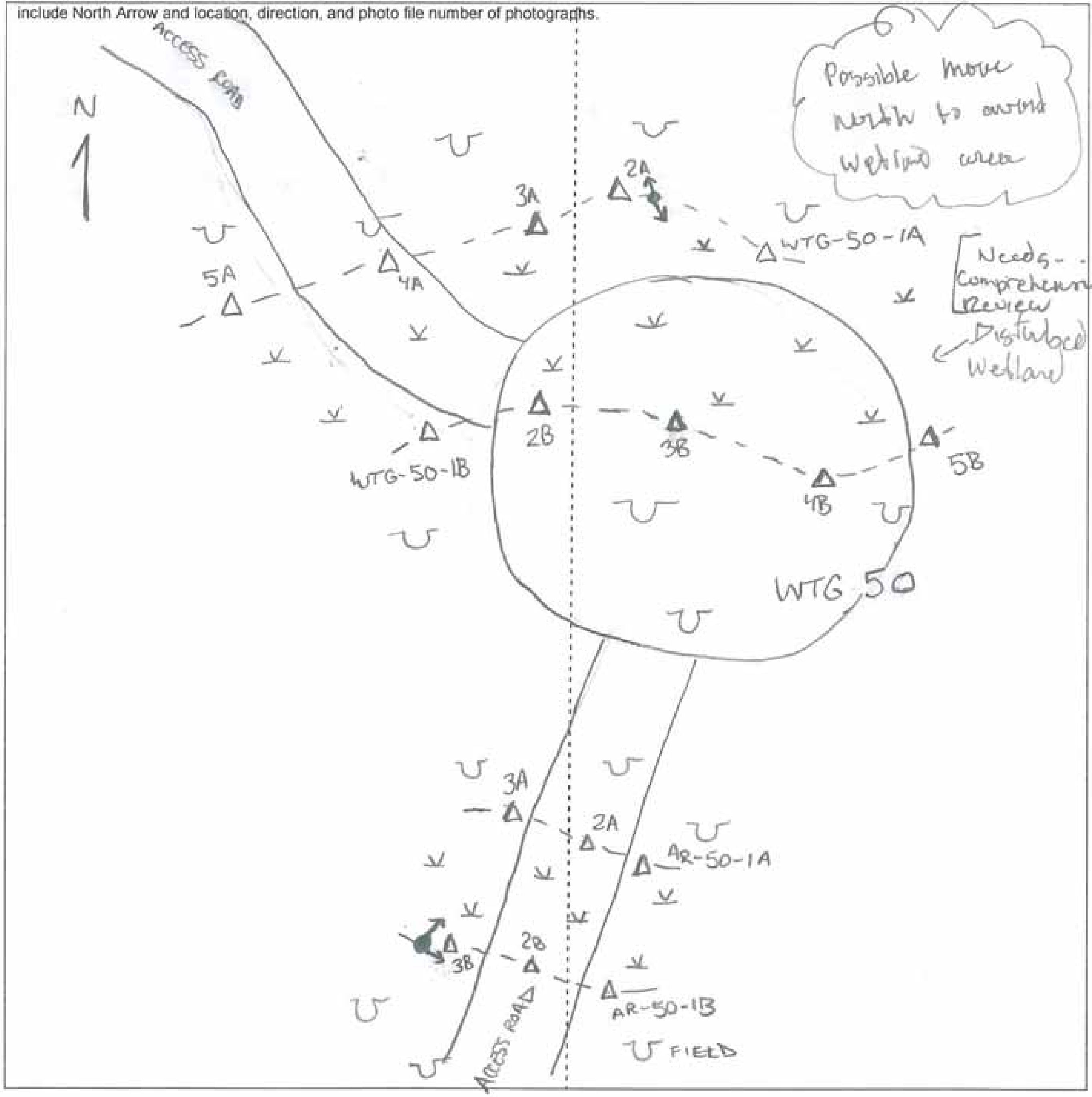
Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  _X_ Saturated Surface
  ___ Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  _X_ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  _X_ Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-50-A/B, AR-50-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/5/06	TIME:
PHOTO ID: 100-0021, 100-0022, 100-0023, 100-0024	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



Possible move north to avoid wetland area

Needs Comprehensive Review

Disturbed Wetland

LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - - -	Centerline	—▶—	Perennial Stream
△	Flag	-▶-·-·-▶	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/5/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]* Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO / PSS Transect ID: WTG 50 A/B Plot ID: PHOTO ID:

* Tree clearing, tire ruts, & cow grazing

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 38.0 Sap/ Shrub: 63.0 Herb: 20.6 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Grey Birch	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Balsam Fir	T	FAC	11.		
4. Gray Birch	Sap	FAC	12.		
5. Raspberry	S	FAC	13.		
6. Sensitive Fern	H	FACW	14.		
7. Soft Rush	H	FACW	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): >12"

Depth to Saturated Soil (in.): >12"

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated
- ___ Water Marks
- ___ Drift lines
- ___ Sediment Deposits
- X Drainage Patterns In Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
Disturbed area w/ second growth Grey Birch dominant; Detail delineation necessary to find shape of wetland; Low chroma soils w/ redox observed.

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/5/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No * Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEM Transect ID: AB 50 A/B Plot ID: PHOTO ID:

VEGETATION * Subject to Corps grouping

Plant Community Classification:

Percent Canopy Cover: Tree: 10.5 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Balsam Fir	T	FAC	10.		
3. Soft Rush	H	FACW	11.		
4. Sensitive Fern	H	FACW	12.		
5. Wool grass	H	FACW	13.		
6. Carex sp. *	H	FACW	14.		
7. Grass spp. *	H	FACW	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

UnID due to seasonal conditions - FACW

HYDROLOGY

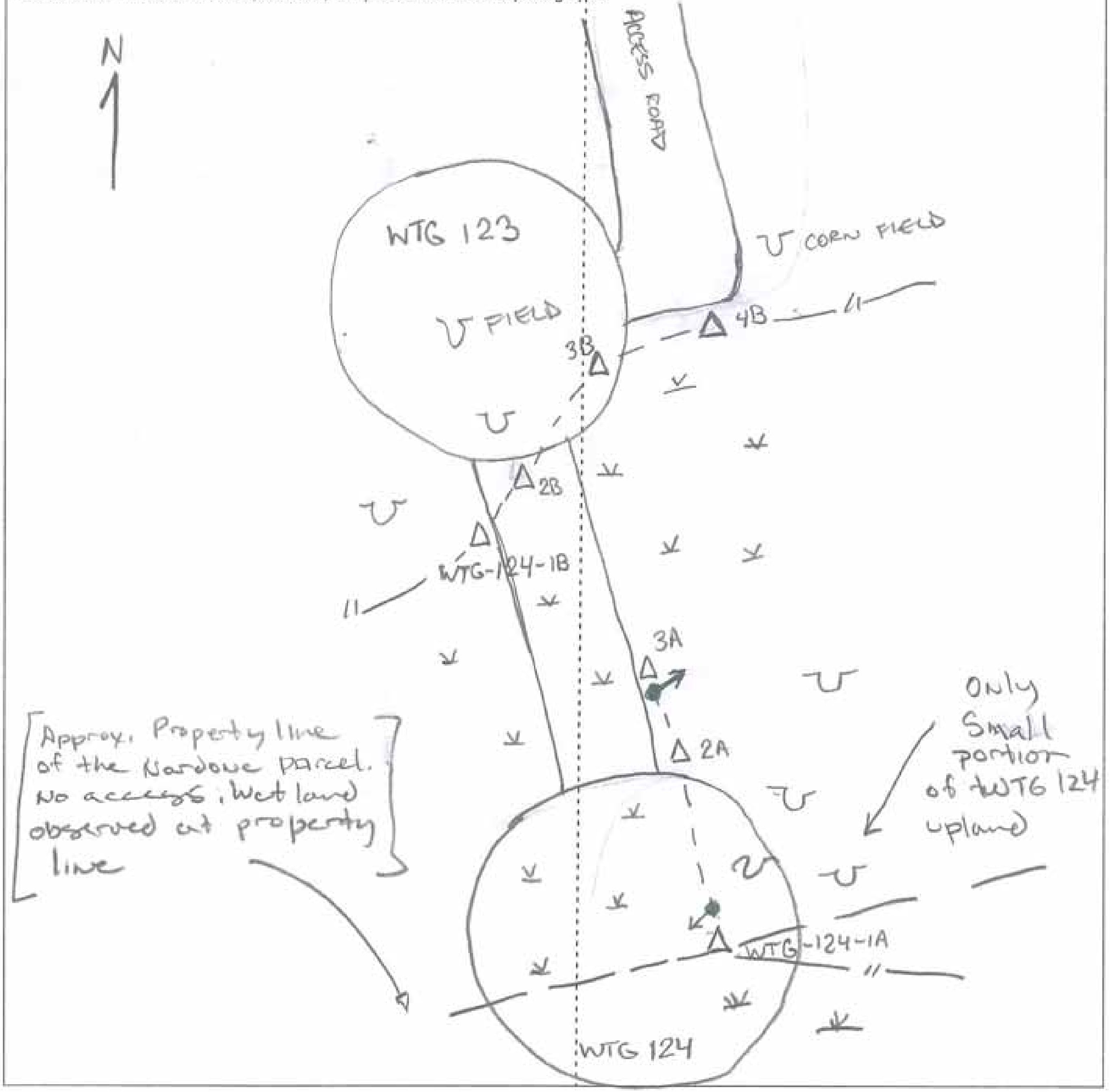
___ Recorded Data (Describe in Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other X No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: ___ Inundated X Saturated to Surface X Water Marks ___ Drift lines ___ Sediment Deposits X Drainage Patterns In Wetlands Secondary Indicators (2 or more required): ___ Oxidized Root Channels in Upper 12 inches X Water-Stained Leaves ___ Local Soil survey Data ___ FAC-Neutral Test ___ Other (Explain in Remarks)
Field Observations: Depth of Surface Water (in.): 0 Depth to Free Standing Water in Pit (in.): Surface Depth to Saturated Soil (in.): Surface	

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-124-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/5/06	TIME:
PHOTO ID: 100-0025, 100-0026	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



Approx. Property line of the Nardone parcel. No access. Wetland observed at property line

Only Small portion of WTG 124 upland

LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - -	Centerline	—▸—	Perennial Stream
△	Flag	-▸-·-·-▸	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/5/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1 Transect ID: WT6 124 A/B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Sap/Shrub: 8.0 Herb: 20.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Sugar Maple	T	FACU	11.		
4. Red Maple	Sap	FAC	12.		
5. Grey Birch	Sap.	FAC	13.		
6. Meadow Sweet	S	FAC	14.		
7. Sensitive Fern	H	FACW	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 86

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
 ___ Stream, Lake, or Tide Gauge
 ___ Aerial Photographs
 ___ Other
x No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 6"

Depth to Saturated Soil (in.): 6"

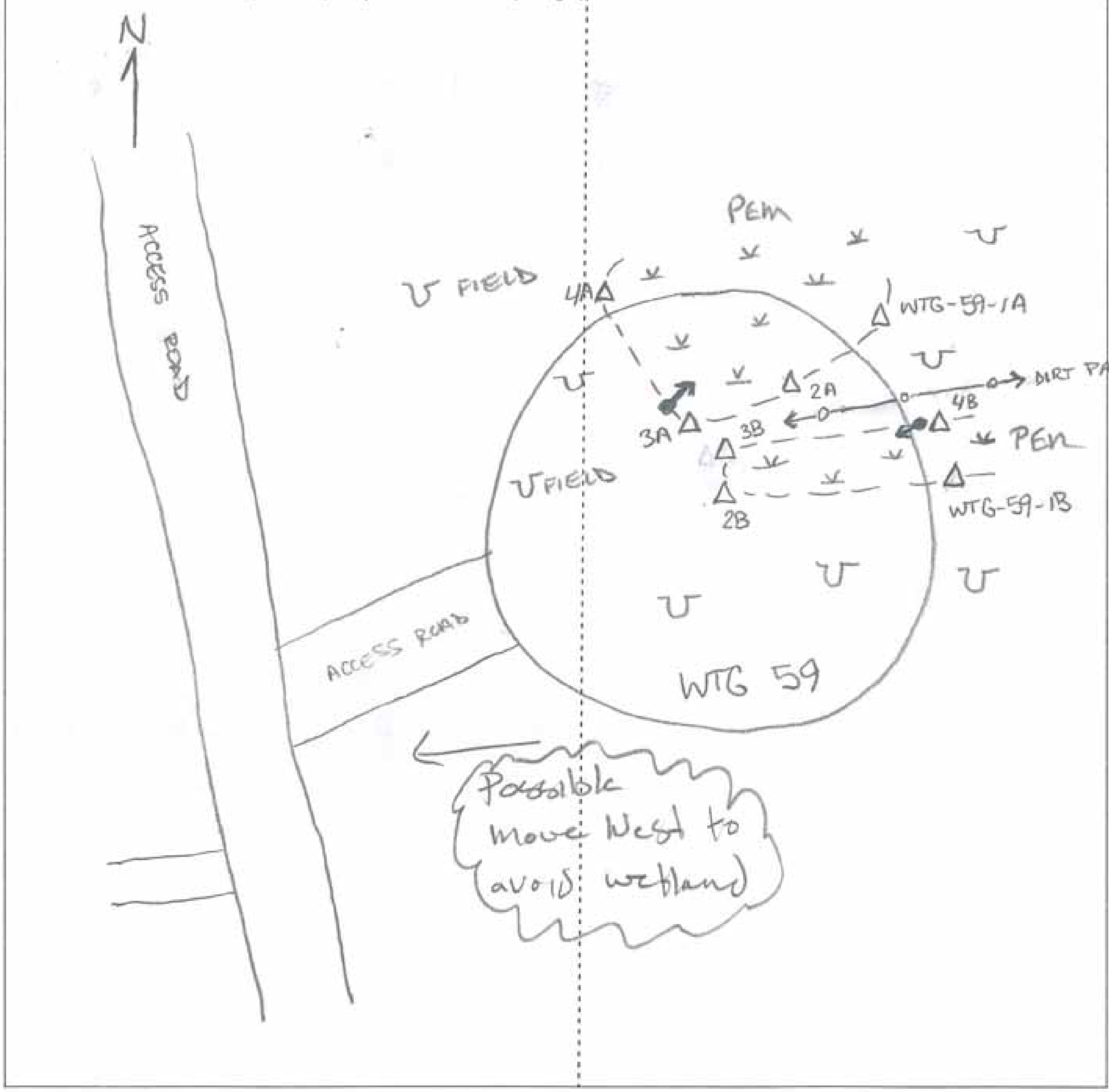
Wetland Hydrology Indicators:
 Primary Indicators:
 ___ Inundated
 x Saturated w/in 6"
 ___ Water Marks
 ___ Drift lines
 ___ Sediment Deposits
 x Drainage Patterns In Wetlands
 Secondary Indicators (2 or more required):
 ___ Oxidized Root Channels in Upper 12 inches
 X Water-Stained Leaves
 ___ Local Soil survey Data
 ___ FAC-Neutral Test
 ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-59-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/5/06 TIME:
PHOTO ID: 100-0027, 100-0028	Franklin County, NY

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	Ʊ	Upland
-------	Centerline	→→	Perennial Stream
△	Flag	-▸-··-▸	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/5/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)?* Yes ~~No~~ Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEM Transect ID: WTG 59 A/B Plot ID: PHOTO ID:

VEGETATION

*Subjected to mowing & cow grazing

Plant Community Classification:

Percent Canopy Cover: Tree: 0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Soft Rush	H	FACW	9.		
2. Wool Grass	H	FACW	10.		
3. Grass spp.	H	FACW	11.		
4. Carex sp.	H	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

UNID due to seasonal conditions - assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
☒ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

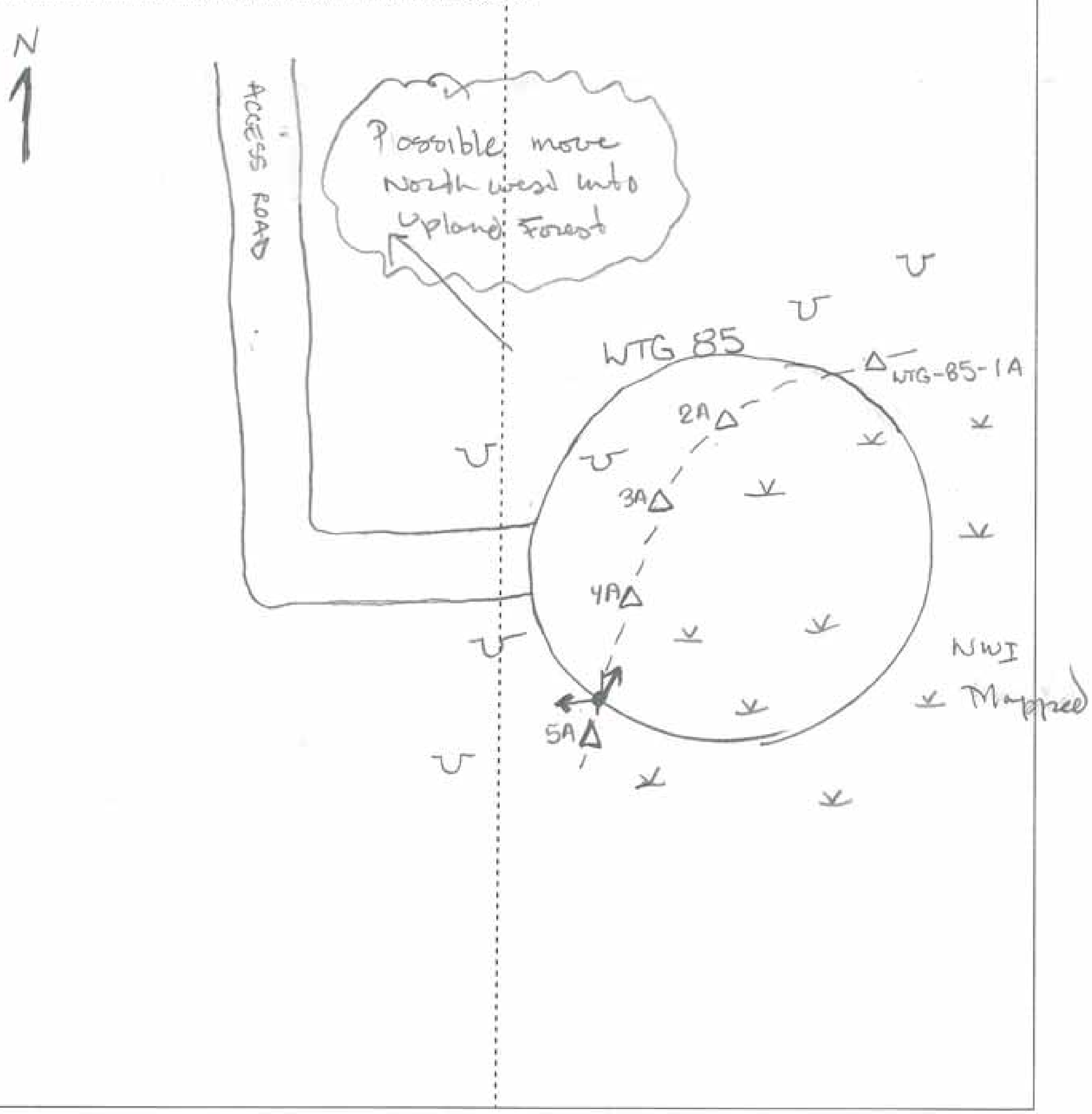
Wetland Hydrology Indicators:
- Primary Indicators:
  - ___ Inundated
  - ☒ Saturated to Surface
  - ___ Water Marks
  - ___ Drift lines
  - ___ Sediment Deposits
  - ☒ Drainage Patterns In Wetlands
- Secondary Indicators (2 or more required):
  - ___ Oxidized Root Channels in Upper 12 inches
  - ☒ Water-Stained Leaves
  - ___ Local Soil survey Data
  - ___ FAC-Neutral Test
  - ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-85-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/6/06	TIME:
PHOTO ID: 100-0029, 100-0030	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - - -	Centerline	―▸―→	Perennial Stream
△	Flag	-▸-·-·-▸	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/6/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1 Transect ID: WTG 85-A Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Sap/Shrub: 20.5 Herb: 38.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Sugar Maple	T	FACU	11.		
4. red maple	Sap	FAC	12.		
5. Grey Birch	Sap	FAC	13.		
6. Sensitive Fern	H	FACW	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 5/6 = 83

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 6"

Depth to Saturated Soil (in.): 6"

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated w/in 6"
- ___ Water Marks
- ___ Drift lines
- ___ Sediment Deposits
- X Drainage Patterns In Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

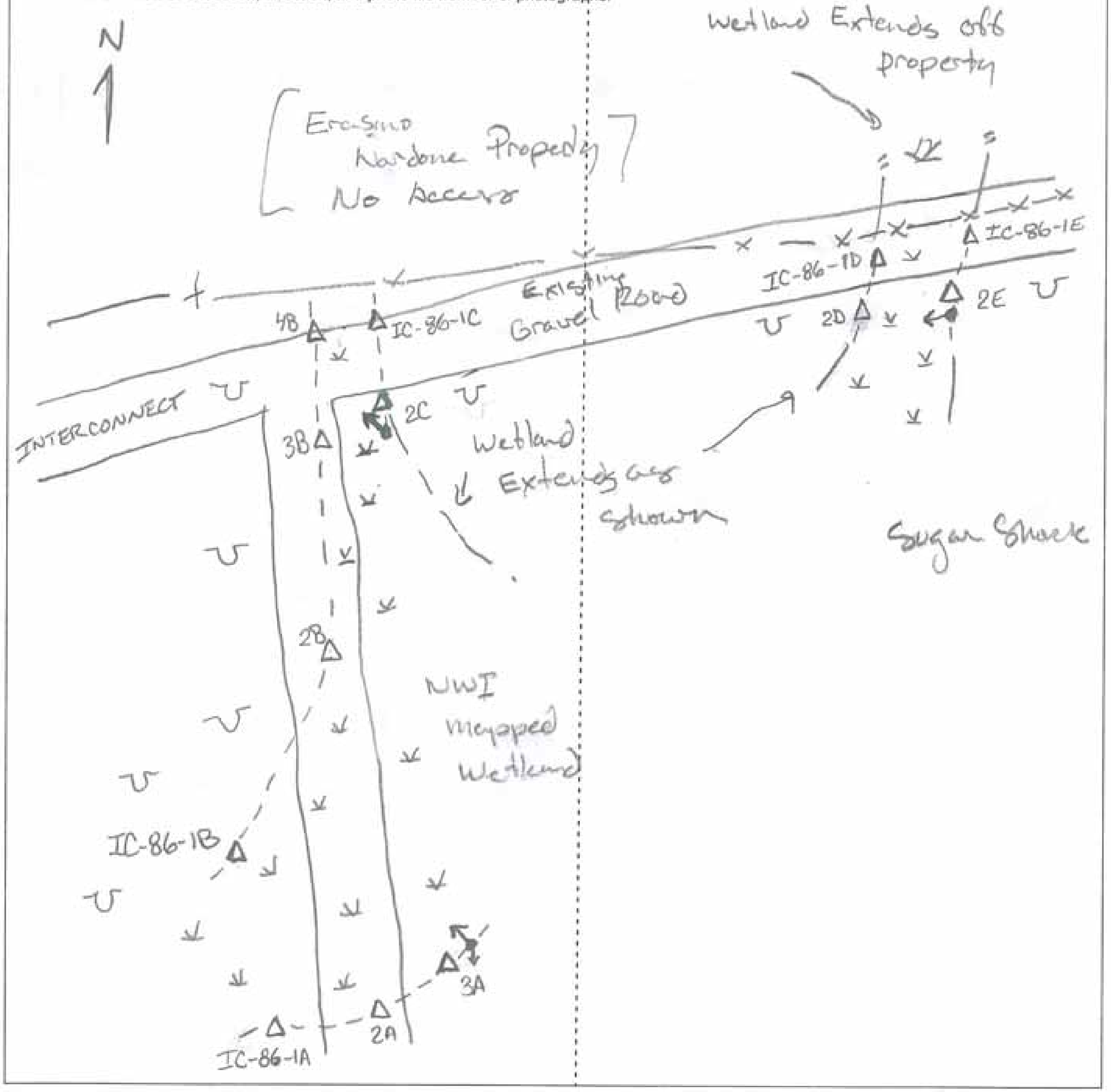
Remarks:

Upgradient NWI mapped wetland

SKETCH FORM

WETLAND ID/ROUTE ID: IC-86-A/B/C/D/E	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/6/06	TIME:
PHOTO ID: 100-0031, 100-0035, 100-0036, 100-0037	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	Ʊ	Upland
- - - - -	Centerline	―▸―	Perennial Stream
△	Flag	- -▸- - -▸	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/6/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO4 Transect ID: IC-86 A/B/C Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 85.5 Shrub: 10.5 Herb: 0* Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Winterberry	S	FACW	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

* Carpet of Sphagnum sp. w/in plot

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  X Saturated to Surface
  X Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

- NWI mapped wetland,
- Wetland has bog characteristics

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/6/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEM Transect ID: JC 86 DE Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Soft Rush	H	FACW	9.		
2. Woolgrass	H	FACW	10.		
3. Grasses sp*	H	FACW	11.		
4. Carex sp *	H	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
W/in Sugar Maple forest
* Un-ID due to seasonal conditions - assumed FACW.

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

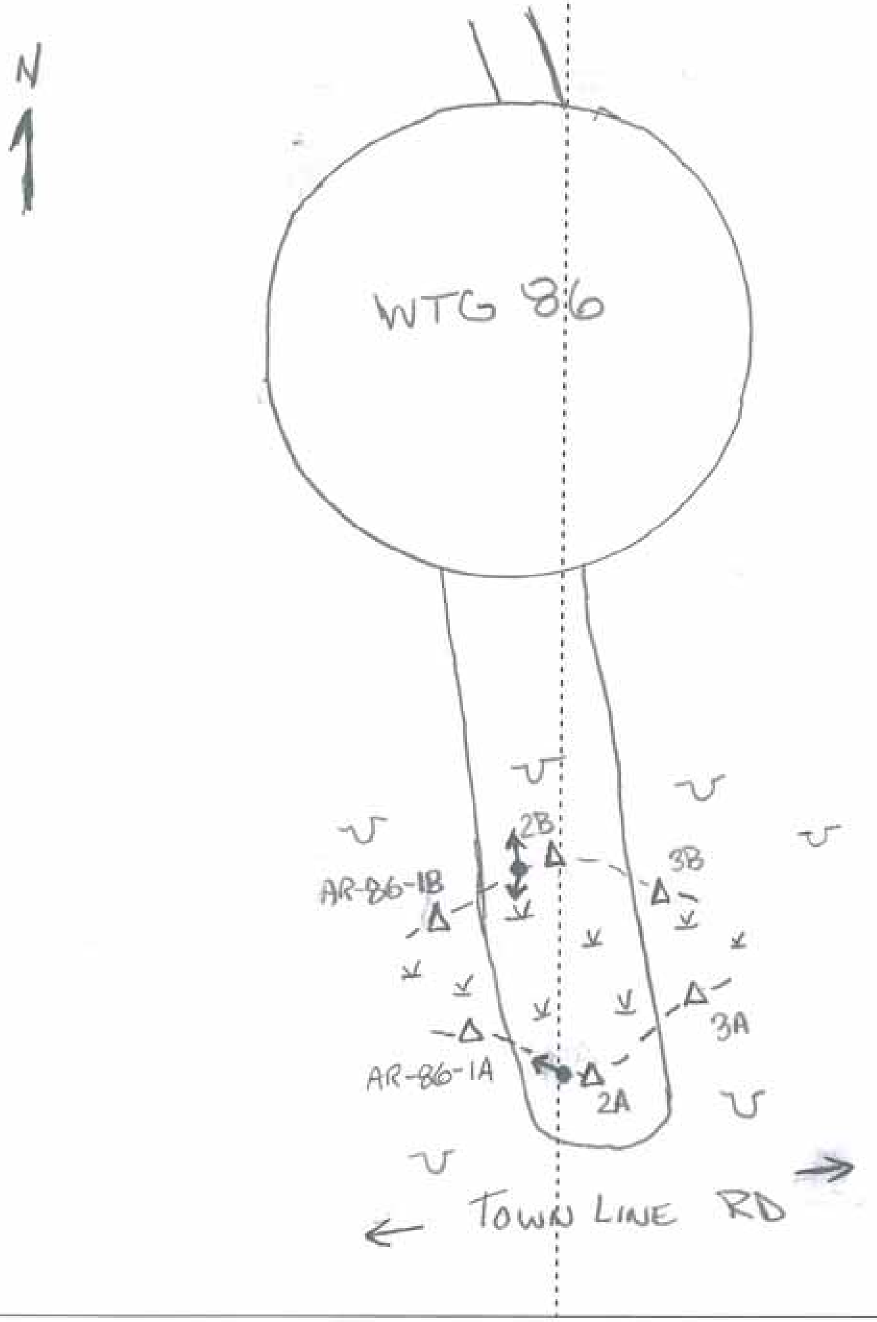
Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  X Saturated to Surface
  ___ Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: AR-86-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/6/06	TIME:
PHOTO ID: 100-0032, 100-0033, 100-0034	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩡	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - - -	Centerline	→—▶	Perennial Stream
△	Flag	-·▶-··-·▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/6/08 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No * Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEO1/4 Transect ID: AR 86 A/B Plot ID: PHOTO ID:

* Cow Grazing

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Soft Rush	H	FACW	11.		
4. Wool Grass	H	FACW	12.		
5. Sensitive Fern	H	FACW	13.		
6. Grass sp *	H	FACW	14.		
7. Carex sp *	H	FACW	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

* UN ID due to seasonal conditions - assumed FACW

HYDROLOGY

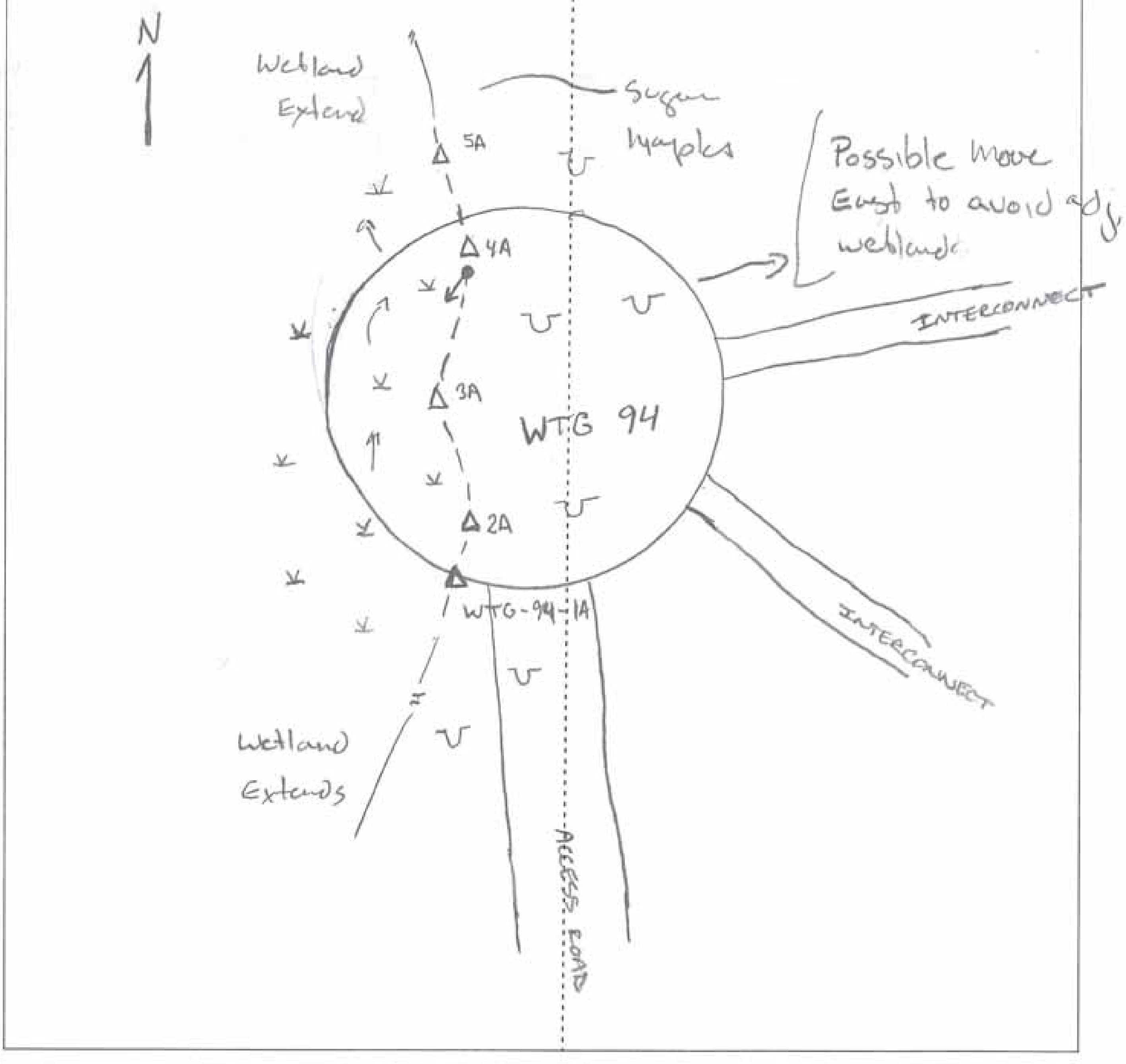
___ Recorded Data (Describe in Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other X No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: ___ Inundated X Saturated to surface X Water Marks ___ Drift lines ___ Sediment Deposits X Drainage Patterns In Wetlands Secondary Indicators (2 or more required): ___ Oxidized Root Channels in Upper 12 inches X Water-Stained Leaves ___ Local Soil survey Data ___ FAC-Neutral Test ___ Other (Explain in Remarks)
Field Observations: Depth of Surface Water (in.): 0 Depth to Free Standing Water in Pit (in.): Surface Depth to Saturated Soil (in.): Surface	

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-94-5A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/6/06	TIME:
PHOTO ID: 100-0040	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩛	Wetland
▭	Sample Station	ꓵ	Upland
- - - - - -	Centerline	—►—	Perennial Stream
△	Flag	-►-·-·-►	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/6/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1 Transect ID: WTG 94 A Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Shrub: 0 Herb: 20.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Balsam Fir	T	FAC	10.		
3. Sugar Maple	T	FACU	11.		
4. Sensitive Fern	H	FACW	12.		
5. Sugar Maple *	H	FACU	13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 3/5 = 60

Remarks:

*Seedlings

HYDROLOGY

___ Recorded Data (Describe in Remarks):
    ___ Stream, Lake, or Tide Gauge
    ___ Aerial Photographs
    ___ Other
_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 10"

Depth to Saturated Soil (in.): 10"

Wetland Hydrology Indicators:
  Primary Indicators:
    ___ Inundated
    _x_ Saturated w/10"
    ___ Water Marks
    ___ Drift lines
    _x_ Sediment Deposits
    _x_ Drainage Patterns In Wetlands
  Secondary Indicators (2 or more required):
    ___ Oxidized Root Channels in Upper 12 inches
    _x_ Water-Stained Leaves
    ___ Local Soil survey Data
    ___ FAC-Neutral Test
    ___ Other (Explain in Remarks)

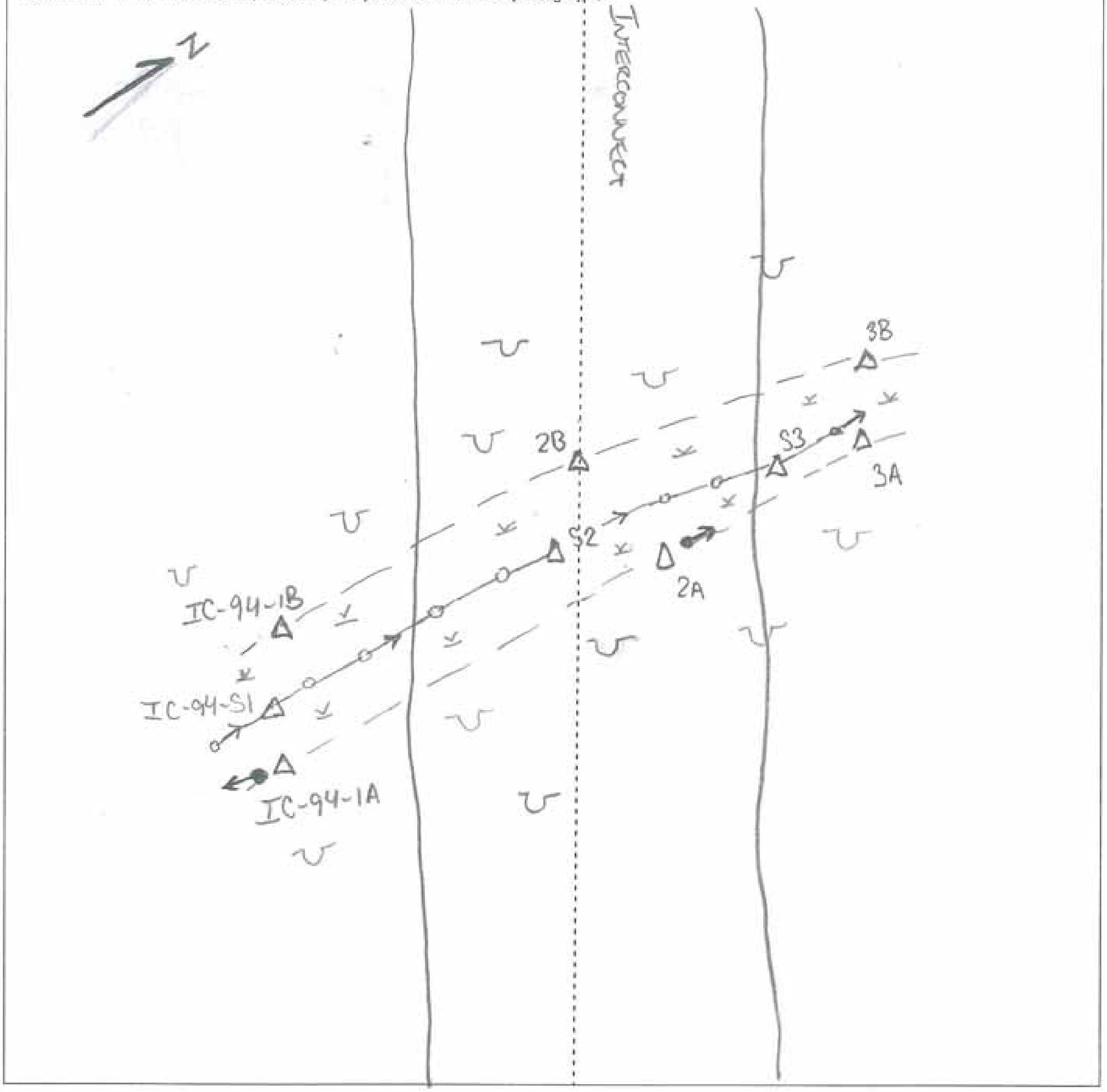
Remarks:

⇒ Braided drainage patterns observed, & poorly drained soil

SKETCH FORM

WETLAND ID/ROUTE ID: IC-94-A/B, IC-94-S	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/7/06	TIME:
PHOTO ID: 100-0041, 100-0042	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - -	Centerline	—▶—	Perennial Stream
△	Flag	-▶-··-▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 11/7/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PF04
Transect ID: TC-94 A/B
Plot ID:
PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 630 Shrub: 0 Herb: 0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
Limited vegetation on stream banks

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  X Saturated at Surface
  X Water Marks
  X Drift lines
  X Sediment Deposits
  X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:
Bordering U.S.G.S mapped Stream, Wetland positioned in ravine

STREAM DATA

PROJECT: BURKE WIND FARM

DATE: 11/7/06

OWNER/APPLICANT: Horizon Wind

LOCATION: Franklin Co., NY

FIELD CREW: B. Raftery

PHOTO FILE #:

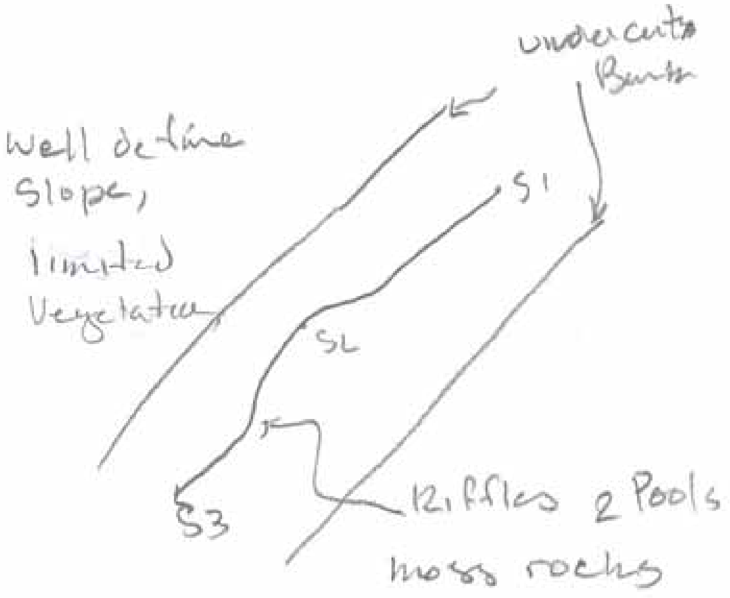
FIELD BOOK AND PAGE: See Field Book

STREAM CROSSING DATA

CHANNEL ID	IC-94-S.A		
NAME (OR TRIB TO)	Unk.		
TYPE OF STREAM	Unk.		
PERENNIAL/INTERMIT	Perennial		
WIDTH (OBSERV/OHW)	5'/8'		
DEPTH (OBSER/OHW)	6"/12"		
FLOW RATE [1]	Med		
FLOW DIRECTION	South to North		
SUBSTRATE	Cobbles / Sand		
BANK VEGETATION	Balsam Fir Overstory		

[1] DRY/STAGNANT/LOW/MEDIUM/HIGH

SKETCH: INCLUDE NORTH, LOCATION OF PHOTO STATION, LOCATION OF DATA PLOTS, ANY OTHER FEATURES



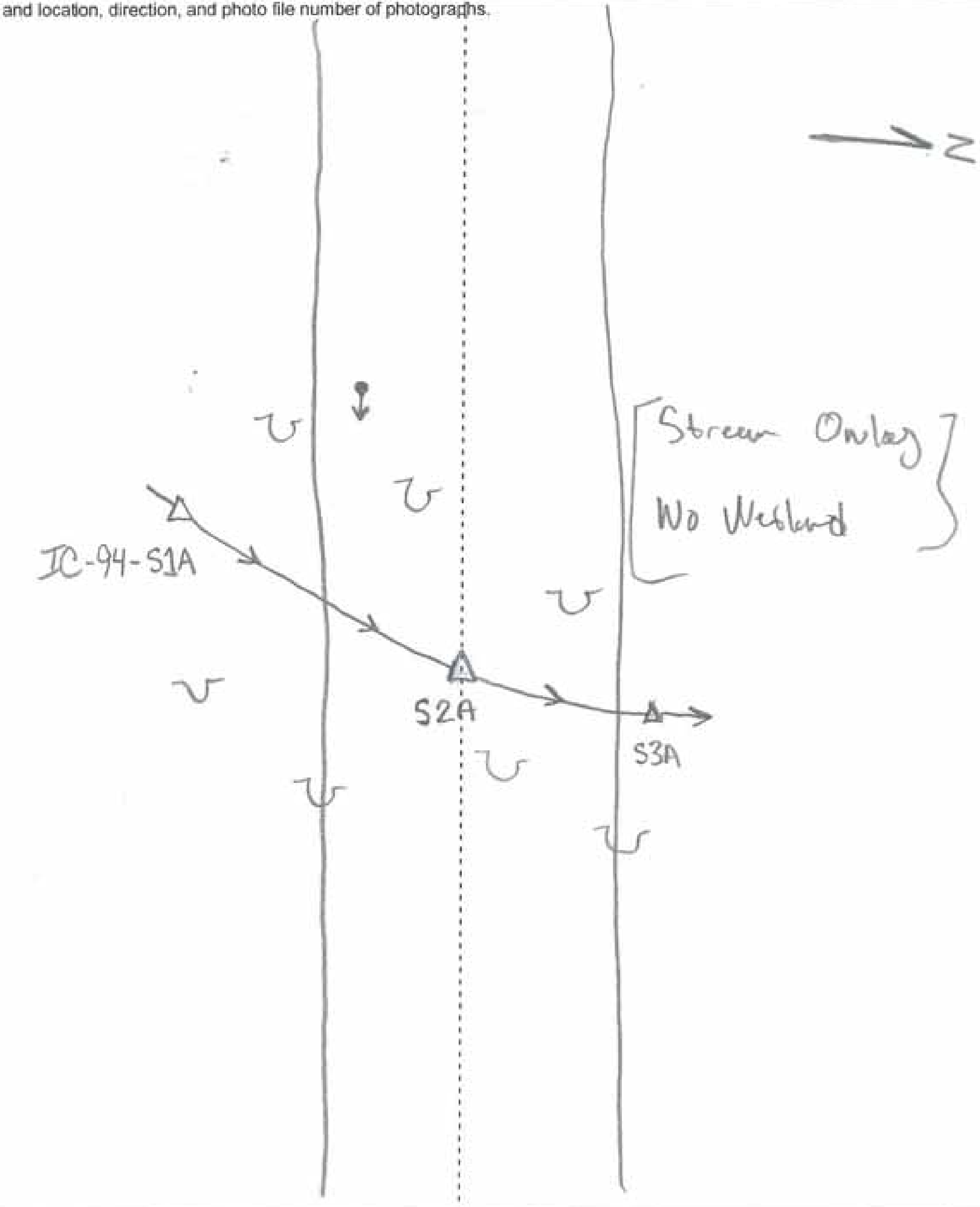
FISH AND WILDLIFE OBSERVATIONS: Song Birds, Deer Tracks

NOTES: Rec. road runoff, No Bordering Vegetated wetlands

SKETCH FORM

WETLAND ID/ROUTE ID: IC-94-SA	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/7/06	TIME:
PHOTO ID: 100-0043	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩡	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - - -	Centerline	—►—	Perennial Stream
△	Flag	-·►-·-·-►	Intermittent Stream

STREAM DATA

PROJECT: BURKE WIND FARM

DATE: 11/7/06

OWNER/APPLICANT: Horizon Wind

LOCATION: Franklin Co., NY

FIELD CREW: B. Raftery

PHOTO FILE #:

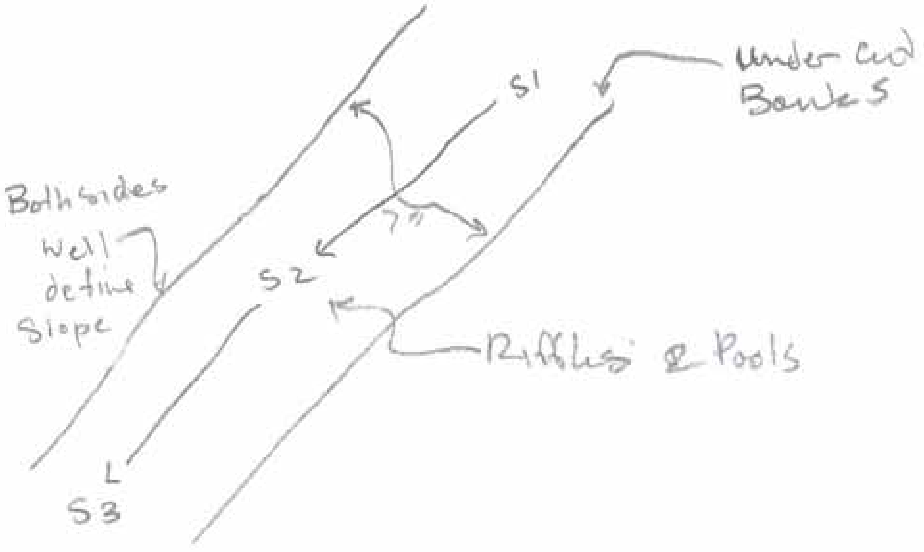
FIELD BOOK AND PAGE: See Field Book

STREAM CROSSING DATA

CHANNEL ID	IC 94 A/B - S1 thru S3		
NAME (OR TRIB TO)	Unk		
TYPE OF STREAM	Unk.		
PERENNIAL/INTERMIT	Perennial		
WIDTH (OBSERV/OHW)	7/10'		
DEPTH (OBSER/OHW)	6"/12"		
FLOW RATE [1]	med.		
FLOW DIRECTION	South to North		
SUBSTRATE	Cobbles / Sand		
BANK VEGETATION	Balsam Fir Overstory		

[1] DRY/STAGNANT/LOW/MEDIUM/HIGH

SKETCH: INCLUDE NORTH, LOCATION OF PHOTO STATION, LOCATION OF DATA PLOTS, ANY OTHER FEATURES



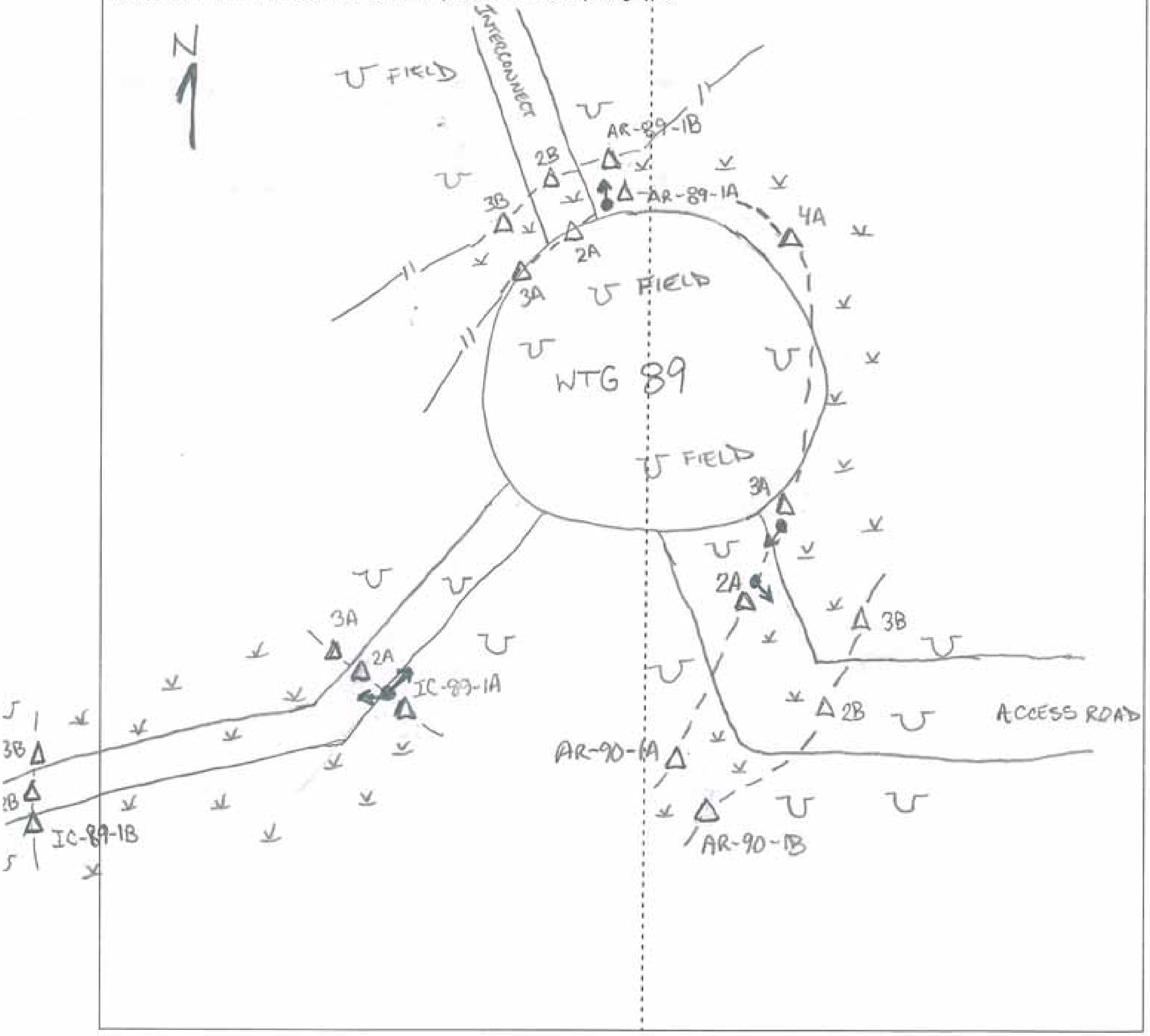
FISH AND WILDLIFE OBSERVATIONS: Song Birds & deer tracks

NOTES: Well defined stream channel, stream receives road runoff.

SKETCH FORM

WETLAND ID/ROUTE ID: AR-89-A/B, AR-90-A/B, IC-89-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/8/06 TIME:
PHOTO ID: 100-0055, 100-0056, 100-0057, 100-0062, 100-0063	Franklin County, NY

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - -	Centerline	→—	Perennial Stream
△	Flag	-▸-·-·-▸	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/8/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1 Transect ID: AR 89 A/B Plot ID: AR 90 A/B PHOTO ID: IC 89 A/B

* Cont ouths

VEGETATION

Plant Community Classification: Sap

Percent Canopy Cover: Tree: 63.0 Shrub: 20.5 Herb: 85.6 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Balsam Fir	T	FAC	11.		
4. Red Maple	Sap	FAC	12.		
5. Grey Birch	Sap	FAC	13.		
6. Sensitive Fern	H	FACW	14.		
7. Carex sp. *	H	FACW	15.		
8 Grass sp *	H	FACW	16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
* UnID due to seasonal conditions - assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

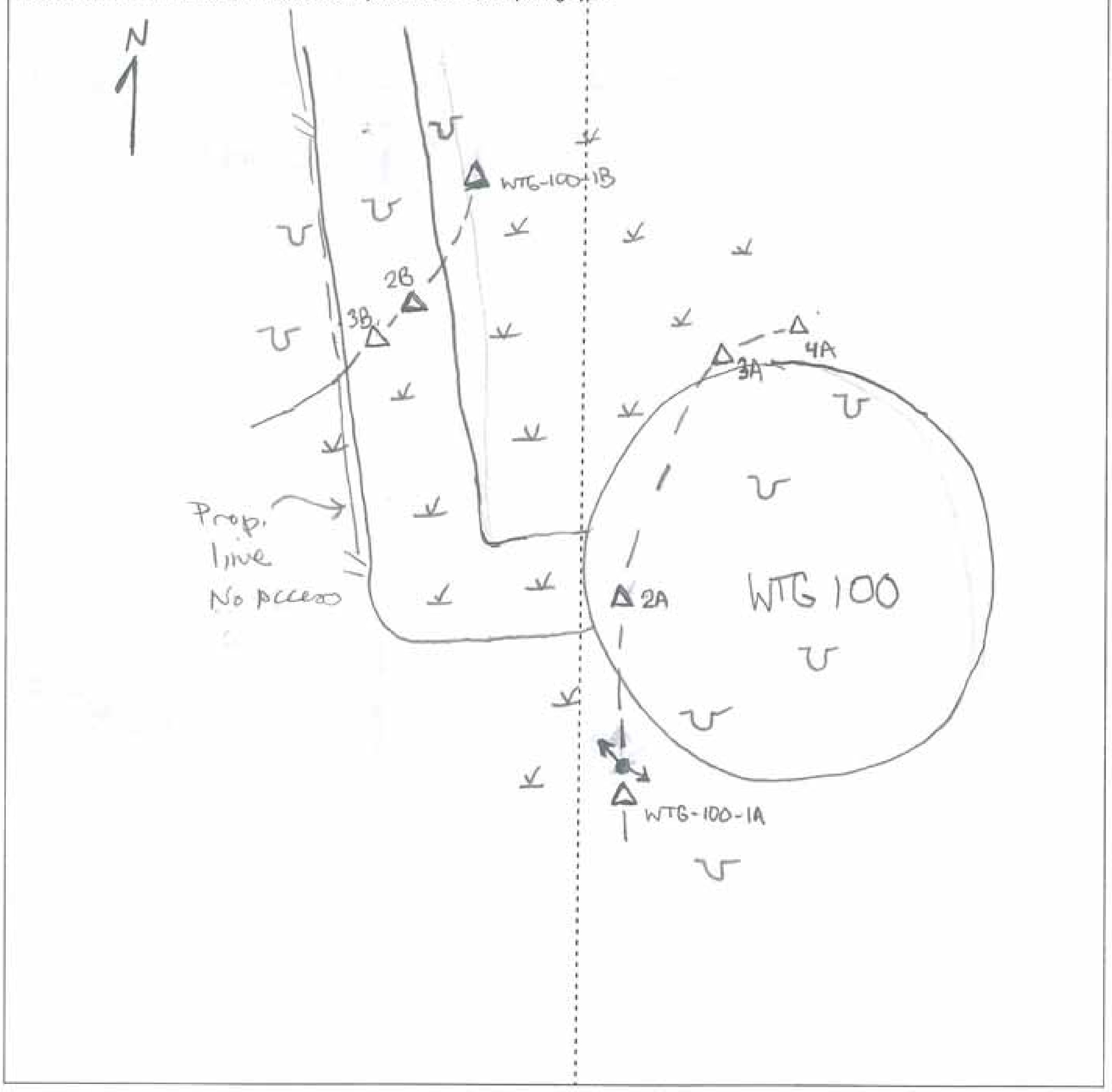
Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated
X Saturated Surface
X Water Marks
___ Drift lines
___ Sediment Deposits
X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12 inches
X Water-Stained Leaves
___ Local Soil survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks:
AR 89 A/B, AR 90 A/B, JC 89 A/B w/in
same w/ wetland systems; same general plants
and hydrologic regime

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-100-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/8/06	TIME:
PHOTO ID: 100-0060, 100-0061	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩡	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - - -	Centerline	──▶──	Perennial Stream
△	Flag	-·▶-·-·-·▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/8/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PF01 Transect ID: WTG 100 A/B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Sap/Shrub: 20.5 Herb: 20.6 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Grey Birch	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Grey Birch	Sap	FAC	11.		
4. Red Maple	Sap	FAC	12.		
5. Sensitive Fern	H	FACW	13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
 ___ Stream, Lake, or Tide Gauge
 ___ Aerial Photographs
 ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 12"

Depth to Saturated Soil (in.): 12"

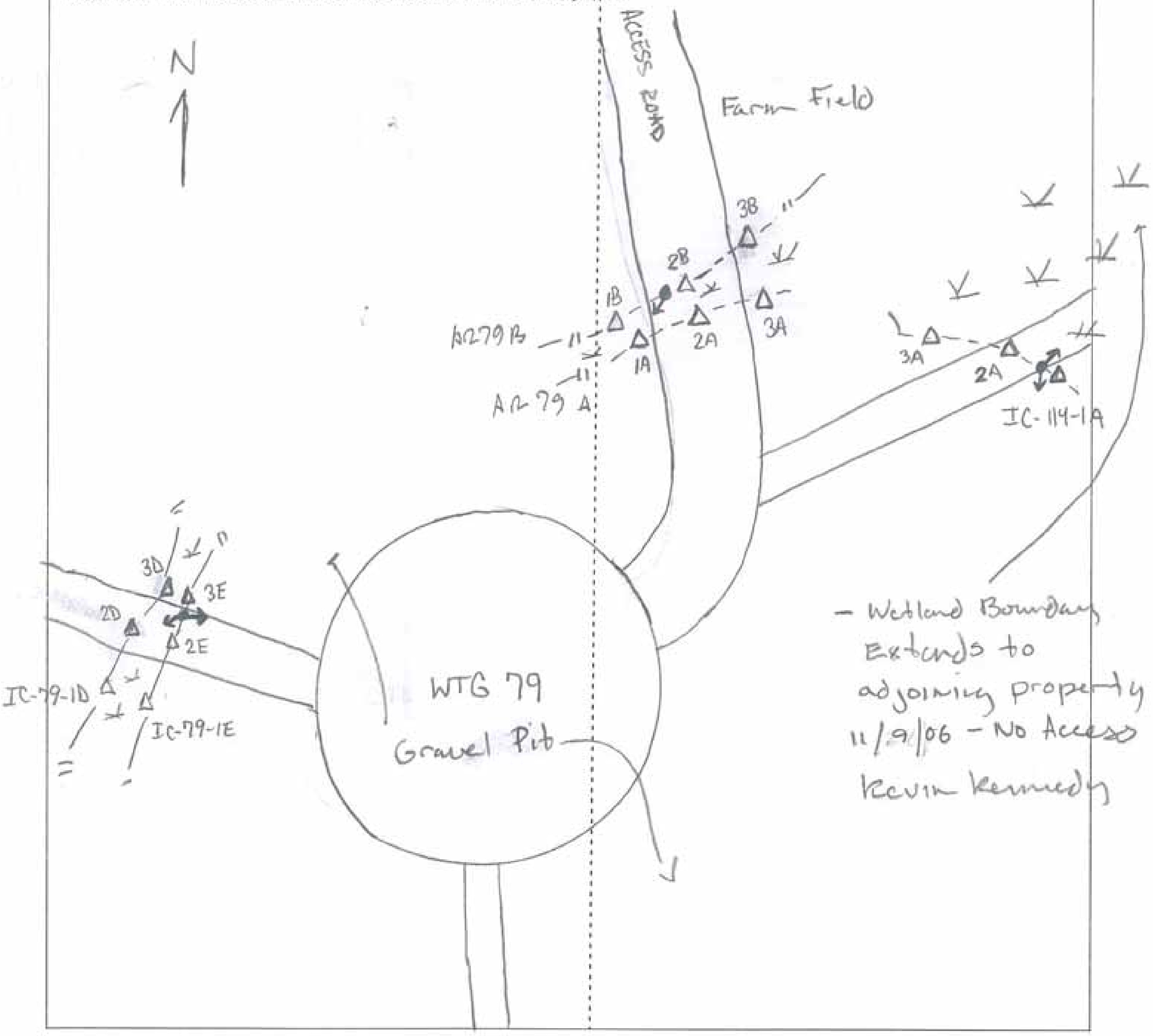
Wetland Hydrology Indicators:
 Primary Indicators:
 ___ Inundated
 X Saturated w/in 12"
 ___ Water Marks
 ___ Drift lines
 ___ Sediment Deposits
 X Drainage Patterns In Wetlands
 Secondary Indicators (2 or more required):
 X Oxidized Root Channels in Upper 12 inches
 ___ Water-Stained Leaves
 ___ Local Soil survey Data
 ___ FAC-Neutral Test
 ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: IC-79-D/E, AR-79-A/B, IC-114-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/9/06	TIME:
PHOTO ID: 100-0068, 100-0069, 100-0070, 100-0071, 100-0072	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



- Wetland Boundary Extends to adjoining property 11/9/06 - No Access Kevin Kennedy

LEGEND

●→	Photo Location / Direction		Wetland
▭	Sample Station		Upland
- - - - - -	Centerline	——▶——	Perennial Stream
△	Flag	-▶-·-·-▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 11/9/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PFO1
Transect ID: JC 114A
Plot ID:
PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 63.0 Sap Shrub: 38.0 Herb: 63.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Grey Birch	T		9.		
2. Red Maple	T		10.		
3. Balm Fir	T		11.		
4. Grey Birch	Sap		12.		
5. Red Maple	Sap		13.		
6. Balsm Fir	Sap		14.		
7. Sensitive Fern	H		15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
 ___ Stream, Lake, or Tide Gauge
 ___ Aerial Photographs
 ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 6"

Depth to Saturated Soil (in.): 6"

Wetland Hydrology Indicators:
Primary Indicators:
 ___ Inundated
 X Saturated @ 6"
 ___ Water Marks
 ___ Drift lines
 ___ Sediment Deposits
 Y Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
 ___ Oxidized Root Channels in Upper 12 inches
 X Water-Stained Leaves
 ___ Local Soil survey Data
 ___ FAC-Neutral Test
 ___ Other (Explain in Remarks)

Remarks:

PROJECT NAME: Burke Wind Farm **PROJECT No.:** 3335.0002.0006.00000

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/9/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEM Transect ID: AR 79 A/B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Soft Rush	H	FACW	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 6"

Depth to Saturated Soil (in.): 6"

Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  _X_ Saturated w/ in 6"
  ___ Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  _X_ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  _X_ Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/9/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO4 Transect ID: Ic 79 D/E Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Shrub: 0 Herb: 38.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Sensitive Fern	H	FACW	10.		
3. Jewel weed	H	FACW	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
    ___ Stream, Lake, or Tide Gauge
    ___ Aerial Photographs
    ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

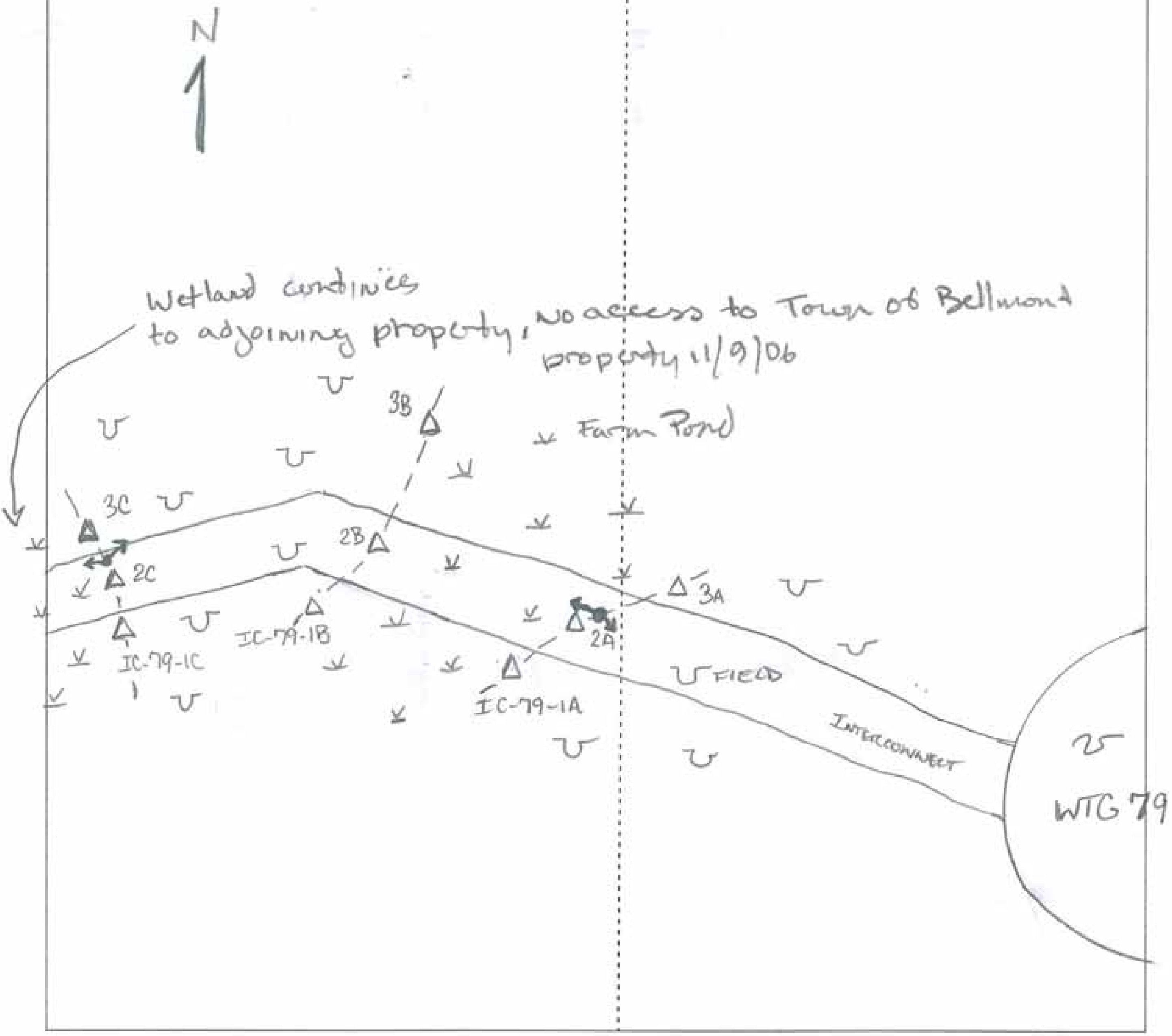
Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated
x Saturated Surface
___ Water Marks
___ Drift lines
___ Sediment Deposits
X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12 inches
X Water-Stained Leaves
___ Local Soil survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: IC-79-A/B/C	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/9/06	TIME:
PHOTO ID: 100-0064, 100-0065, 100-0066, 100-0067	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	∪	Upland
- - - - - -	Centerline	→	Perennial Stream
△	Flag	-▸-··-▸	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/9/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1 Transect ID: IC-79C Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 38.0 Shrub: 63.0 Herb: 20.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Grey Birch	T	FAC	9.		
2. Red maple	T	FAC	10.		
3. Gray Birch	S	FAC	11.		
4. Sensitive Fern	H	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 10"

Depth to Saturated Soil (in.): 10"

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- _X_ Saturated w/in 10"
- ___ Water Marks
- ___ Drift lines
- ___ Sediment Deposits
- _X_ Drainage Patterns In Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- _X_ Water-Stained Leaves
- ___ Local Soil survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/9/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1 Transect ID: IC 79 A/B Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 63.0 Shrub: Sap/ 38.0 Herb: 38.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Balsam Fir	T	FAC	11.		
4. Grey Birch	Sap	FAC	12.		
5. Red Maple	Sap	FAC	13.		
6. Sensitive Fern	H	FACW	14.		
7. Grasses *	H	FACW	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
UN ID due to seasonal conditions assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

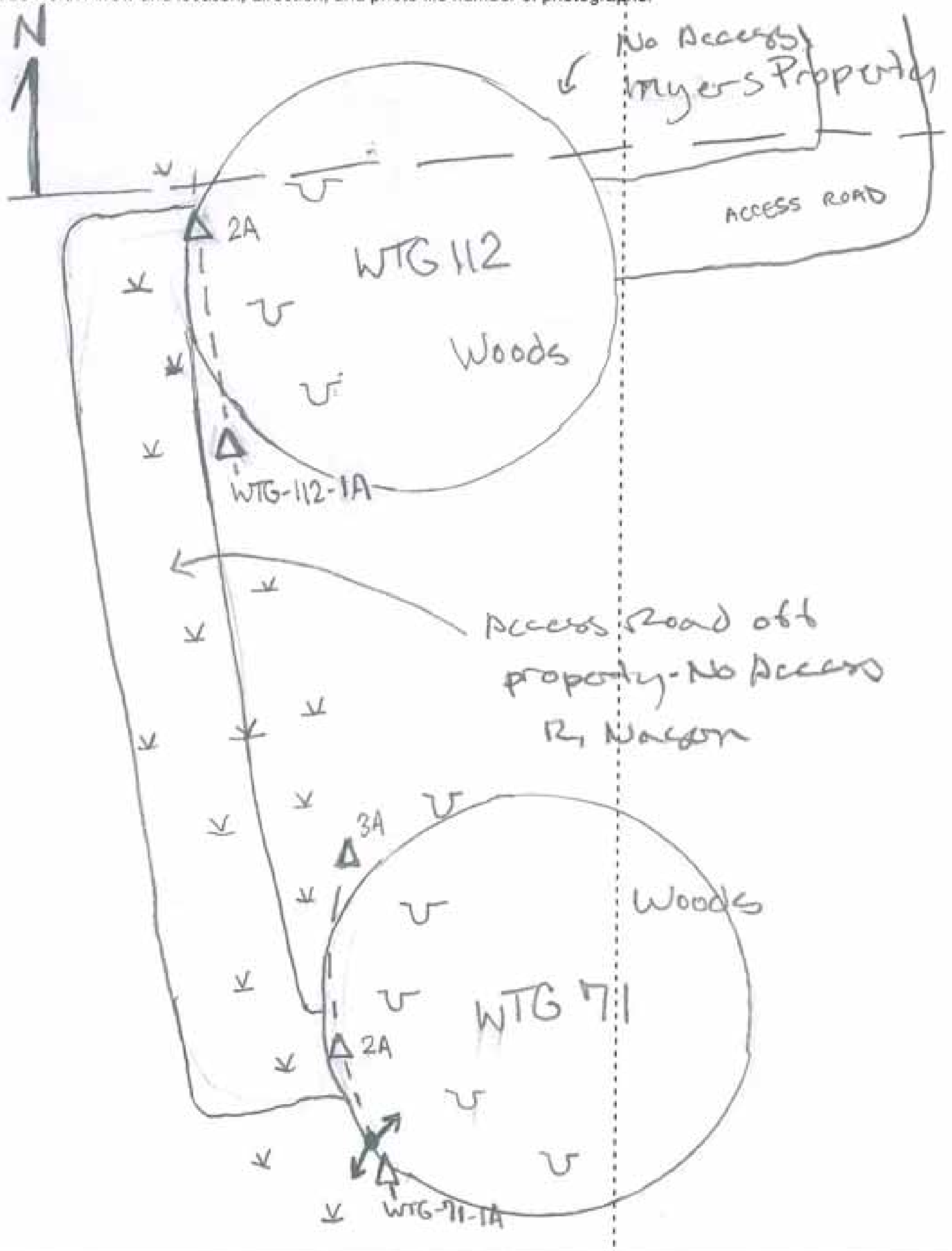
Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  X Saturated Surface
  ___ Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-71-A, WTG-112-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/9/06	TIME:
PHOTO ID: 100-0073, 100-0074	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⩡	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - -	Centerline	——▶——	Perennial Stream
△	Flag	-·▶-·-·-▶	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/9/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO4 Transect ID: WTG 71 A Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Shrub: 20.5 Herb: 38.0 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Grey Birch	T	FAC	11.		
4. Cinnamon Fern	H	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
✓ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 10"

Depth to Saturated Soil (in.): 10"

Wetland Hydrology Indicators:
  Primary Indicators:
    ___ Inundated
    ✗ Saturated w/ 10"
    ___ Water Marks
    ___ Drift lines
    ___ Sediment Deposits
    ✓ Drainage Patterns In Wetlands
  Secondary Indicators (2 or more required):
    ___ Oxidized Root Channels in Upper 12 inches
    ✗ Water-Stained Leaves
    ___ Local Soil survey Data
    ___ FAC-Neutral Test
    ___ Other (Explain in Remarks)

Remarks:

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/9/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1 Transect ID: WTG 112 A Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63,0 Shrub: 0 Herb: 20.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Balsam Fir	T	FAC	10.		
3. Beech*	T	FACU	11.		
4. Cinnamon Fern	H	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 4/5 = 80

Remarks:

*Shallow roots

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

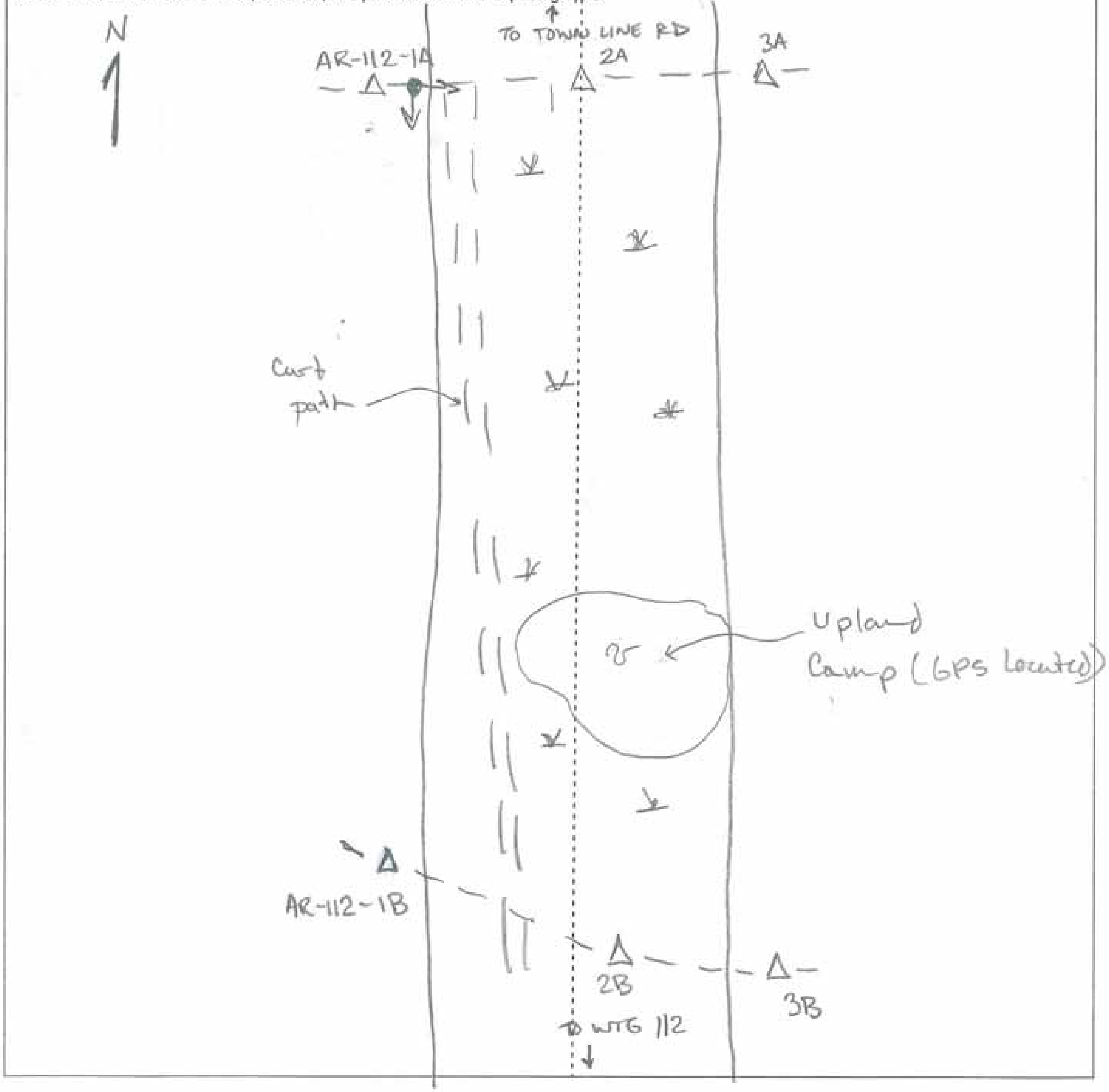
Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  X Saturated Surface
  ___ Water Marks
  ___ Drift lines
  ___ Sediment Deposits
  X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: AR-112-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/9/06	TIME:
PHOTO ID: 100-0075, 100-0076	Franklin County, NY	

Include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	Ū	Upland
--------	Centerline	──▶──	Perennial Stream
△	Flag	-·▶-·-·-·▶	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm
Applicant/Owner: Horizon Wind
Investigator: B. Raftery

Date: 11/9/06
County: Franklin
State: NY

Do Normal Circumstances exist on the site? [✓ Yes] No
Is the site significantly disturbed (Atypical Situation)? Yes [✓ No]
Is the area a potential Problem Area? Yes [✓ No]
(If needed, explain on reverse.)

Community ID: PFO / PSS
Transect ID: AR-112 A/B
Plot ID:
PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 38.0 Shrub: Sap/20.5 Herb: 38 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T	FAC	9.		
2. Grey Birch	T	FAC	10.		
3. Balsam Fir	T	FAC	11.		
4. Grey Birch	Sap	FAC	12.		
5. Sensitive Fern	H	FACW	13.		
6. Grasses*	H	FACW	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-):

Remarks:

*UnID due to seasonal conditions. - FACW

HYDROLOGY

____ Recorded Data (Describe in Remarks):
  ____ Stream, Lake, or Tide Gauge
  ____ Aerial Photographs
  ____ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

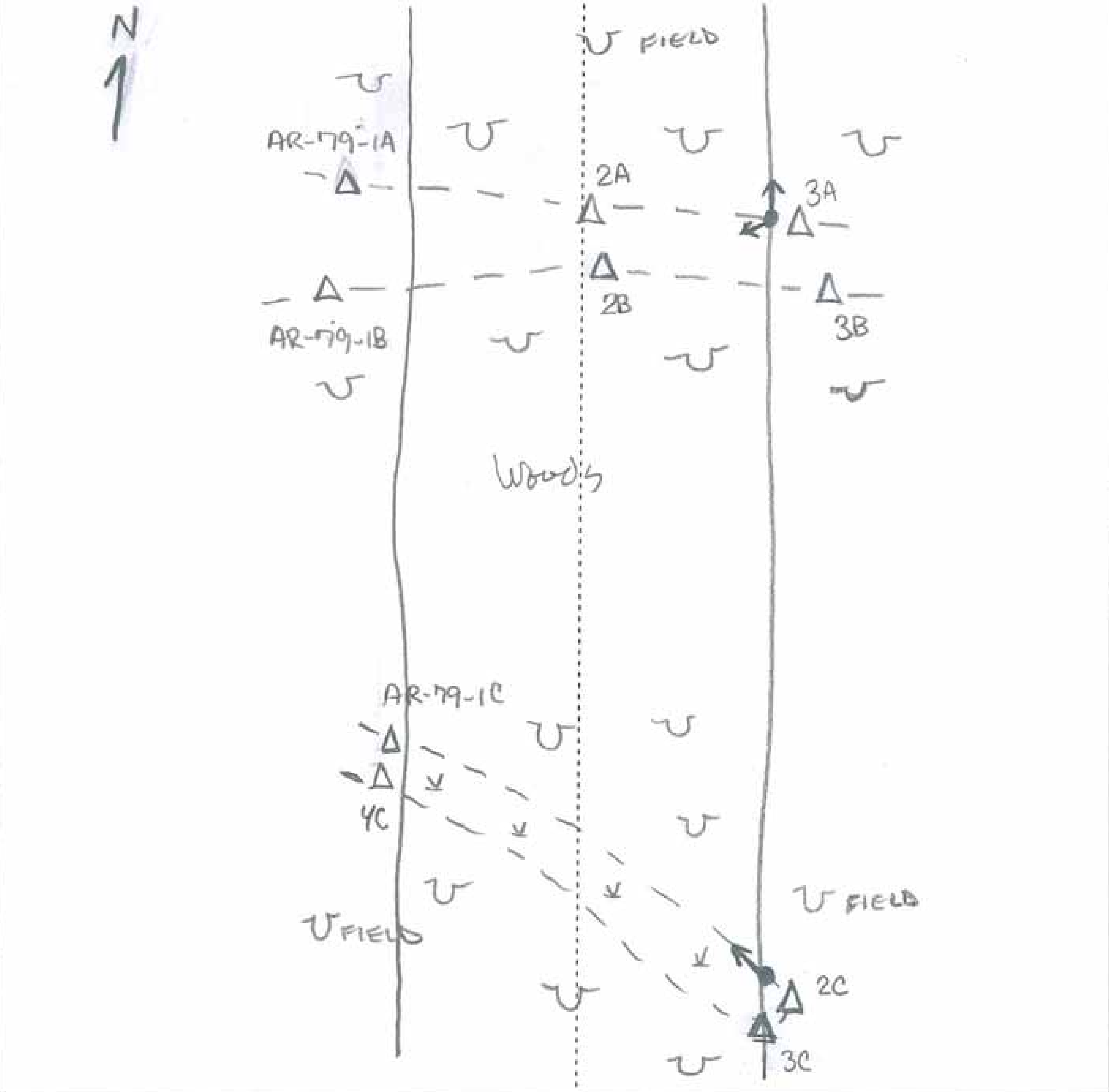
Wetland Hydrology Indicators:
Primary Indicators:
  ____ Inundated
  X Saturated Surface
  ____ Water Marks
  ____ Drift lines
  ____ Sediment Deposits
  X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ____ Oxidized Root Channels in Upper 12 inches
  X Water-Stained Leaves
  ____ Local Soil survey Data
  ____ FAC-Neutral Test
  ____ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: AR-79-A/B/C	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/10/06	TIME:
PHOTO ID: 100-0081, 100-0082, 100-0083	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	Ʊ	Upland
-------	Centerline	→	Perennial Stream
△	Flag	-▸-·-▸	Intermittent Stream

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/10/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEO/PSS/PEM Transect ID: AQ79 A13 Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 0 Sap/Shrub: 20.5 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Grey Birch	Sap	FAC	9.		
2. red Maple	Sap	FAC	10.		
3. Joe Pye Weed	H	FACW	11.		
4. soft Rush	H	FACW	12.		
5. Sensitive Fern	H	FACW	13.		
6. Grass sp.*	H	FACW	14.		
7. Sedges spp*	H	FACW	15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

* UnID due to seasonal condition assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks):
 ___ Stream, Lake, or Tide Gauge
 ___ Aerial Photographs
 ___ Other
☒ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
 Primary Indicators:
 ___ Inundated
 ☒ Saturated to Surface
 ___ Water Marks
 ☒ Drift lines
 ☒ Sediment Deposits
 ☒ Drainage Patterns In Wetlands
 Secondary Indicators (2 or more required):
 ___ Oxidized Root Channels in Upper 12 inches
 ☒ Water-Stained Leaves
 ___ Local Soil survey Data
 ___ FAC-Neutral Test
 ___ Other (Explain in Remarks)

Remarks:

PROJECT NAME: **Burke Wind Farm** **PROJECT No.:** **3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/10/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PEM Transect ID: AR 79C Plot ID: PHOTO ID:

VEGETATION * Farm Drainage / Historic Pasture

Plant Community Classification:

Percent Canopy Cover: Tree: 0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Soft Rush	H	FACW	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
  ___ Stream, Lake, or Tide Gauge
  ___ Aerial Photographs
  ___ Other
_X_ No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 6"

Depth to Saturated Soil (in.): 6"

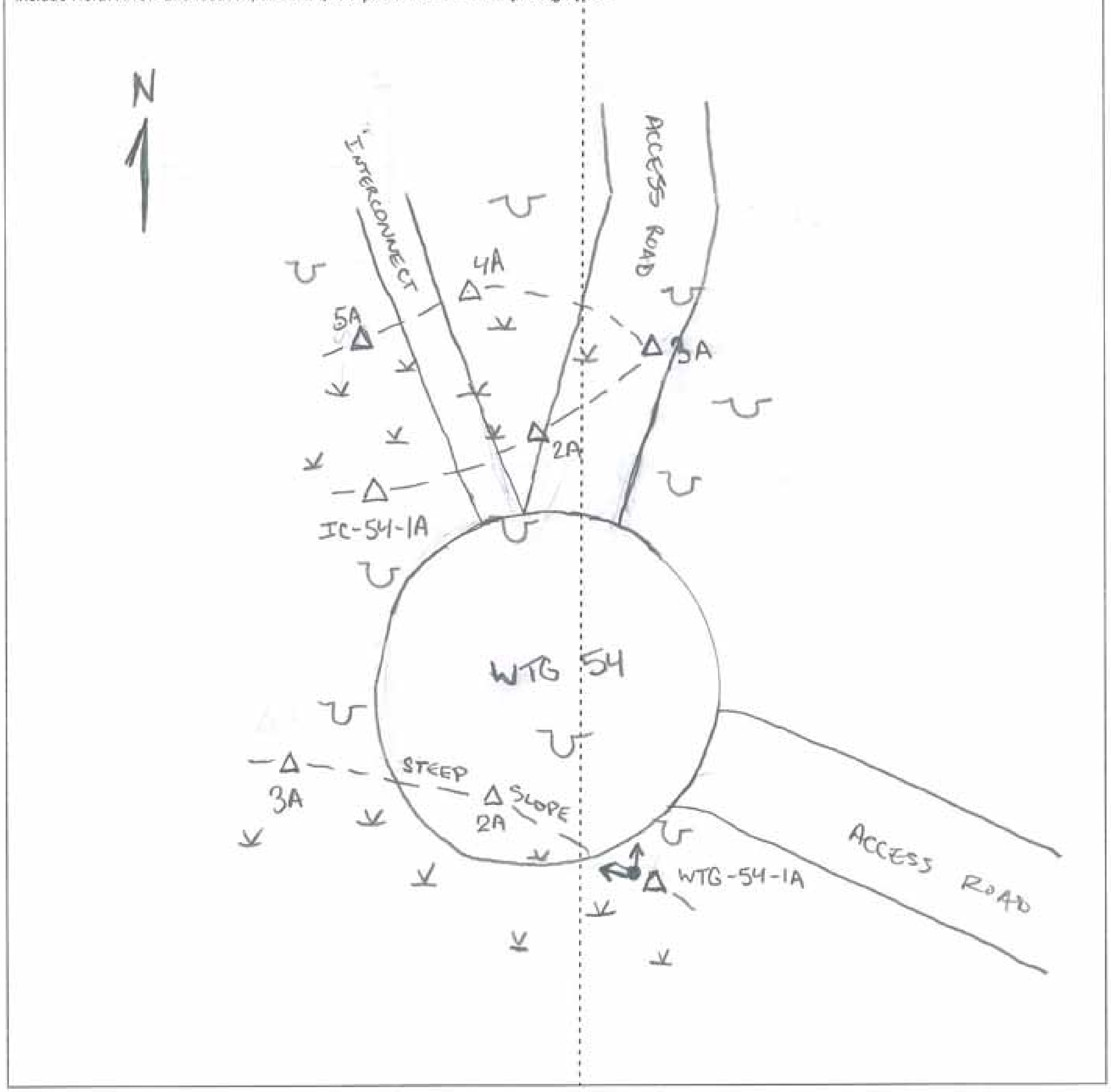
Wetland Hydrology Indicators:
Primary Indicators:
  ___ Inundated
  _✓_ Saturated ws | 6"
  ___ Water Marks
  _X_ Drift lines
  ___ Sediment Deposits
  _X_ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
  ___ Oxidized Root Channels in Upper 12 inches
  _X_ Water-Stained Leaves
  ___ Local Soil survey Data
  ___ FAC-Neutral Test
  ___ Other (Explain in Remarks)

Remarks:

SKETCH FORM

WETLAND ID/ROUTE ID: WTG-54-A, IC-54-A	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/10/06	TIME:
PHOTO ID: 100-0079, 100-0080	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



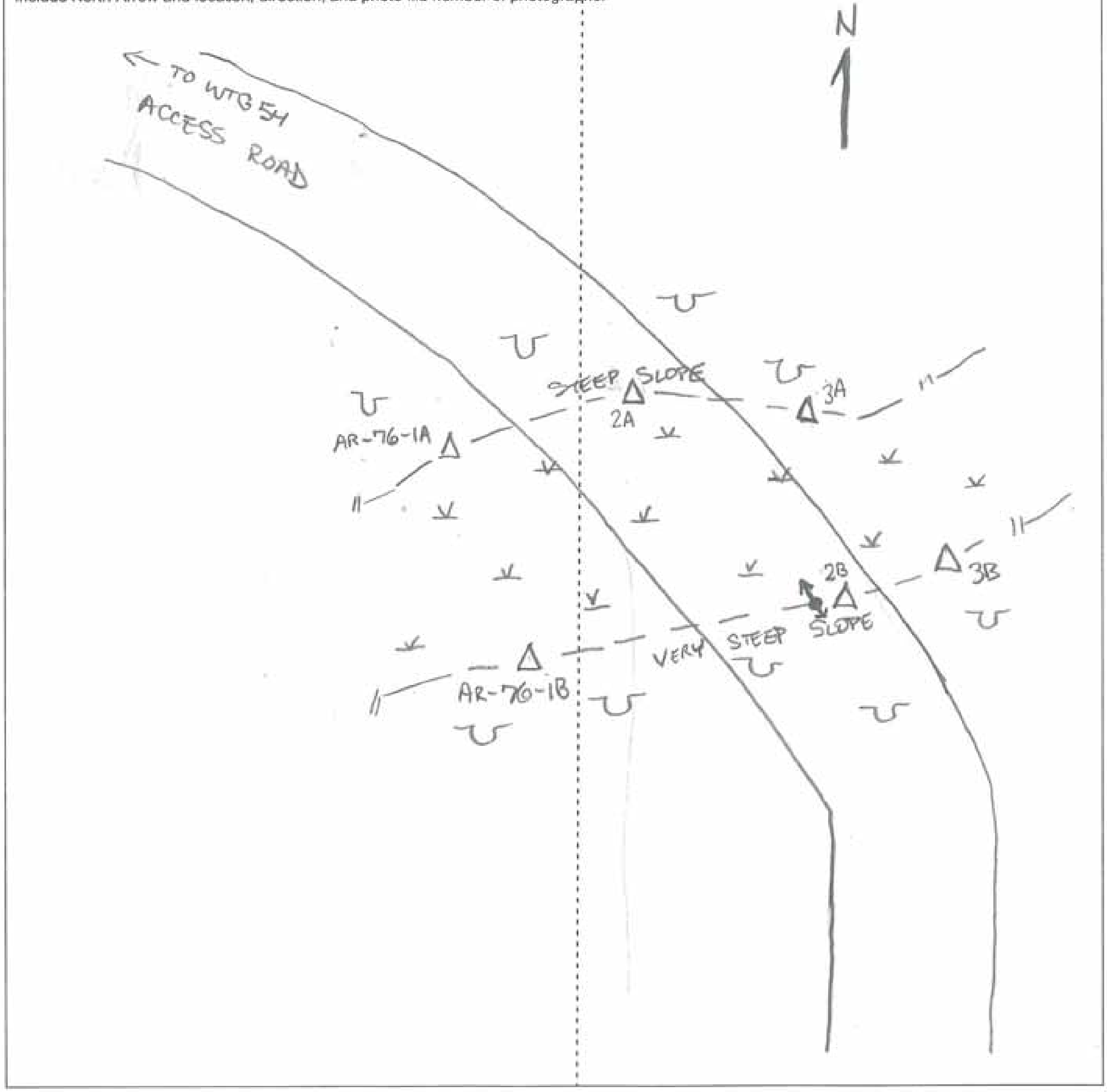
LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	Ʊ	Upland
-------	Centerline	──►──	Perennial Stream
△	Flag	-·►-·-·►	Intermittent Stream

SKETCH FORM

WETLAND ID/ROUTE ID: AR-76-A/B	PROJECT: Burke Wind Farm – 3335.0002.0006.00000	
INITIALS OF DELINEATORS: B. Raftery	DATE: 11/10/06	TIME:
PHOTO ID: 100-0077, 100-0078	Franklin County, NY	

include North Arrow and location, direction, and photo file number of photographs.



LEGEND

●→	Photo Location / Direction	⊻	Wetland
▭	Sample Station	Ʊ	Upland
- - - - - -	Centerline	──▶──	Perennial Stream
△	Flag	-·▶·-·-·▶	Intermittent Stream

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

DR 76 AB] Same wetland
WTG 54A] System

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/6/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1/4 Transect ID: DR 76 A/B/WTG 54A Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:
Percent Canopy Cover: Tree: 38.0 Shrub: 0 Herb: 85.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Balsam Fir	T	FAC	9.		
2. Red Maple	T	FAC	10.		
3. Joe Pye Weed	H	FACW	11.		
4. Sensitive Fern	H	FACW	12.		
5. Grasses sp.	H	FACW	13.		
6. Carex sp.	H	FACW	14.		
7.			15.		
8			16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100

Remarks:
* Un ID due to seasonal conditions assumed FACW

HYDROLOGY

___ Recorded Data (Describe in Remarks):
___ Stream, Lake, or Tide Gauge
___ Aerial Photographs
___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): Surface

Depth to Saturated Soil (in.): Surface

Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated
X Saturated to Surface
___ Water Marks
___ Drift lines
___ Sediment Deposits
X Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12 inches
X Water-Stained Leaves
___ Local Soil survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks:

PROJECT NAME: Burke Wind Farm **PROJECT No.: 3335.0002.0006.00000**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 USAE Wetlands Delineation Manual)

Project Site: Burke Wind Farm Applicant/Owner: Horizon Wind Investigator: B. Raftery	Date: 11/10/06 County: Franklin State: NY
Do Normal Circumstances exist on the site? [✓ Yes] No Is the site significantly disturbed (Atypical Situation)? Yes [✓ No] Is the area a potential Problem Area? Yes [✓ No] (If needed, explain on reverse.)	Community ID: PFO1 Transect ID: IC 54A Plot ID: PHOTO ID:

VEGETATION

Plant Community Classification:

Percent Canopy Cover: Tree: 63.0 Sap/Shrub: 38.0 Herb: 28.5 Vine: 0

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Red Maple	T		9.		
2. Gray Birch	T	FAC	10.		
3. Balsam Fir	T	FAC	11.		
4. Red Maple	Sap	FAC	12.		
5. Grey Birch	Sap	FAC	13.		
6. Sensitive Fern	H	FACW	14.		
7. Cinnamon Fern	H	FACW	15.		
8 Royal Fern	H	FACW	16.		

Percent of dominant Species that are OBL, FACW, or FAC (excluding FAC-):

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
 ___ Stream, Lake, or Tide Gauge
 ___ Aerial Photographs
 ___ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water (in.): 0

Depth to Free Standing Water in Pit (in.): 10"

Depth to Saturated Soil (in.): 10"

Wetland Hydrology Indicators:
Primary Indicators:
 ___ Inundated
 x Saturated w/ 10"
 ___ Water Marks
 ___ Drift lines
 ___ Sediment Deposits
 ✓ Drainage Patterns In Wetlands
Secondary Indicators (2 or more required):
 ___ Oxidized Root Channels in Upper 12 inches
 ✓ Water-Stained Leaves
 ___ Local Soil survey Data
 ___ FAC-Neutral Test
 ___ Other (Explain in Remarks)

Remarks:

Appendix B

WTG-42-1A (NE View)

WTG-42-2B (S View)

WTG-42-4B (SW View)

IC-42-2A (NW View)

IC-42-3B (SW View)

WTG-65-2A (NE View)

WTG-65-2A (W View)

AR-65-2B (NE View)


AR-65-2B (W View)


AR-74-2A (E/NE View)


AR-74-2A (NE View)


IC-49-2A (NE View)

IC-49-2A-NW

IC-49-1D (E View)

IC-49-3D (NE View)

WTG-57-2A (NE View)

WTG-58-3A (NE View)

WTG-58-1B (N View)

AR-58-2A (W View)

AR-58-2B (E View)

WTG-50-2A (SE View)

WTG-50-2A (NW View)

AR-50-3B (NE View)

AR-50-3B (E View)

WTG-124-1A (SW View)

WTG-124-3A (NE View)

WTG-59-3A (NE View)

WTG-59-4B (W View)


WTG-85-5A (N View)


WTG-85-5A (W View)


IC-86-2E (W View)


AR-86-2B (N View)


AR-86-2B (SW View)


AR-86-2A (NW View)


IC-86-3A (NW View)


IC-86-3A (S View)

IC-86-2C (NW View)

WTG-94-4A (SW View)

IC-94-1A (S View)

IC-94-2A (N View)

IC-94-SA (E View)

WTG-95-1A (SE View)

WTG-95-1A (NW View)

IC-95-2B (E View)


IC-95-2B (W View)


IC-95-1C (NW View)


WTG-101-4A (W View)


WTG-101-4A (NE View)

AR-89-1A (N View)

AR-90-2A (SE View)

AR-90-3A (SW View)

WTG-100-1A (NW View)


WTG-100-1A (SE View)


IC-89-1A (W View)


IC-89-1A (NE View)


IC-79-2A (NW View)


IC-79-2A (SE View)


IC-79-2C (W View)


IC-79-2C (NE View)


IC-79-3E (SW View)

IC-79-3E (E View)

AR-79-2B (SW View)

IC-114-1A (NE View)

IC-114-1A (S View)

WTG-71-1A (SW View)

WTG-71-1A (NE View)

AR-112-1A (S View)

AR-112-1A (E View)

AR-76-2B (NW View)

AR-76-2B (SE View)

WTG-54-1A (NW View)

WTG-54-1A (N View)

AR-79-3A (N View)

AR-79-3A (SW View)

AR-79-2C (NW View)

WTG-111 (SW View)

Appendix E
Avian and Bat Studies

AVIAN AND BAT STUDIES FOR THE PROPOSED JERICHO RISE WIND FARM, FRANKLIN COUNTY, NEW YORK

FINAL REPORT

April 2007 –November 2007

Prepared For:

Jericho Rise Wind Farm, LLC
3 Columbia Place
Albany, New York 12207

Prepared By:

WEST, Inc.

Jessica Kerns, David P. Young, Jr., Christopher S. Nations, Victoria K. Poulton
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2003 Central Avenue
Cheyenne, Wyoming 82001

January 2008

Table of Contents

List of Tables

List of Figures

1.0 Introduction and Background

Jericho Rise Wind Farm, LLC (Jericho Rise) is developing a renewable energy portfolio for northern New York which includes a potential wind power project in Franklin County. The proposed Jericho Rise Wind Farm is located in the towns of Bellmont and Chateaugay. The exact location and size of the development will be based on a number of factors including economics, electricity markets, transmission constraints, power purchase agreements, permitting, and results of site surveys.

Through the early project evaluation process, concerns were raised by the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Fish and Wildlife Service (USFWS). These concerns included potential project impacts to avian and bat resources, particularly resident bats, nocturnal migrant birds and bats, migrant raptors, breeding birds, and species of concern that may occupy the Project Area. The agencies requested that data be collected that could be used to describe these resources in the context of the proposed development, assist in addressing potential impacts from the development, and to the extent possible, assist in wind project design and siting that minimizes risk to avian and bat resources.

A pre-construction study that addressed agency concerns and provided site-specific data on resources of concern was initiated in April 2007. The principal goals of the study were:

1) Provide information on avian and bat resources and use of the Project Area that is useful in evaluating potential impacts from wind power development;
2) Provide information on avian and bat migration over the proposed Project Area that is useful in evaluating the relative risk of the proposed location;
3) Provide information on avian, bat, and sensitive species use of the Project Area that would help in designing a wind plant that is less likely to expose species to potential collisions with turbines, and;
4) Provide recommendations for further monitoring studies and potential mitigation measures, if appropriate.

The studies included field surveys for diurnal migratory raptors, breeding birds, resident bats, migratory bats, and state and federally listed or sensitive species. Specific objectives of the study were to (1) describe and quantify nocturnal migration over the proposed project, (2) describe and quantify diurnal raptor migration through the proposed project, (3) describe and quantify breeding bird use in the proposed Project Area, (4) describe and quantify migrant and resident bats in the proposed project, and (5) identify the presence of any special-status species (e.g., federal or state-listed species) that may occur seasonally in the Project Area. The study protocol was developed with input from personnel of NYSDEC and USFWS, and with the expertise and experience of WEST, which has conducted similar studies for wind energy development throughout the U.S.

2.0 Project Area

The Jericho Rise Project Area lies in northeastern Franklin County, New York. The Project Area falls within Bellmont and Chateaugay townships. U.S. Highway 11 runs east-west north of the Project Area and a number of county roads cross through the project. Land within the Project Area is privately owned and the primary land uses are agriculture (cropland, livestock), forest products, and rural housing. Population density is low and scattered, but there are clusters of houses in the small residential areas of the Village of Chateaugay and Brainardsville.

The Project Area is bordered on the east by the Chateaugay River, which runs through a prominent forested ravine. Smaller tributary streams run throughout the Project Area and most occur within in wooded corridors. Topographically the Project Area is variable from broad relatively flat or low sloping fields to rolling hills. The rolling topography within the Project Area has left the area a mosaic of open pastures (livestock grazing), some cultivated agriculture (e.g., corn, potatoes), and deciduous or mixed forest. Low elevation areas are either forested, wetland, or both while higher flatter elevation areas have been converted to agriculture. Typically the north portion of the Project Area has more open fields and less forest while the reverse is true to the south.

The Jericho Rise Project Area spans the Western Adirondack Foothills, Western Adirondack Transition, and Malone Plain ecozones of New York (Andrle and Carroll 1988). The Western Adironack Foothills are characterized by hills and gently rounded mountains. Dominant landcover was historically shrubland and forests of spruce, balsam fir, and northern hardwoods. In the Western Adirondack Transition zone, topography is flatter and land cover is a mixture of agriculture, old fields, and successional forest (Andrle and Carroll 1988). In the Malone Plain ecozone, elevation is lower and topography ranges from flat to rolling. Much of the land is in agriculture and forested areas are typically characterized by aspen and birch (Andrle and Carroll 1988). The presence of forests and rivers historically supported logging industries and a papermill is located on the eastern side of the Project Area.

Initially, a larger area extending north and west of the current Project Area boundary was studied. As a result, a few field survey stations are located outside of the current Project Area boundaries; however, much of the data collection occurred within the most current Project Area boundaries. In general and because the objective of the data collection was estimating potential impacts from wind development on the identified resources, the data that was collected from the area outside the current proposal was included in the analysis. For example, the data from the breeding bird surveys could be used to compare the proposed development area with non-development areas. In addition, the analyses that estimated risk to any particular resource (e.g., an exposure index) benefited from the larger data set. The radar sampling location was located within the current proposed Project Area.

3.0 Study Components and Methods

The studies consisted of diurnal point count surveys from fixed point locations conducive to observing raptors and other large birds; breeding bird survey point counts located through the development area; driving surveys for state-listed species; nocturnal marine radar sampling during fall migration for bats; mist net sampling for resident bats during the breeding season, and AnaBat sampling at three locations during spring and fall migration periods and over the entire Project Area during summer.

Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) measures were implemented at all stages of the study, including in the field, during data entry and analysis, and report writing. Following field surveys, observers were responsible for inspecting their data forms for completeness, accuracy, and legibility. A sample of records from an electronic database was compared to the raw data forms and any errors detected were corrected. Irregular codes or data suspected as questionable were discussed with the observer and/or project manager. Errors, omissions, or problems identified in later stages of analysis were traced back to the raw data forms, and appropriate changes in all steps were made.

Data Compilation and Storage

A Microsoft® ACCESS database was developed to store, organize, and retrieve survey data. Data were keyed into the electronic database using a pre-defined format to facilitate subsequent QA/QC and data analysis. All data forms, field notebooks, and electronic data files were retained for reference.

3.1 Diurnal Point Count Surveys

The objective of the diurnal point count surveys was to estimate spatial and temporal use of the Project Area by migrant raptors and other diurnal migrants. Sampling intensity was designed to document raptor migration through the development area. Initially, existing data from raptor migration watch sites in New York was used to determine appropriate dates for maximizing observations of migrant raptors. The peak windows for migrant sharp-shinned hawks and broad-winged hawks were chosen as the target survey periods. Based on existing data from raptor migration watch sites for the past three years, the peak of the sharp-shinned hawk and broad-winged hawk spring migration usually occurs during the last two weeks of April and for the fall migration broad-winged hawk movement concentrates in mid-September and sharp-shinned hawks in approximately the first week of October. Efforts were made to concentrate the surveys in these periods to maximize observations of migrant raptors but actual survey dates were flexible in response to adverse or highly preferable weather conditions.

3.1.1 Methods

Four points were selected along an approximately east-west transect (using public roads) though the Project Area (Figure 1). The survey points were selected to provide good visibility in all directions while sampling different vegetation, topographic features, and portions of the Project Area without overlap. An east-west layout was used to minimize the possibility of double counting migrant raptors as they moved north-south through the Project Area. The surveys emphasized counts and locations of raptors and large birds within approximately 800 m (0.5 mi) of each point.

Each survey plot was a variable circular plot centered on the observation point (Reynolds et al. 1980, Bibby et al. 1992). Survey duration at each point was 60 minutes per visit. Surveys were conducted according to methods used by the Hawk Migration Association of North America (HMANA) with observers continuously scanning the sky and surrounding areas for raptors in the survey area. Surveys were conducted between approximately 0900 and 1500 hours each survey day when weather conditions typically produce thermal uplifts conducive to raptor movement.

All raptors and other large birds (e.g., waterfowl) observed during the survey were assigned a unique observation number and plotted on a map of the survey plot. The date, start and end time of the observation period, and weather information such as temperature, wind speed, wind direction, barometric pressure, and cloud cover were recorded for each survey. Species or best possible identification, number of individuals, sex and age class (if possible), distance from plot center when first observed, closest distance, altitude above ground, activity (behavior), and habitat(s) were recorded for each raptor observed. Flight or movement paths were mapped for all raptors and given the corresponding unique observation number. Approximate flight height at first observation and the approximate lowest and highest flight heights were recorded to the nearest 5 or 10-meter interval. Flight heights were estimated by comparison to nearby objects such as radio or met towers, power poles, and trees.

A list of all bird species observed during all surveys types was generated for the Jericho Rise Project Area. The total number of unique species and the mean number of species observed per survey (i.e., number of species/plot/60-min. survey) were calculated to illustrate and compare differences between seasons for fixed point bird use surveys. Species lists, with the number of observations and the number of groups, were generated by season, including all observations of birds detected regardless of their distance from the observer. For the standardized fixed point bird use estimates, only observations of birds detected within the 800-meter radius plot were used. Estimates of bird use (i.e., number of birds/plot/60-min. survey) were used to compare differences between bird types, seasons, and other wind-energy facilities.

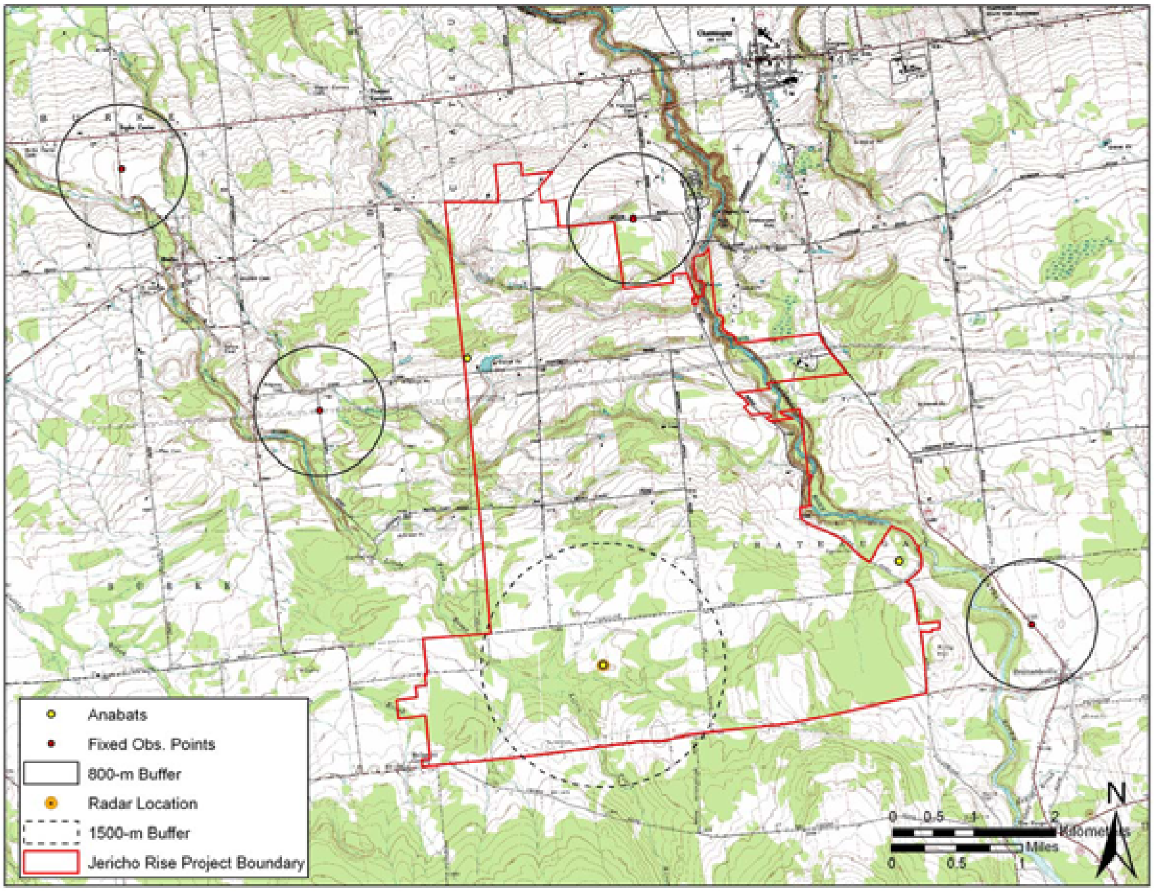
The frequency of occurrence by species was calculated as the percent of surveys in which a particular species was observed. Frequency of occurrence provided relative estimates of the bird diversity of the study area. For example, a particular species might have high use estimates for the study area based on just a few observations of large flocks; however, the frequency of occurrence would indicate that it only occurred during a few of the surveys, therefore making it less likely to be affected by the wind-energy facility. To calculate potential risk to bird species, the first flight height recorded was used to estimate the percentages of birds flying within the “likely zone of risk” for typical turbines. Since the type of turbines that will be used at the Project Area is currently unknown, the likely zone of risk was defined as a flight height of between 82 to 410 feet (25 to 125 m), which is the blade height of typical turbines that could be used at the Jericho Rise Wind Farm.

A relative index to collision exposure (R) was calculated for bird species observed during the fixed point bird use surveys using the following formula:

$R = A*P_f*P_t$

Where A equals mean relative use for species *i* (observations within 800 m of observer) averaged across all surveys, P_f equals proportion of all observations of species *i* where activity was recorded as flying (an index to the approximate percentage of time species *i* spends flying during the daylight period), and P_t equals proportion of all initial flight height observations of species *i* within the likely zone of risk. This index does not account for differences in behavior other than flight heights and percent of birds observed flying.

Figure 1. Diurnal point count, radar, and AnaBat sampling locations in the Jericho Rise Project Area.



3.1.2 Results

In the spring, each fixed point was surveyed 8 times during the survey window, for a total of 32 surveys (Table 1). A total of 642 individual large birds in 247 separate groups were recorded during the surveys (Table 2). One-hundred and twelve (112) individual raptors were observed in 97 different groups. During the fall, each point was surveyed 7 times for a total of 28 surveys. A total of 3853 individual large birds in 228 separate groups were recorded during the fall surveys (Table 2). Fifty-nine (59) individual raptors were observed in 50 different groups.

Table 1. Summary of fixed-point surveys and avian use for the Jericho Rise Project Area.

Season	Number of Visits	Mean Use	# Species/ Survey	# Species	# Surveys Conducted
Spring	8	19.09	4.19	20	32
Fall	7	137.61	3.32	14	28
Overall	15	74.40	3.78	23	60

During the spring and fall, Canada goose, American crow, and ring-billed gull were the most commonly observed large birds. The overall use estimate for the fall was greatly influenced by large flocks of Canada geese and ring-billed gulls flying over the Project Area (Table 2). Raptor use was relatively similar among points, with the highest use estimates (3.5) at survey point 1 in the northwest portion of the Project Area and lowest use (1.4) at survey point 2 in the southwest (Figure 1). The use estimates by point were similar in both spring and fall.

Turkey vulture was the most common raptor. Approximately half of all spring raptor observations were turkey vultures (Table 2). Other common raptor species observed during spring surveys included red-tailed hawk, northern harrier, and American kestrel, Turkey vulture was again the most common fall raptor (38% of raptor observations), followed by red-tailed hawk (22%) and northern harrier (13%). Canada geese had the highest use estimates for any large bird, particularly in the fall (Table 3). Few raptors had high use estimates, as raptor species were rarely seen often and/or in high numbers.

Table 2. Avian species observed while conducting fixed point avian use surveys in the Jericho Rise Project Area.

		Spring		Fall		Total	
Species/Group	Scientific Name	# obs	# grps	# obs	# grps	# obs	# grps
Waterbirds		**135**	**22**	**483**	**12**	**618**	**34**
great blue heron	*Ardea herodias*	9	4	0	0	9	4
great egret	*Ardea alba*	2	2	0	0	2	2
ring-billed gull	*Larus delawarensis*	123	15	433	11	556	26
unidentified gull		1	1	50	1	51	2
Waterfowl		**219**	**31**	**2783**	**68**	**3002**	**99**
Canada goose	*Branta canadensis*	191	20	2376	61	2567	81
mallard	*Anas platyrhynchos*	24	9	2	1	26	10
northern shoveler	*Anas clypeata*	1	1	0	0	1	1
snow goose	*Chen caerulescens*	0	0	388	5	388	5
unidentified waterfowl		3	1	17	1	20	2
Raptors		**112**	**97**	**59**	**50**	**171**	**147**
Accipiters							
Cooper's hawk	*Accipiter cooperii*	0	0	3	3	3	3
sharp-shinned hawk	*Accipter striatus*	4	4	0	0	4	4
unidentified accipiter		2	2	1	1	3	3
Buteos							
broad-winged hawk	*Buteo platypterus*	2	2	0	0	2	2
red-tailed hawk	*Buteo jamaicensis*	19	18	19	18	38	36
rough-legged hawk	*Buteo lagopus*	5	5	1	1	6	6
unidentified buteo		1	1	4	4	5	5
Eagles		*1*	*2*	*1*		*2*	
bald eagle	*Haliaeetus leucocephalus*	1	1	0	0	1	1
golden eagle	*Aquila chrysaetos*	0	0	1	1	1	1
Falcons		*14*	*17*	*2*		*16*	
American kestrel	*Falco sparverius*	14	13	2	2	16	15
peregrine falcon	*Falco peregrinus*	1	1	0	0	1	1
Other Raptors		*2*	*3*	*1*		*3*	
osprey	*Pandion haliaetus*	2	2	0	0	2	2
unidentified raptor		0	0	1	1	1	1
turkey vulture	*Cathartes aura*	46	33	19	11	65	44
northern harrier	*Circus cyaneus*	15	15	8	8	23	23
Upland Gamebirds							
wild turkey	*Meleagris gallopavo*	4	1	0	0	4	1
Passerines		**170**	**84**	**528**	**98**	**698**	**182**
American crow	*Corvus brachyrhynchos*	161	77	524	94	685	171
common raven	*Corvus corax*	9	7	4	4	13	11
Other Birds							
pileated woodpecker	*Dryocopus pileatus*	2	2	0	0	2	2
Total		**642**	**237**	**3853**	**228**	**4495**	**465**

Table 3. Mean use, percent composition and percent frequency of occurrence for avian species by season for the Jericho Rise Project Area.

	Use		% Composition		% Frequency	
Species	Spring	Fall	Spring	Fall	Spring	Fall
Waterbirds	**4.16**	**17.25**	**21.8**	**12.5**	**46.9**	**25.0**
great blue heron	0.28	0	1.5	0	12.5	0
great egret	0.03	0	0.2	0	3.1	0
ring-billed gull	3.84	15.46	20.1	11.2	34.4	21.4
unidentified gull	0	1.79	0	1.3	0	3.6
Waterfowl	**6.53**	**99.39**	**34.2**	**72.2**	**50.0**	**60.7**
Canada goose	5.94	84.86	31.1	61.7	31.3	57.1
mallard	0.56	0.07	2.9	0.1	21.9	3.6
northern shoveler	0.03	0	0.2	0	3.1	0
snow goose	0	13.86	0	10.1	0	7.1
unidentified waterfowl	0	0.61	0	0.4	0	3.6
Raptors	**2.97**	**2.11**	**15.5**	**1.5**	**78.1**	**67.9**
Accipiters						
Cooper's hawk	0	0.11	0	0.1	0	10.7
sharp-shinned hawk	0.09	0	0.5	0	9.4	0
unidentified accipiter	0.03	0.04	0.2	<0.1	3.1	3.6
Buteos						
broad-winged hawk	0.06	0	0.3	0	6.3	0
red-tailed hawk	0.28	0.68	1.5	0.5	21.9	53.6
rough-legged hawk	0.13	0.04	0.7	<0.1	9.4	3.6
unidentified buteo	0	0.14	0	0.1	0	14.3
Eagles						
bald eagle	0.03	0	0.2	0	3.1	0
golden eagle	0	0.04	0	<0.1	0	3.6
Falcons						
American kestrel	0.44	0.07	2.3	0.1	37.5	3.6
peregrine falcon	0.03	0	0.2	0	3.1	0
Other Raptors						
osprey	0.06	0	0.3	0	6.3	0
unidentified raptor	0	0.04	0	<0.1	0	3.6
turkey vulture	1.34	0.68	7.0	0.5	62.5	25.0
northern harrier	0.47	0.29	2.5	0.2	37.5	28.6
Upland Gamebirds	**0.13**	**0**	**0.7**	**0**	**3.1**	**0**
wild turkey	0.13	0	0.7	0	3.1	0
Passerines	**5.25**	**18.86**	**27.5**	**13.7**	**93.8**	**75.0**
American crow	5.00	18.71	26.2	13.6	87.5	75.0
common raven	0.25	0.14	1.3	0.1	15.6	10.7
Other Birds	**0.06**	**0**	**0.3**	**0**	**6.3**	**0**
pileated woodpecker	0.06	0	0.3	0	6.3	0
Overall	**19.09**	**137.61**	**1.5**	**10.8**	**100.0**	**96.4**

Mean flight height for many avian group falls within the zone of risk (Table 4). Waterfowl and raptors, particularly accipiters, eagles, and vultures, had an average flight height between 25 – 125 m. However, fewer than half of the observations for most avian groups were within the zone of risk. Northern harrier, a state species of special concern, was often observed (82.6%) at heights below the zone of risk.

Table 4. Flight height characteristics by avian group during fixed point avian use surveys in the Jericho Rise Project Area.

Group	# Obs Flying	# Groups Flying	Mean Flight Height	% Obs Flying	% within Flight Height Categories 0-25 m	25-125 m	> 125 m
Waterbirds	32	616	32.09	100.0	44.8	54.9	0.3
Waterfowl	90	2964	99.31	99.1	44.9	30.6	24.5
Raptors	125	148	110.55	96.1	32.4	39.2	28.4
Accipiters	*7*	*7*	*72.86*	*87.5*	*28.6*	*42.9*	*28.6*
Buteos	*36*	*37*	*175.83*	*94.9*	*8.1*	*45.9*	*45.9*
Eagles	*2*	*2*	*72.50*	*100.0*	*50.0*	*50.0*	*0*
Falcons	*13*	*14*	*21.92*	*82.4*	*78.6*	*21.4*	*0*
Other Raptors	*3*	*3*	*350.00*	*100.0*	*0*	*33.3*	*66.7*
Vultures	*41*	*62*	*119.76*	*100.0*	*19.4*	*48.4*	*32.3*
Northern Harrier	*23*	*23*	*25.61*	*100.0*	*82.6*	*13.0*	*4.3*
Upland Gamebirds	0	0	0	0	0	0	0
Passerines	153	655	31.74	94.1	53.9	46.0	0.2
Other Birds	0	0	0	0	0	0	0
Overall	**400**	**4383**	**71.60**	**98.2**	**45.8**	**36.6**	**17.6**

Exposure indices were calculated as the mean use estimates for all surveys (number of birds/60-minute survey) times the percent of birds observed flying times the percent of birds flying within the zone of risk (defined as the approximate rotor-swept area of 25 – 125 m). Canada goose had the highest exposure index for all species observed, primarily from high use estimates derived from observations of large flocks flying through the Project Area (Table 5). Among raptors, turkey vulture had the highest exposure index also due to high use of the area by this species.

Table 5. Mean exposure indices calculated by species observed during fixed point avian use surveys in the Jericho Rise Project Area.

Species/Group	# Groups Flying	Overall Mean Use	% Flying	% Flying within RSA	Exposure Index	% Within Rotary Height
Canada goose	74	42.77	98.9	30.1	12.72	61.0
ring-billed gull	26	9.27	100.0	60.1	5.57	81.8
American crow	143	11.40	94.0	45.7	4.90	63.9
snow goose	5	6.47	100.0	29.1	1.88	54.9
turkey vulture	41	1.03	100.0	48.4	0.50	67.7
unidentified waterfowl	1	0.28	100.0	100.0	0.28	100.0
red-tailed hawk	25	0.47	92.9	53.8	0.23	57.7
mallard	9	0.33	100.0	60.0	0.20	75.0
common raven	10	0.20	100.0	58.3	0.12	58.3
great blue heron	4	0.15	100.0	44.4	0.07	44.4
northern harrier	23	0.38	100.0	13.0	0.05	26.1
American kestrel	13	0.27	87.5	21.4	0.05	42.9
Cooper's hawk	3	0.05	100.0	66.7	0.03	100.0
rough-legged hawk	5	0.08	100.0	40.0	0.03	40.0
broad-winged hawk	2	0.03	100.0	50.0	0.02	50.0
golden eagle	1	0.02	100.0	100.0	0.02	100.0
northern shoveler	1	0.02	100.0	100.0	0.02	100.0
osprey	2	0.03	100.0	50.0	0.02	50.0
unidentified accipiter	2	0.03	100.0	50.0	0.02	50.0
bald eagle	1	0.02	100.0	0	0	100.0
great egret	1	0.02	100.0	0	0	0
sharp-shinned hawk	2	0.05	66.7	0	0	0
unidentified buteo	4	0.07	100.0	0	0	0
unidentified gull	1	0.83	100.0	0	0	0
unidentified raptor	1	0.02	100.0	0	0	0
peregrine falcon	0	0.02	0	0	0	0
pileated woodpecker	0	0.03	0	0	0	0
wild turkey	0	0.07	0	0	0	0

3.2 Avian Nocturnal Radar Survey

The overall purpose of nocturnal radar surveys is to characterize avian migration over a Project Area and provide data to determine the relative magnitude of nocturnal migration over a proposed development area when compared to other sites. Two other extensive baseline studies have been conducted for proposed projects in Clinton County: the Noble Clinton Windpark (Mabee et al. 2006) and the Marble River Wind Farm (Woodlot Alternatives 2006a, 2006b). Information from these studies is publicly available and the radar survey locations were 14.5 (~9.0mi) and 15.1 km (~9.4mi) respectively from the center of the proposed Project Area (Figure 2). In addition there are at least 12 other sites studied since 2003 in New York and 2 in nearby Vermont that have publicly available results for cumulative analyses. Analysis of other X-band marine radar studies conducted according to methods recommended by NYSDEC have suggested similar results, and while results of existing monitoring studies are variable, they do not indicate that nocturnal migrant birds are at great risk from wind turbines.

3.2.1 Methods

Available reports for existing marine radar studies in New York and Vermont were acquired and evaluated to summarize data and results related to characteristics of nocturnal migration and to develop a risk assessment for the Jericho Rise Project Area. Two levels of analysis were conducted. Local characteristics of migration are described based on results of the Noble Clinton Windpark and the Marble River Wind Farm. Regional migration characteristics and trends were evaluated from studies throughout New York and neighboring states such as Vermont and Pennsylvania.

3.2.2 Results

Two extensive baseline studies were conducted for proposed projects in nearby Clinton County, NY: the Noble Clinton Windpark and the Marble River Wind Farm. Information from these studies is publicly available and the radar survey locations were 7.0 miles and 7.9 miles respectively from the Jericho Rise Project Area. The overall purpose of nocturnal radar surveys is to determine the relative magnitude and characteristics of nocturnal migration over a proposed development area and provide data to compare to other sites. In addition to these sites, there are approximately 11 other sites studied since 2003 in New York and 4 in nearby Vermont and Pennsylvania that have publicly available results for cumulative analyses (Table 6).

Overall passage rates were lower at the nearby Noble Clinton and Marble River sites than other radar sites studied in New York. In general, however, results from these two sites are not largely different from other sites studied in the eastern U.S. (Table 6). Mean spring flight direction recorded at Noble Clinton and Marble River, 30°and 40 ° respectively, and mean fall flight direction, 162° and 193 ° respectively, were similar to other studies which have shown a northeasterly heading for spring migrants and southwesterly heading for fall migrants (Table 6). Mean flight height of targets at the Noble Clinton site (338 m, spring; 333 m, fall) was lower than Marble River (422 m, spring; 438 m, fall) in both seasons and both sites reported similar or lower flight heights than other recent studies in the U.S. Also, the percent of targets which flew below the zone of risk, defined as below 125 m, was slightly higher than other studies where flight height was recorded with vertical mode radar (Table 6).

Figure 2. Jericho Rise Project Area in relation to nearby proposed projects with baseline radar studies.

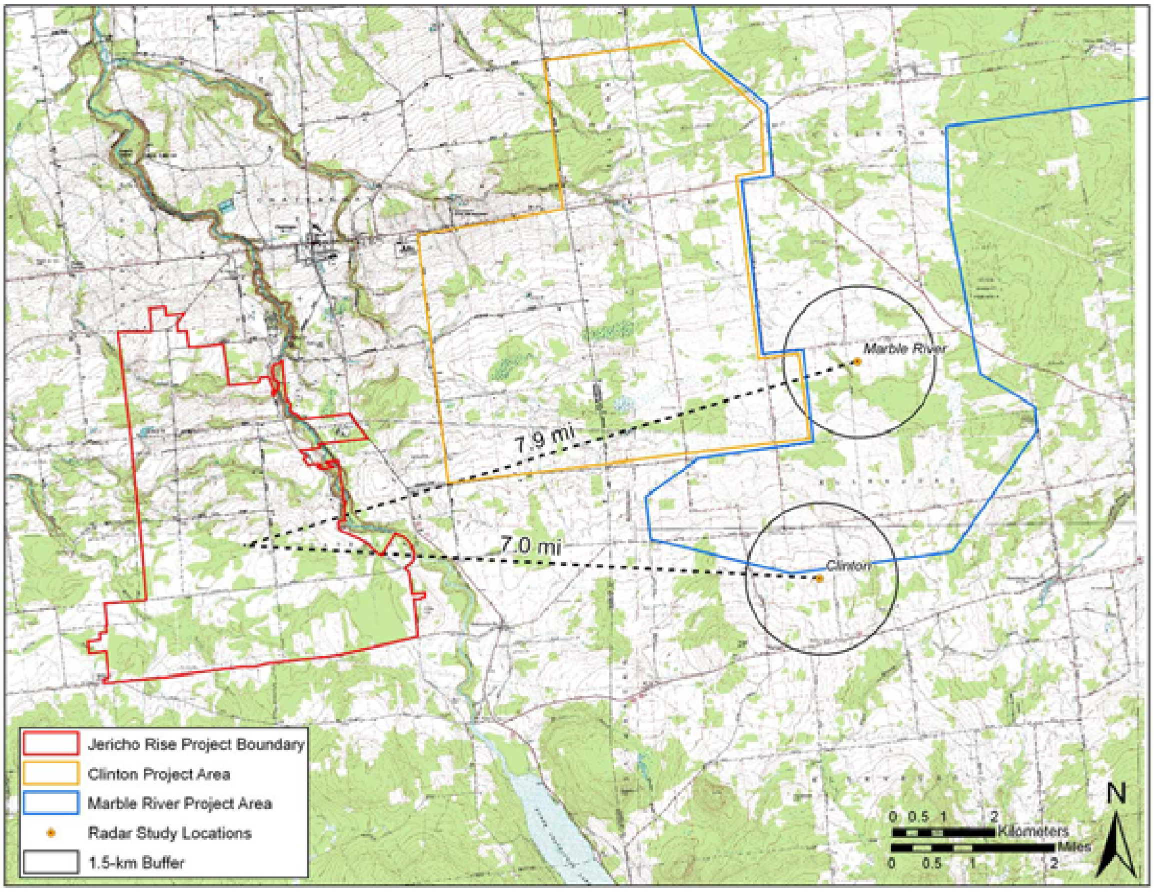


Table 6. Results of radar studies at proposed and existing wind projects in the Eastern U.S. conducted since 2003.

Site	Passage Rates (t/km/hr)		Mean Flight Height (m)		% Targets below 125 m		Mean Flight Direction	
	Fall	Spr	Fall	Spr	Fall	Spr	Fall	Spr
Noble Clinton, NY **(Mabee *et al.* 2006)**	**197**	**110**	**333**	**338**	**12**	**20**	**162**	**30**
Marble River, NY **(Woodlot Alternatives 2006a,b)**	**152**	**254**	**438**	**422**	**5**	**11**	**193**	**40**
St. Lawrence Windpower, NY (Young et al. 2007)	346	166	490	441	8	14	209	34
Alabama Ledge, NY (Young et al. 2006)	165	200	487	413	11	14	219	35
Dairy Hills, NY (Young et al. 2006)	170	234	466	397	10	15	180	14
Flat Rock, NY (Mabee *et al.* 2005)	158		415		8		184	
Chautauqua, NY (Cooper *et al.* 2004a,b)	238	395	532	528	5	4	199	29
Prattsburgh (1), NY (Mabee *et al.* 2004, 2005)	200	170	365	319	9	18	177	18
Jordanville, NY (Woodlot Alternatives 2005a, b)	380	409	440	371	6	21	208	40
Prattsburgh (2), NY (Roy et al 2004, Woodlot 2005)	193	277	516	370	3	16	188	22
West Hill, NY (Woodlot Alternatives 2005)	732	160	664	291	3	25	223	31
High Sheldon, NY (Woodlot Alternatives 2005)	197	112	422	418	3	6	213	29
Fairfield Top Notch, NY (B. Gary, NYDEC, pers. comm.)	691	509	516	419	4	20	198	44
Searburg, VT (Roy and Pelletier 2005a, 2005b)	178	404	556	523	4	6	203	69
Sheffield, VT (Roy et al. 2005)	109	199	564	522	1	6	200	40
Martindale, PA (Plissner *et al.* 2005)	187		436		8		188	
Casselman, PA (Plissner *et al.* 2005)	174		448		7		219	
Mount Storm, WV (Young *et al.* 2004)	199		410		16		184	
Mean	259	259	472	412	7	14	197	34

Note: Some values are approximations based on the limited information provided in the report or averaged over more than one sampling location (e.g., Flat Rock, Mount Storm).

3.3 Breeding Bird Survey

The objective of the breeding bird survey was to estimate the spatial and temporal use of the proposed development area by breeding resident birds. The surveys were during June/early July based on the regional timing recommended for USGS BBS in northern New York (USGS 2001).

3.3.1 Methods

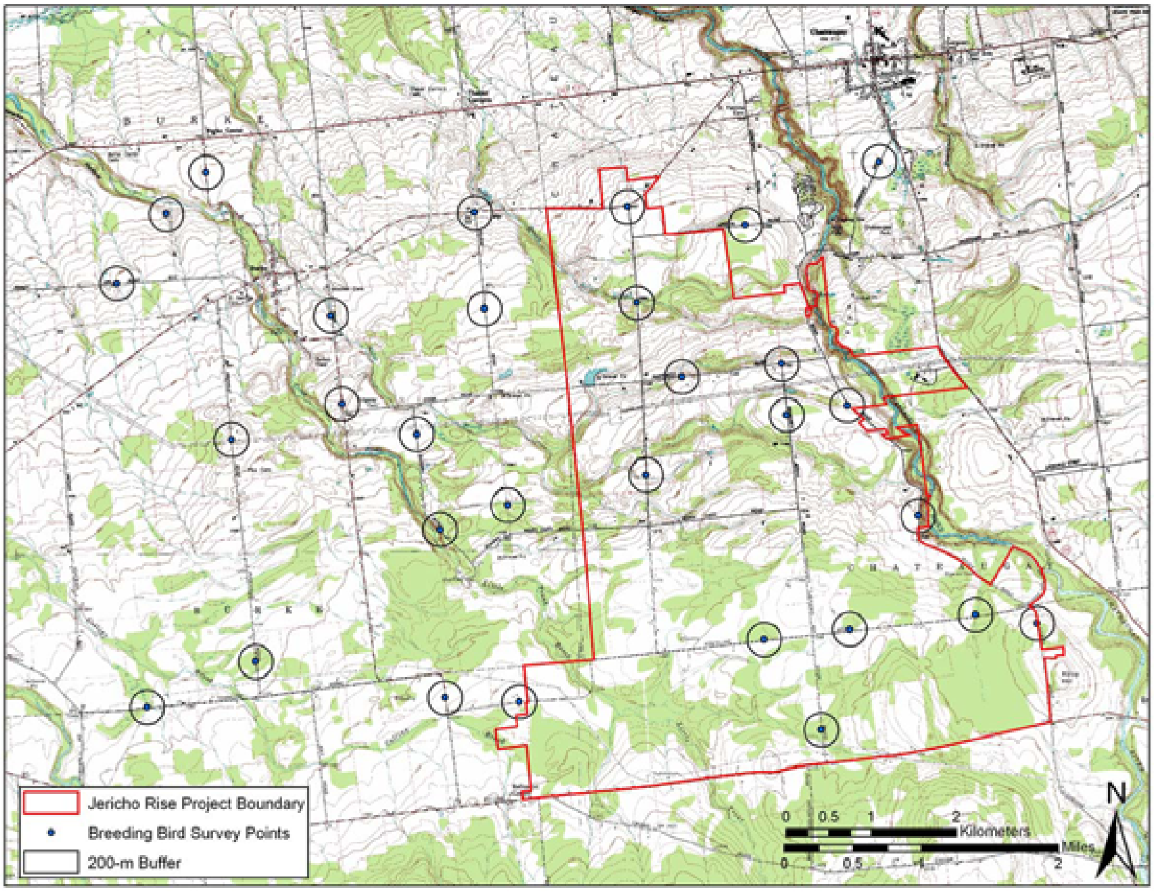
Originally, 30 survey points were established on public roads and private lands using preliminary project maps provided by Jericho Rise. The survey points were selected to cover as much of the original proposed development area and habitat types as possible. Following reconfiguration of the project boundary, approximately half of the survey points were established within the Project Area as currently proposed (Figure 3). Each survey station was marked on a map and GPS coordinates were recorded for each point. The habitat at each survey point was described to examine the applicability of the location to represent other areas within the proposed development area.

U.S. Geological Survey Breeding Bird Survey (USGS 2001) methods were used for the surveys. Each survey plot was a variable circular plot centered on the observation point. All birds observed were recorded; however, the survey effort was concentrated within an approximate 400 m (0.25 mi) radius circle centered on the observation point. All points were surveyed 3 times during the recommended survey period and at least seven days were skipped between the surveys to spread the effort over the breeding season.

Survey periods at each point were 3 minutes long, similar to the BBS method. The date; start and end time of the observation period; and weather information such as temperature, wind speed, wind direction, and cloud cover were recorded for each survey. Species or best possible identification, number of individuals of each species, how observed (visual or auditory), and behavior (flying, perching, singing, etc.) were recorded for each observation during the 3-minute count at each survey point.

A list of all bird species observed during all surveys was generated for the Project Area. The total number of unique species and the mean number of species observed per survey (i.e., number of species/point/survey) were calculated. Species lists, with the number of observations and the number of groups, were generated, including all observations of birds detected regardless of their distance from the observer. For the standardized breeding bird use estimates, only observations of birds detected within 400 meters of the point were used.

Figure 3. Breeding bird survey point count locations in the Jericho Rise Project Area.



3.3.2 Results

Point count surveys were conducted on June 15 and 16, June 25 and 26, and July 3, 2007. A total of 1,466 individual birds were observed in 991 groups (Table 7). On average, slightly more than 8 birds were observed for each point count survey within 400 meters of the observer. Eighty-two (82) different species were observed during the surveys. European starling, American crow, and red-winged blackbird were the most common passerines observed based on use estimates (number observed within 400 m of the survey point per 3-minute survey). The diversity of species observed is indicative of the mosaic of habitat types at the Jericho Rise Project Area. Two New York state threatened species, northern harrier and sedge wren, were recorded during the breeding bird surveys. Three species on the USFWS 2002 Birds of Conservation Concern list for BCR 14 (Atlantic Northern Forests) were also recorded: wood thrush, chestnut-sided warbler, and bay-breasted warbler.

Table 7. Avian species observed while conducting breeding bird surveys (June 15 – July 3, 2007) in the Jericho Rise Project Area. [a]

Species/Type	Scientific Name	# obs.	#groups
Waterbirds			
great blue heron	*Ardea herodias*	2	2
Waterfowl		**38**	**4**
common goldeneye	*Bucephala clangula*	1	1
mallard	*Anas platyrhynchos*	37	3
Shorebirds		**12**	**10**
American woodcock	*Scolopax minor*	1	1
killdeer	*Charadrius vociferus*	10	8
Wilson's snipe	*Gallinago gallinago*	1	1
Raptors		**2**	**2**
northern harrier	*Circus cyaneus*	1	1
unidentified owl		1	1
Doves/Pigeons		**44**	**26**
mourning dove	*Zenaida macroura*	26	21
rock pigeon	*Columba livia*	18	5
Passerines		**1334**	**916**
Blackbirds/Orioles		*390*	*145*
Baltimore oriole	*Icterus galbula*	1	1
bobolink	*Dolichonyx oryzivorus*	41	29
brown-headed cowbird	*Molothrus ater*	5	5
common grackle	*Quiscalus quiscula*	3	3
eastern meadowlark	*Sturnella magna*	17	12
European starling	*Sturnus vulgaris*	221	27
red-winged blackbird	*Agelaius phoeniceus*	102	68
Creepers/Nuthatches		*13*	*11*
brown creeper	*Certhia americana*	3	3
red-breasted nuthatch	*Sitta canadensis*	9	7
white-breasted nuthatch	*Sitta carolinenis*	1	1
Finches		*42*	*25*

Table 7. Avian species observed while conducting breeding bird surveys (June 15 – July 3, 2007) in the Jericho Rise Project Area. [a]

Species/Type	Scientific Name	# obs.	#groups
American goldfinch	*Carduelis tristis*	40	24
common redpoll	*Carduelis flammea*	2	1
Flycatchers		*29*	*28*
acadian flycatcher	*Empidonax virescens*	1	1
alder flycatcher	*Empidonax alnorum*	11	11
eastern kingbird	*Tyrannus tyrannus*	5	5
eastern phoebe	*Sayornis phoebe*	6	5
eastern wood-pewee	*Contopus virens*	4	4
least flycatcher	*Empidonax minimus*	1	1
willow flycatcher	*Empidonax traillii*	1	1
Gnatcatchers/Kinglet			
blue-grey gnatcatcher	*Polioptila melanura*	2	2
Grassland/Sparrows		*214*	*184*
chipping sparrow	*Spizella passerina*	19	18
dark-eyed junco	*Junco hyemalis*	2	2
field sparrow	*Spizella pusilla*	1	1
indigo bunting	*Passerina cyanea*	11	11
Lincoln's sparrow	*Melospiza lincolnii*	2	2
northern cardinal	*Cardinalis cardinalis*	1	1
savannah sparrow	*Passerculus sandwichensis*	78	66
song sparrow	*Melospiza melodia*	63	50
white-throated sparrow	*Zonotrichia albicollis*	37	33
Mimids			
gray catbird	*Dumetella carolinensis*	11	10
Swallows		*30*	*15*
bank swallow	*Riparia riparia*	16	5
barn swallow	*Hirundo rustica*	11	7
tree swallow	*Tachycineta bicolor*	3	3
Tanagers/Groskbeaks/Crossbills		*15*	*15*
rose-breasted grosbeak	*Pheucticus ludovicianus*	11	11
scarlet tanager	*Piranga olivacea*	4	4
Thrushes		*82*	*80*
American robin	*Turdus migratorius*	50	48
eastern bluebird	*Sialia sialis*	7	7
hermit thrush	*Catharus guttatus*	9	9
Veery	*Catharus fuscescens*	7	7
wood thrush	*Mycteria americana*	9	9
Titmice/Chickadees			
black-capped chickadee	*Poecile atricapillus*	33	23
Vireos		*41*	*41*
blue-headed vireo	*Vireo salitarius*	16	16

Table 7. Avian species observed while conducting breeding bird surveys (June 15 – July 3, 2007) in the Jericho Rise Project Area. [a]

Species/Type	Scientific Name	# obs.	#groups
Philadelphia vireo	*Vireo philadelphicus*	8	8
red-eyed vireo	*Vireo olivaceus*	17	17
Warblers		*198*	*171*
American redstart	*Setophaga ruticilla*	6	6
bay-breasted warbler	*Dendroica castanea*	1	1
black-throated blue warbler	*Dendroica virens*	8	8
black-throated green warbler	*Dendroica virens*	11	9
blue-winged warbler	*Vermivora pinus*	7	7
chestnut-sided warbler	*Dendroica pensylvanica*	13	13
common yellowthroat	*Geothlypis trichas*	70	50
house sparrow	*Passer domesticus*	3	1
mourning warbler	*Oporornis philadelphia*	6	6
Nashville warbler	*Vermivora ruficapilla*	3	3
ovenbird	*Seiurus aurocapilla*	29	28
pine warbler	*Dendroica pinus*	1	1
yellow warbler	*Dendroica petechia*	24	24
yellow-rumped warbler	*Dendroica coronata*	16	14
Waxwings			
cedar waxwing	*Bombycilla cedrorum*	28	16
Wrens		*10*	*9*
house wren	*Troglodytes aedon*	1	1
sedge wren	*Cistothorus platensis*	6	5
winter wren	*Troglodytes troglodytes*	3	3
Corvids		*196*	*141*
American crow	*Corvus brachyrhynchos*	148	104
blue jay	*Cyanocitta cristata*	42	34
common raven	*Corvus corax*	6	3
Cuckooes			
black-billed cuckoo	*Actitis macularia*	1	1
Swifts/Hummingbirds			
ruby-throated hummingbird	*Archilochus colubris*	3	3
Woodpeckers		**30**	**27**
downy woodpecker	*Picoides pubescens*	3	3
hairy woodpecker	*Picoides villosus*	3	3
northern flicker	*Colaptes auratus*	5	4
pileated woodpecker	*Dryocopus pileatus*	5	5
unidentified woodpecker		3	2
yellow-bellied sapsucker	*Sphyrapicus varius*	11	10
Total		**1466**	**991**

[a] number observed within 400m of the survey point per 3-minute survey

3.4 Migratory Bat Surveys

Migratory bats traveling within the Jericho Rise Project Area were sampled using two different techniques: acoustic and radar. The objective of acoustic AnaBat surveys was to record the relative abundance of echo-locating bats flying through the Project Area during the fall migration season. Information on passage rates, flight direction, and flight altitude of nocturnal targets was gathered by a single radar unit operating at the Project Area during the month of August, a period historically associated with elevated collision risk to migratory bats.

3.4.1 Acoustic Survey Methods

Bat activity at the Project Area was recorded using AnaBat II ultrasonic bat detectors attached to zero-crossing analysis interface modules (ZCAIM) which house a compact flash memory card for temporary download of ultrasonic activity files. To sample continuously on remote mode (automatic data collection), the detector and ZCAIM were powered by an external 12V battery. Each AnaBat unit (detector, ZCAIM, and 12V battery) was enclosed inside a plastic box or dry bag with the detector microphone positioned against a PVC tube protruding from the box/bag. This design prevented water from damaging the AnaBat units without compromising the ability of the unit to detect ultrasonic noise in the environment. To limit variation among AnaBats, sensitivity settings were calibrated for each unit prior to data collection. Most AnaBat units were set at or near setting 7 on the sensitivity dial. AnaBat units were removed from the field approximately once per week to download files, recharge batteries, and troubleshoot technical problems.

Bat calls were recorded during the fall migration season (August 1 – October 31). Nights that experienced any number of technical difficulties (e.g., extraneous noise, low battery, etc) were not included in the final analyses. Three permanent sampling stations were established within the Project Area: north, southwest radar, and southeast (Figure 1). At each sampling station, two AnaBat units were deployed at two different levels for “passive” sampling from approximately sunset to sunrise (1900 to 0700). One unit was located at ground level elevated 1 m above ground to increase sampling space. The second passive unit was located at tree canopy level by means of a pulley system which allowed the AnaBat unit to be raised/lowered. All sampling locations were established along forested edges within the Project Area. Data gathered from the passive AnaBat units were used to calculate bat activity (designated as number of calls/night) present at the Project Area during the sampling period.

3.4.2 Acoustic Survey Results

The total number of calls and number of calls per night, recorded by each AnaBat unit varied by location (Table 8). Sampling at each of the three sampling stations began on August 3, 2007 and all 6 units passively sampled until October 15, 2007, though total number of sampling days varies by unit. The AnaBat unit located in the southeastern portion of the Project Area detected a greater number of bat calls overall; however, this location had the greatest number of technical difficulties and the fewest number of sampling nights. Insect noise was frequently recorded by the 2 southeast units. The nature of acoustic monitoring makes it difficult to deduce whether the unusually high number of calls/night were the result of a few individual bats foraging along the wooded edge or numerous bats passing through the area. Further investigation into the calls revealed high numbers of calls at ground level produced by eastern red bats from August 9 – 31, with one night recording >800 calls. Several feeding buzzes were recorded, but the majority of calls were short sequences (1-5 pulses). Similar activity was recorded at the two units located in the northern portion of the Project Area. High numbers of eastern red bat calls were recorded early in the season (primarily August); however it is difficult to determine if these are foraging individuals or migrating groups. The sampling location in the southwestern portion of the Project Area recorded fewer calls/night (n=9.30). Habitat at this sampling location differed slightly from the other two locations. Though all stations were positioned along a wooded edge, the southwestern sampling station bordered an open gravel pit while the other two locations were adjacent to fields.

Table 8. Number of sampling days, total number of calls recorded, and calls/night recorded by each AnaBat unit during the fall migration period.

Location	Unit	# of sampling days used in analysis	Total # of calls	# calls/night
North	Ground	65	2012	30.95
	Canopy	34	1772	52.12
	Overall	99	3784	**38.22**
Southwest radar	Ground	49	802	16.37
	Canopy	60	212	3.53
	Overall	109	1014	**9.30**
Southeast	Ground	27	3628	134.37
	Canopy	34	491	14.44
	Overall	61	4119	**67.52**

Analysis of bat calls was conducted using Analook software (DOS version). Analook displays ultrasonic activity in a format similar to a sonogram used for analysis of bird vocalizations (e.g., frequency versus time). The majority of calls could not be identified to species either because they did not contain at least five pulses or the call characteristics overlapped more than two species. Calls were placed into two categories: high (call frequency > 35khz; e.g., eastern red bat, eastern pipistrelle, and *Myotis* species) and low (call frequency < 35khz; e.g., big brown bat, silver-haired bat, and hoary bat). Further analysis of calls was aided by the Preliminary Key to the Qualitative Identification of Calls within the AnaBat System (Amelon 2005, unpublished data) where characteristics such as slope, frequency, minimum frequency, consistency of minimum frequency, and shape of pulse assist in the identification of bat vocalizations. High frequency calls similar to those of *Myotis* species were further examined to determine if any calls were characteristic of small–footed bat (*Myotis leibii*) (non-sigmoidal pulses, consistent minimum frequency throughout the call sequence, and minimum frequencies >45khz). A few calls with characteristics similar to those of small–footed bat were detected at the passive monitoring stations; however, low numbers of pulses and infrequency of calls makes it difficult to conclusively determine their presence.

3.4.3 Radar Survey Methods

A single mobile radar lab consisting of a marine radar unit mounted on a vehicle was deployed at the Project Area. The radar sampling location was determined based on constraints of the radar (e.g., minimization of ground interference), safety, and land owner access; but was chosen to provide good coverage of the Project Area (Figure 1). The sampling station was fixed for the duration of the survey period. The Furuno FR1510-MKIII radar used in this study was X-band radar, transmitting at 9,410 MHz with peak power output of 12 kW, similar to other radar labs used to study wind power development sites throughout the U.S. (e.g., Cooper et al. 1991, Harmata et al. 1999, Roy and Pelletier 2005).

Measurements can be highly variable due to a number of factors including observer bias, the radar settings affecting target detection, and the type of radar used. To minimize these biases, efforts were made to standardize data collection and radar settings as much as possible. The radar was aligned with magnetic north each night by parking the van in the same location and orientation. To decrease ground clutter the radar was positioned in an opening surrounded on all sides by treeline that acted as a radar fence or screen reflecting back the lower portion of the radar main beam, producing a clear picture of sky beyond. The radar used in this study has several controls which affect detection and tracking of targets. In order to detect and track small targets, the radar operated under the shortest pulse length setting with the gain control turned up to the highest setting. While short wave-length and high gain insure detection of small targets, these settings also have the effect of producing atmospheric or background noise on the screen which consequently can obscure small targets. To minimize clutter and noise close to the radar, the anti-sea control was set to the point where background noise was dispersed and limited primarily to the outer edge of the screen. The anti-rain clutter was kept at the lowest setting to minimize filtering out small targets. These settings insure that small targets, such as individual bats, can be detected by the radar. Also during sampling, specific functions or capabilities of the radar were used to determine data values to minimize observer bias. The electronic bearing line and variable range marker used in offset mode allowed the compass bearing of a target trail and the speed at which the target was moving to be measured by the radar as opposed to estimated by the observer or measured from the screen.

Radar sampling was conducted from August 1 – 31, 2007, when migrant bats appear to be most abundant and it is assumed that bats make up a greater proportion of nocturnal targets than migrating birds. Sampling was conducted from approximately sunset to sunrise each night during the study period unless interrupted by inclement weather or unforeseen circumstances (e.g., power failure). Each night was broken down into 60-min sampling periods that consisted of:

1. one 5-min session to collect weather data (wind speed; wind direction; cloud cover (%); approximate ceiling height; approximate visibility; precipitation; barometric pressure; air temperature) and adjust radar antenna to horizontal mode;
2. one 10-min short-range session (1.5 km range) with the radar in horizontal (surveillance) mode to count targets for passage rates;
3. one 10-min short- range session (1.5 km range) with the radar in horizontal (surveillance) model to record flight direction and speed of targets;
4. one 5-min session to collect change in weather (if applicable) and adjust radar antenna to vertical mode;
5. one 10-min short-range session (1.5 km range) with the radar in vertical mode to count targets for passage rates;

6. one 10-min short-range session (1.5 km range) with the radar in vertical mode to measure flight altitudes up to 1500 m;
7. one 5-min close-range session (0.5 km range) with the radar in vertical mode to measure flight altitudes up to 500 m;
8. one 5-min long-range session (3.0 km range) with the radar in vertical mode to measure flight altitudes up to 3000 m.

All data were exported from Microsoft Access and imported into SAS V.8 for further data processing, quality assurance, and analysis. Additional analyses were performed using Matlab V6.5. To determine passage rates in horizontal mode, the 2-dimensional area represented by the radar image was treated as a 1-dimensional "front" perpendicular to the direction of migration, with length equal to 3 km (the diameter of the surveyed area); all targets counted in the radar image during the sampling period were treated as if they had crossed the front. Based on that assumption, passage rate was calculated as number of targets per kilometer per hour.

Mean flight direction was estimated as $\bar{\mu} = \tan^{-1}\left(\bar{y}/\bar{x}\right)$ where $\bar{y} = \sum_{i=1}^{n}\cos\left(\theta_i\right)\big/n$, $\bar{x} = \sum_{i=1}^{n}\sin\left(\theta_i\right)\big/n$, and θ_i was the flight direction for the i^{th} observation (Batschelet, 1981). Dispersion in the data was calculated as $r = \left(\bar{x}^2 + \bar{y}^2\right)^{1/2}$ such that $0 \le r \le 1$. If all observations had exactly the same direction, $r = 1$; conversely, $r = 0$ would indicate uniform distribution of directions around the circle.

Mean flight altitude was not adjusted for unequal sampling intensity at different heights or unequal detection probability as a function of distance from the radar unit.

Air speed of targets, V_a, was calculated as $V_a = \left[V_g^2 + V_w^2 - 2V_gV_w\cos\left(\Delta\theta\right)\right]$, where V_g = target ground speed, V_w = wind speed, and $\Delta\theta$ was the difference between the target flight direction and wind direction. Hourly weather observations made at ground level were used for estimates of wind speed and direction. Wind direction categorized by field observers as 'N', 'NE', 'E', 'SE', etc.; were transformed to bearings (0°, 45°, 90°, 135°, etc.) for the calculation of $\Delta\theta$. Targets with air speeds less than 6 m/s or greater than 35 m/s were judged not to be migrating birds or bats. The percentage of non-avian or bat targets was calculated to assess the extent of insect clutter in the dataset.

3.4.4 Radar Survey Results

Nocturnal radar surveys were conducted most nights during the 31 days of August, 2007 (n = 30 nights). Radar sampling was conducted for approximately 250 hours during the entire study period.

Flight Direction

Most targets were flying either East or West (Figure 4). Mean direction was 237°, or roughly southwest. However, dispersion was r = 0.084, indicating that directions were only weakly concentrated around the mean. Approximately 54% of targets had flight directions within 90° of due South (the presumed direction of migration in August); i.e., similar proportions of targets were flying North and South. Only 16% of targets had flight directions within 45° of due South.

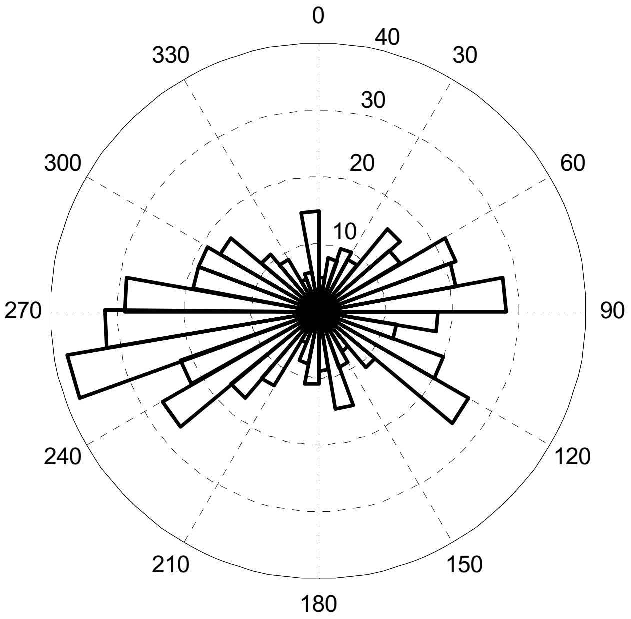


Figure 4. Observed flight directions.

<u>Passage Rates</u>

The overall mean passage rate in the horizontal mode was 11.1 ±0.7 targets/km/hr (mean ± SE) (*n* = 252 sample periods) and in the vertical mode was 58.7 ± 2.9 targets/km/hr (mean ± SE) (*n* = 247 sample periods). Mean nightly passage rate was highly variable in both horizontal mode (Figure 5) and vertical mode (Figure 6). The greatest nightly passage rates (both horizontal and vertical modes) occurred on August 26. Mean hourly passage rates tended to be relatively low early in the evening, with rapid increases to maximum values around 2100 – 2200 pm (Figures 7 and 8). Hourly horizontal passage rates declined slightly after reaching a maximum and then were relatively constant for the rest of the night (Figure 7). In contrast, hourly vertical passage rates declined steadily after reaching a maximum (Figure 8).

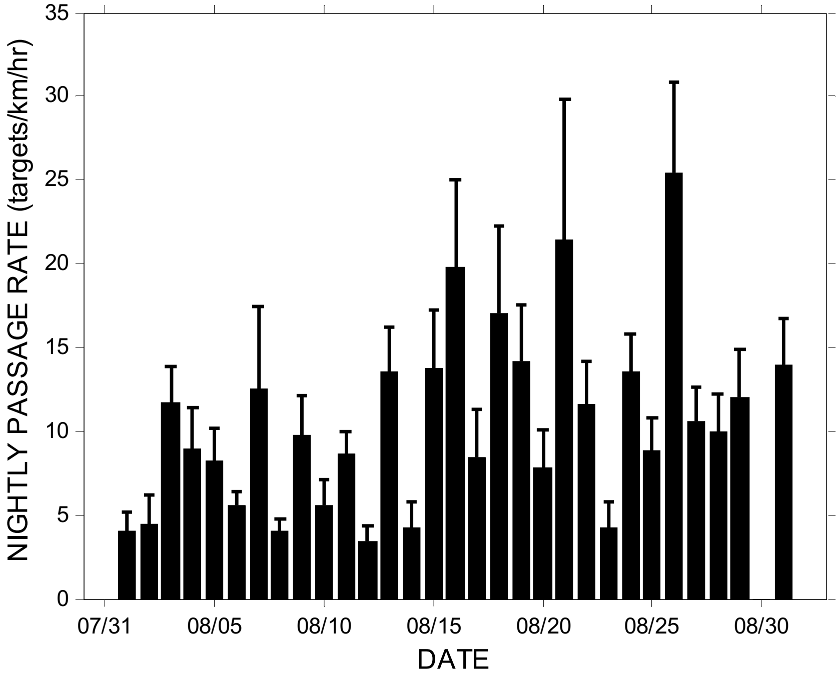


Figure 5. Mean + 1 SE nightly passage rates in horizontal mode.

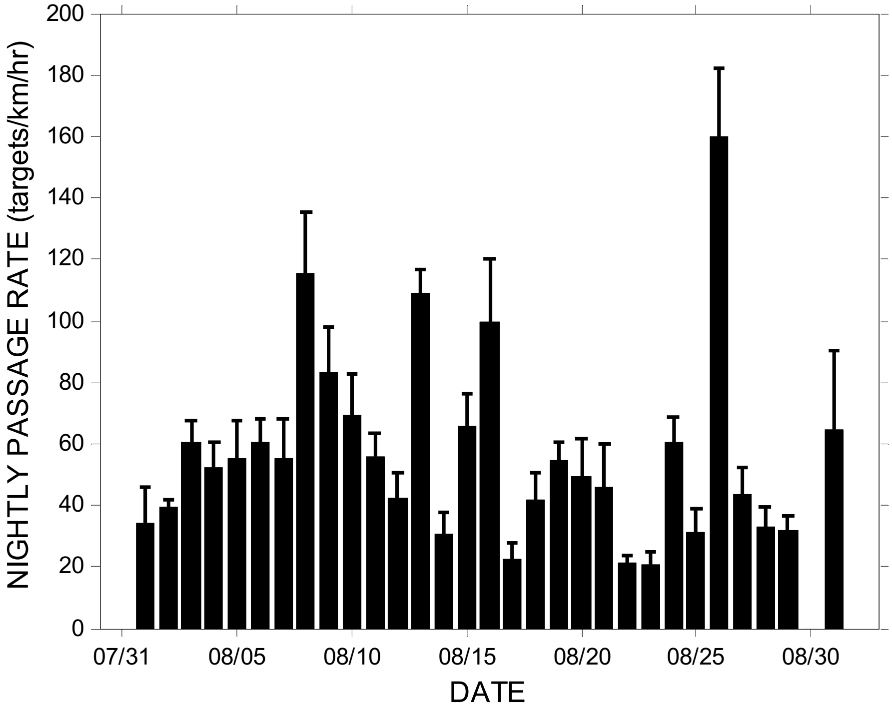


Figure 6. Mean + 1 SE nightly passage rates recorded in vertical mode.

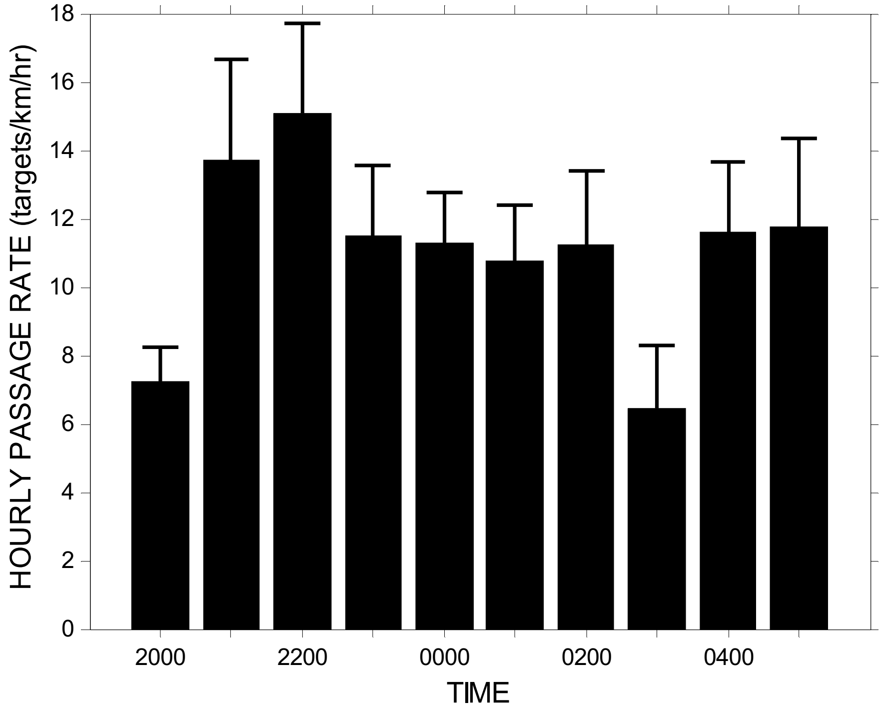


Figure 7. Mean + 1 SE hourly passage rates recorded in horizontal mode.

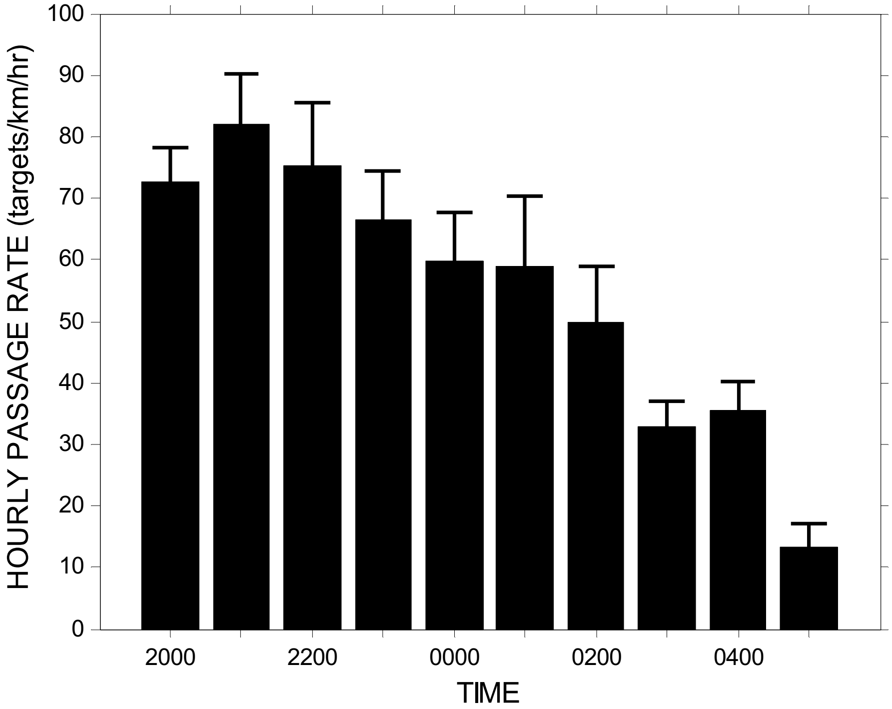


Figure 8. Mean ± 1 SE hourly passage rates recorded in vertical mode.

Flight Altitudes

For sampling at the 1.5-km range in vertical mode, mean flight altitude was 323.4 ± 4.3 m (mean ± SE) (*n* = 5399 targets) above radar level (arl)[1]. Approximately 31.6% of targets had flight altitudes less than 125 m (the zone of risk posed by turbines) at the Jericho Rise Project Area. The highest percentage of targets (30.7%) occurred between 100 and 200 m arl (Figure 9). Nightly mean flight altitudes were variable throughout the study period and ranged from approximately 140 m to 550 m arl (Figure 10). Distribution of nightly flight altitude in relationship to the rotor-swept zone (0 – 125 m) emphasizes that on most nights, most targets were flying above the rotor-swept zone (Figure 11). However, on a few nights (August 2, 7, 22, 23) more than 50% of targets were flying within rotor-swept heights. In contrast to variation in nightly altitudes, hourly mean flight altitudes were relatively constant (typically in the 300 – 350 m range) (Figure 12) and close to the overall mean flight altitude for the study period. For sampling periods at the 3-km range in vertical mode, 4.3% of targets (*n* = 2280 targets) had flight altitudes greater than 1500 m.

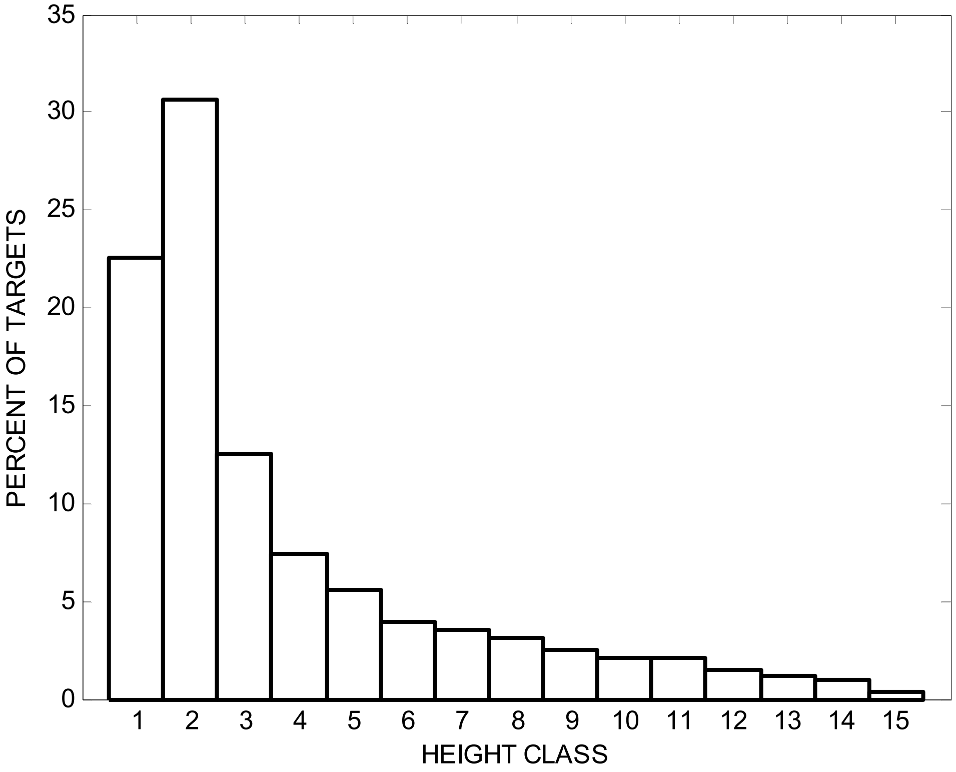


Figure 9. Frequency histogram of targets by height class, sampling at 1.5-km range. Height class 1 represents altitudes 0-100 m, class 2 represents altitudes 100-200 m, etc.

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[1] Target altitude was measured in relation to a horizontal line running through the point of origin for the radar and thus termed above radar level. Height above ground level (agl) is highly variable depending on the topography directly below any given target and not measurable with the radar.

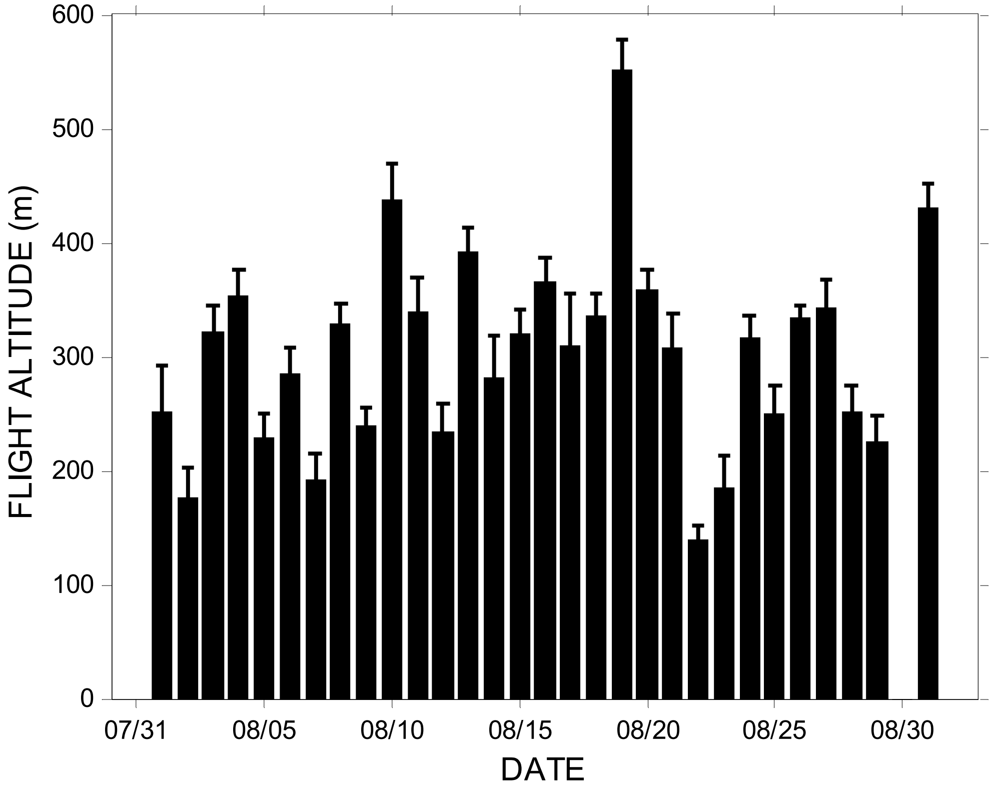


Figure 10. Mean + 1 SE nightly flight altitude sampling at 1.5 km range.

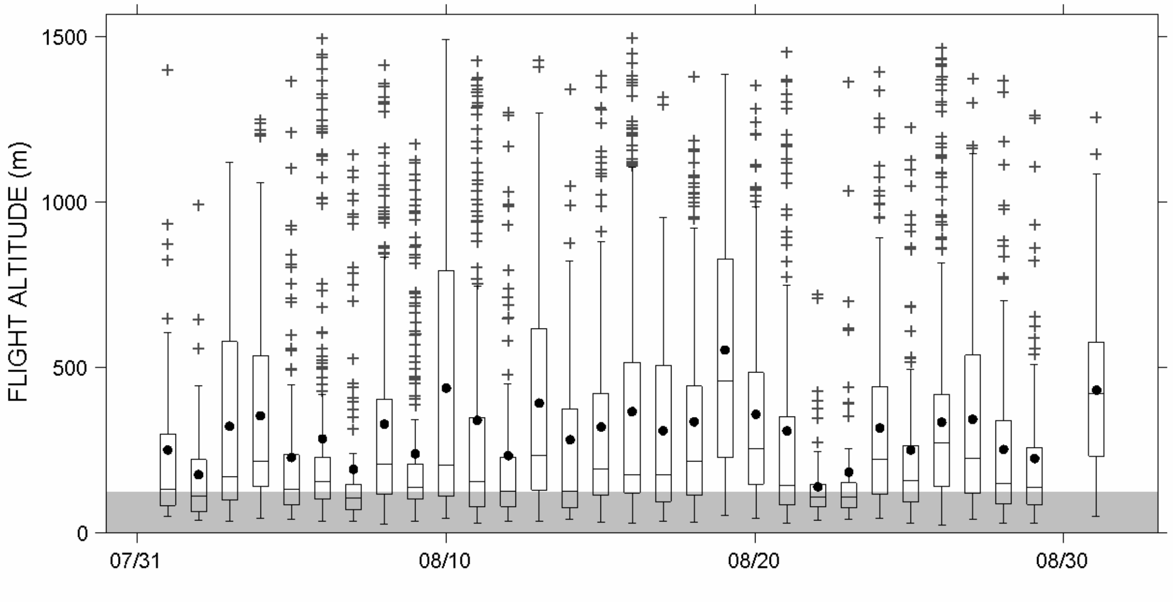


Figure 11. Boxplots showing nightly distribution of flight height for 1.5km range. Black circles represent mean height. Gray region indicates rotor-swept zone, 0 – 125 m elevation.

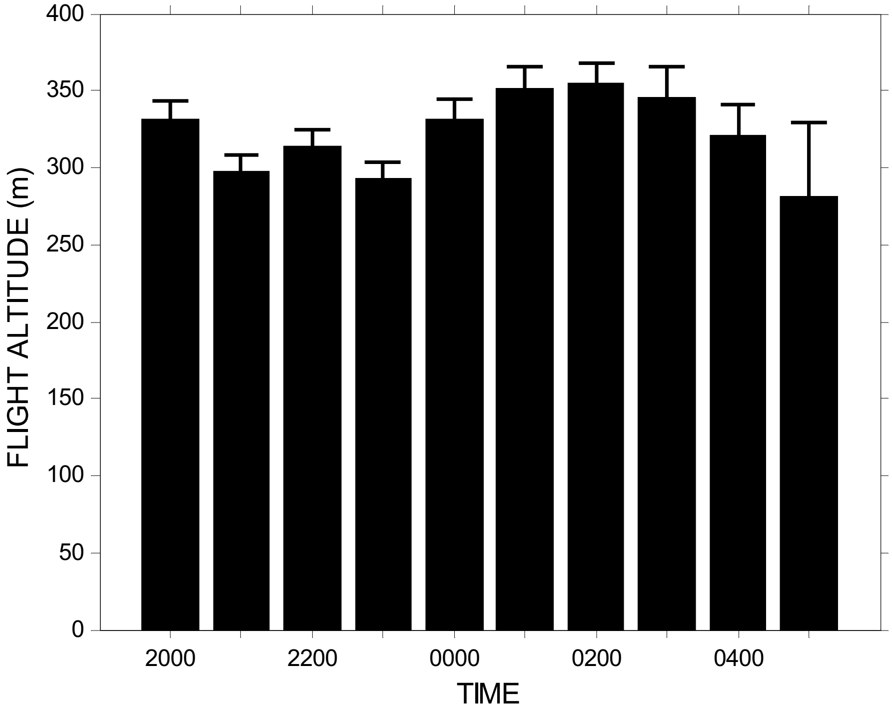


Figure 12. Mean + 1 SE hourly flight altitude sampling at 1.5-km range.

Target Speed

Air speed of targets was calculated by adjusting for wind speed and direction (see Methods above). Of 563 targets, 7 were excluded because they were moving very slow (< 6 m/s) and 2 targets were excluded due to high speed (> 35m/s). After excluding very slow and very fast targets, overall mean target air speed was 13.17 ± 0.17 m/s (mean ± SE) (*n* = 554 targets). Nightly mean target air speed varied from approximately 12 to 17 m/s (Figure 13).

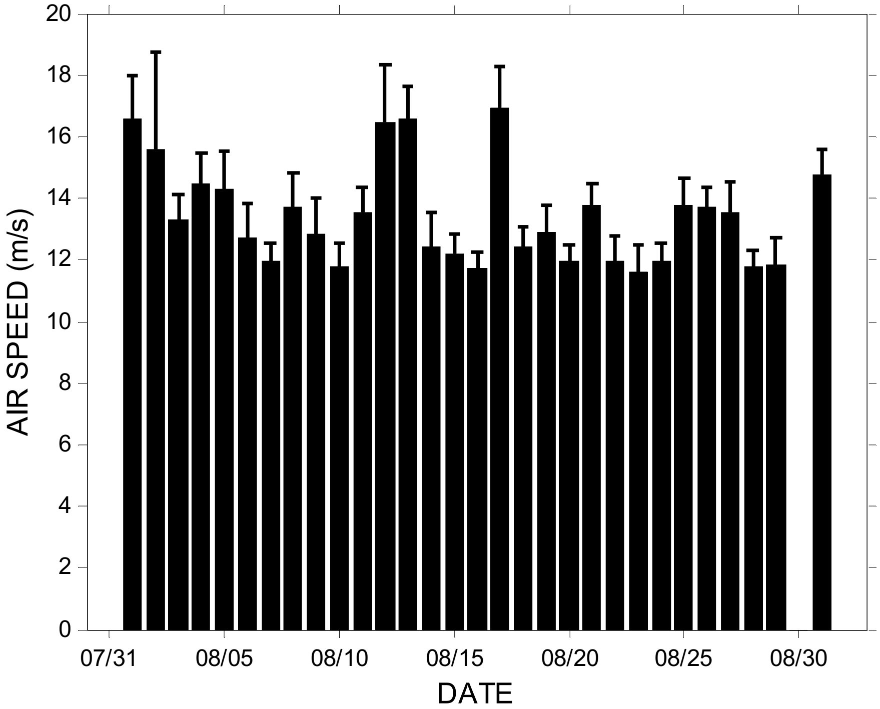


Figure 13. Mean + 1 SE nightly target air speed.

3.5 Resident Bats

3.5.1 Methods

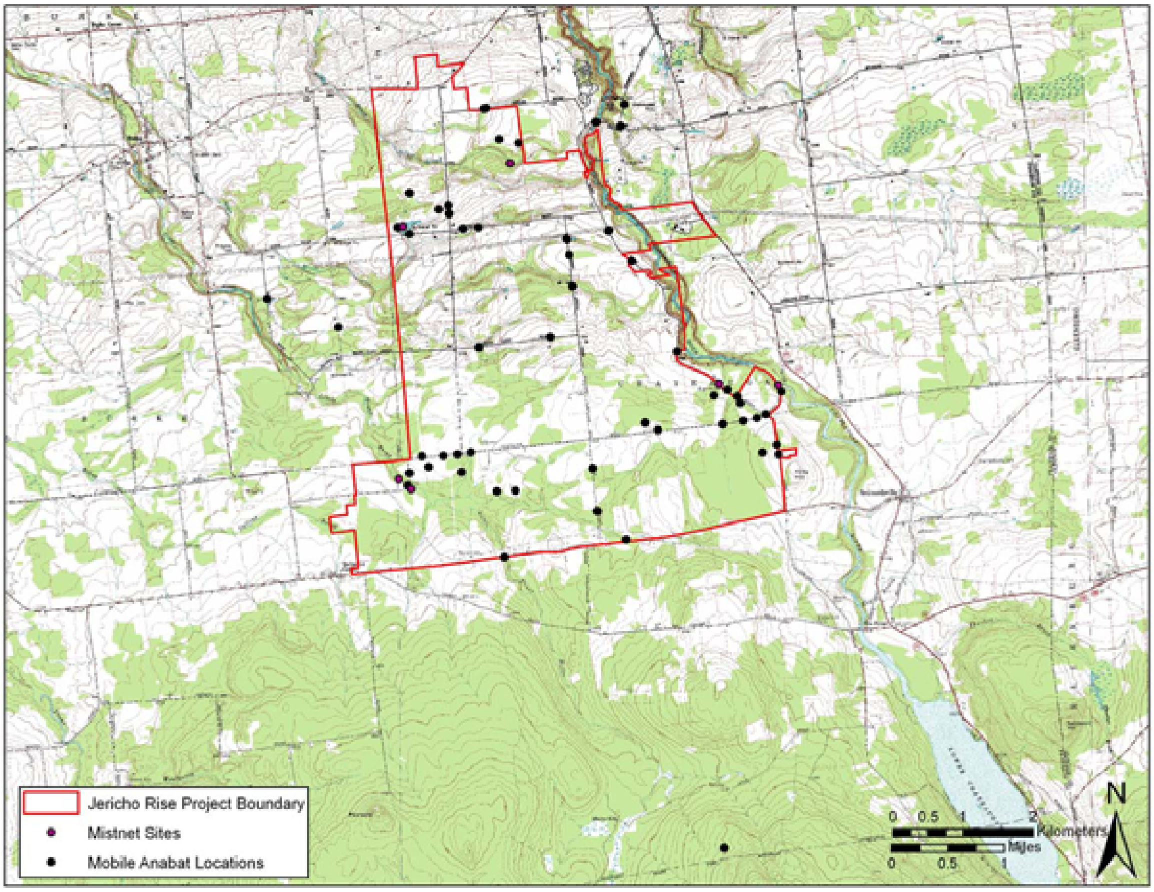
To acoustically determine species present and the potential presence of special status species, AnaBat sampling and mist net surveys were conducted during the summer breeding season. During the breeding season, a "roaming" or mobile AnaBat unit was deployed to assess resident/breeding bat species present within the Project Area. Roaming sampling was conducted using a handheld AnaBat unit for 9 nights (3 sampling periods of 3 consecutive nights each) at habitats likely to have high numbers of resident bats. To select locations for active sampling (Figure 14), reconnaissance visits were made to the Project Area with features known to be important for bats, such as travel corridors (trails and roads), linear landscape features (forest edges), and access to water (riparian areas). Active sampling was conducted from sunset until approximately 4-5 hours after sunset. Surveys focused on sampling suitable bat habitat to assess resident bat species and possible presence of sensitive bat species.

As with passive surveys for migratory bats, analysis of bat calls recorded during roaming surveys was conducted using Analook software (DOS version). Many call sequences could not be identified to species (e.g., < 5 pulses/call sequence, call characteristics overlapped more than two species), though this occurred less often than with passive monitoring. Calls were again placed into two categories: high frequency (> 35khz) and low frequency (< 35khz). Further analysis of calls was aided by the Preliminary Key to the Qualitative Identification of Calls within the AnaBat System (Amelon 2005, unpublished data) where characteristics such as slope, frequency, minimum frequency, consistency of minimum frequency, and shape of pulse assist in the identification of bat vocalizations. High frequency calls similar to those of *Myotis* species were further examined to determine if any calls were characteristic of small footed or Indiana bat. Call frequencies and number of calls per night were not calculated for the mobile survey because of unequal survey effort and sampling methods that could result in individual bats being repeatedly recorded, potentially skewing number of bats recorded on any specific night.

Concurrent with summer acoustic bat surveys, mist net sampling was conducted to determine presence of resident bat species within the Project Area. Mist net sample sites were chosen to maximize the potential number of bats captured during foraging and summer roosting (Figure 14). Most sampling sites were located along riparian areas and/or forested edges to increase the likelihood of capture. During each sampled night, one or two net locations were established with single, double, triple, or quadruple net sets deployed depending on the habitat sampled. If two net sets were deployed at separate sampling locations, the locations were at least 30 m apart to discourage recaptures. To the extent possible, captured bats were recorded with an AnaBat detector upon release to establish a call library for the Project Area and confirm species identification.

Ground surveys of the Project Area were also conducted to map vegetation communities and habitats in more detail and to look for caves, mines, karst habitat, or other potential bat colony sites. Though several wetland wooded areas exist within the Project Area as potential roosting habitat, no caves, mines or karst areas were located within the Project Area.

Figure 14. Mistnet and mobile AnaBat locations in the Jericho Rise Project Area.



3.5.2 Results

Summer sampling with the mobile AnaBat unit occurred on 3 sampling periods of 3 consecutive nights: June 28-July 1 (one night rained out), July 21-23, and August 3-5. Mobile bat surveys recorded 589 bat calls. Species encountered frequently during mobile surveys include (in decreasing order of frequency): eastern red bat, little brown bat, and big brown bat. Other species, such as hoary bat and eastern pipistrelle, were recorded to a lesser extent. A few calls with characteristics similar to silver-haired bat were recorded, though calls of this species are very similar to big brown bat and are, therefore, difficult to confirm. Also difficult to differentiate are the calls of *Myotis* species, such as Indiana bat, northern myotis, and small-footed bat. No calls with characteristics typical of these *Myotis* species were recorded during mobile AnaBat surveys.

Mist-net capture surveys of resident bats occurred on 10 nights during the breeding season (July 10 – 30, 2007). Up to 4 net locations were established during each survey night. Each net location had either a single net or multiple net set (up to 4 stacked nets). Nets were open for surveys at 2100 and closed approximately 3-4 hours later. Capture success varied from zero bats/net/night to 28 bats/net/night. A total of 121 bats were captured of four species. Little brown bat (n=93, 76%) and eastern red bat (n=25, 21%) comprised the majority of the captures. One eastern pipistrelle was captured on July 12, 2007 and two hoary bats were captured on July 15, 2007. No listed species were captured during mist-netting.

3.6 Sensitive Species Surveys

The objective of the sensitive species surveys was to determine the presence/absence and spatial distribution of state and federal listed avian species within the proposed Project Area. Species of concern that could occur in the Project Area based on habitat and previous documentation include black tern, bald eagle, pied-billed grebe, least bittern, American bittern, northern harrier, sedge wren, Henslow's sparrow, osprey, short-eared owl, upland sandpiper, grasshopper sparrow, vesper sparrow, horned lark, and golden-winged warbler.

3.6.1 Methods

During the first two weeks of June, appropriate nesting habitat was located by consulting land use maps and aerial photographs. Driving surveys and habitat-specific surveys were conducted by traveling adjacent roads and watching for target species and/or walking transects through accessible land with suitable habitat. Sensitive species surveys in the Jericho Rise Project Area were conducted in appropriate nesting habitat within original Project Area boundaries on 6 days between June 9 and June 14, 5 days between June 27 and July 1, and 5 days between July 9 and 13. Approximately 50 hours were spent during June and 20 hours during July covering roads in the Project Area in an attempt to document presence/absence of sensitive species. Surveys were conducted during the early morning and evening hours when target species would be most active. In addition, sensitive species were always noted when encountered by biologists working within the Project Area during any survey type. Approximate coordinates of first observation were recorded and efforts were made to maximize observation time to record information on behavior, habitat, and direction of travel.

3.6.2 Results

Five endangered or threatened avian species were documented during formal presence/absence searches, breeding bird and migratory raptor surveys, or incidental sightings (Figures 15 and 16). Three of these species: bald eagle, golden eagle, and peregrine falcon, were sighted during migratory surveys. Only one individual of each species was observed during surveys.

Two listed species observed within/near the Project Area, northern harrier and sedge wren, are likely breeding residents within or near the Project Area. Three northern harriers were located in the Project Area during the presence/absence surveys. One northern harrier was observed during breeding bird surveys and 23 were documented during migratory raptor surveys. Two additional northern harriers were observed incidentally by biologists while working in the area in early fall. Total number of harriers using the Jericho Rise Project Area may be less than the total number of individuals recorded, as many of these sightings were likely the same individual(s) recorded several times. Sedge wren, a New York state threatened species, was recorded regularly at one breeding bird survey point located outside of the current Project Area boundary during June 2007. The somewhat nomadic species prefers to nest in damp meadows where grasses are interspersed with small shrubs; however, breeding pairs rarely occupy the same location in consecutive years.

Three species of concern were also recorded during migratory raptor surveys, including osprey, Cooper's hawk, and sharp-shinned hawk. These individuals were likely migrants passing through the Project Area and not breeding residents. No upland sandpipers or short-eared owls, species which may be present but difficult to detect, were documented in the Project Area during the surveys.

Figure 15. Locations of endangered species recorded near the Jericho Rise Project Area.

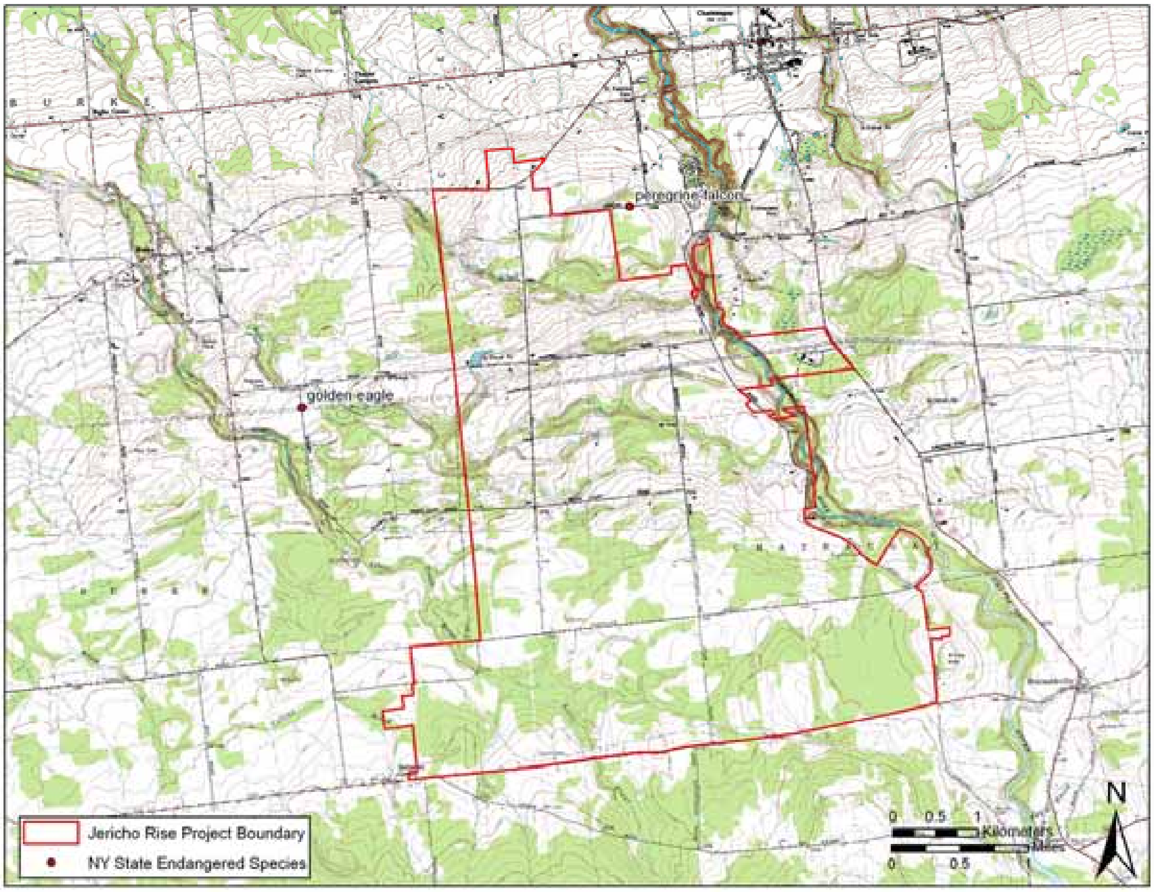
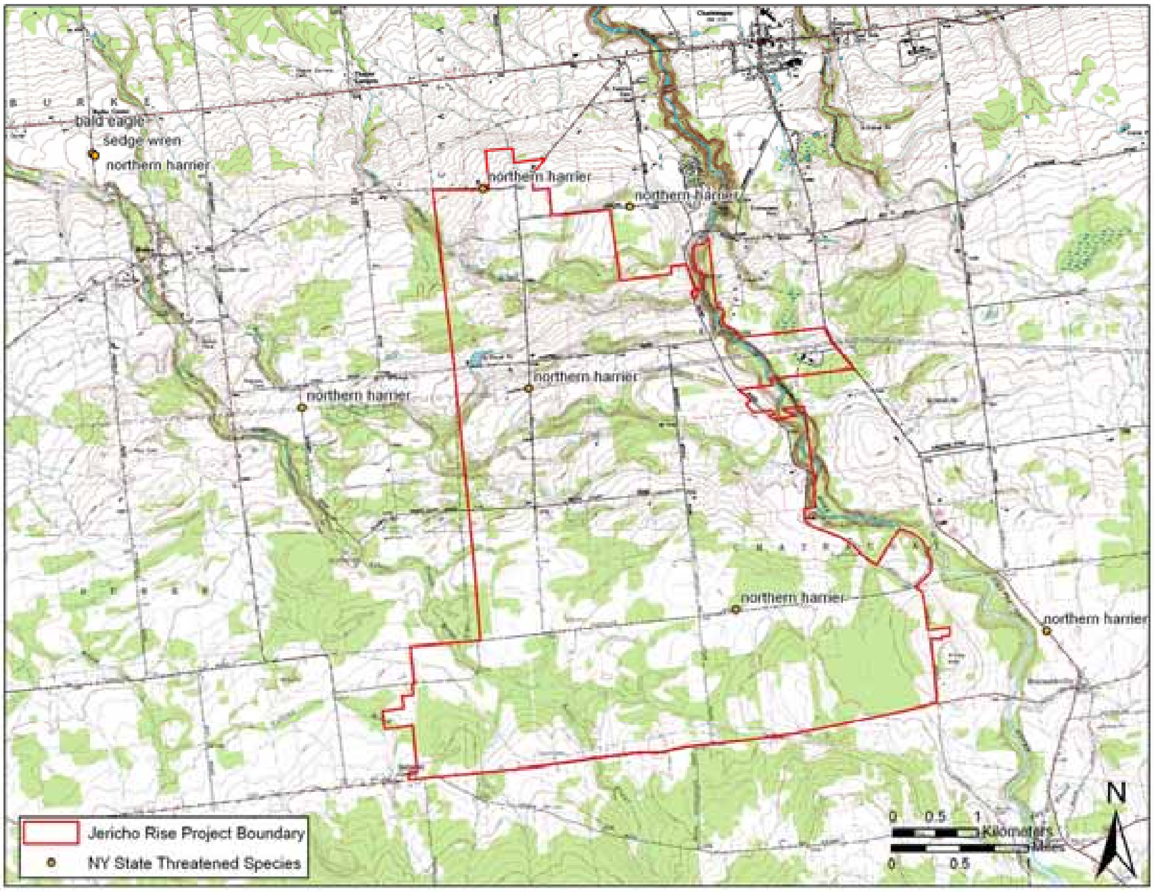


Figure 16. Locations of threatened species recorded within/near the Jericho Rise Project Area.



4.0 Discussion

4.1 Migratory Raptors

The diurnal point count surveys were designed to count migrant raptors through the Project Area during periods when peak migration for sharp-shinned hawks and broad-winged hawks could be expected. Data from established hawk watch sites located closest to the Jericho Rise Project Area were examined from the past 3 years (2004-2006) to determine the 2-week period in each season that would maximize observations of these species and hopefully other raptors as well (HMANA 2006). Hawk watch sites consulted include: Eagle Crossing, southwest Quebec (spring); Derby Hill, western NY (spring); Braddock Bay, western NY (spring); Montreal West Island, southwest Quebec (fall); Franklin Mountain, central NY (fall); and Mohonk Preserve, east-central NY (fall).

While the peak movement periods for these species varied by year and location, in general, heavy movement of sharp-shinned hawks occurred in the last two weeks of April each year. In the fall, heavy movement of sharp-shinned hawks appeared slightly more variable, though most peak days of movement typically occurred in the first two weeks of October. For broad-winged hawks, the peak of spring migration was slightly later than sharp-shinned hawks but usually occurred before the end of April. In most years, up to 80% of broad-winged hawks counted at each site moved through between approximately April 18 and April 30. For the fall season, broad winged hawk migration usually occurred earlier than sharp-shinned hawks between September 10 and September 22.

Based on this information, it was determined that the last two weeks of April would be the best time to conduct surveys to maximize spring raptor observations and during the fall the optimal time frame would be from mid-September to mid-October. The survey protocol was designed to provide 60 hours of survey time during these periods that could be compared to the same periods and dates from the established hawk watch sites. Based on the original project boundary of the proposed Jericho Rise Project Area, four survey points were established to provide better coverage of the area. A total of 32 hours of surveys were conducted between April 4 and May 28, 2007 and 28 hours of survey between September 12 and October 26, 2007.

Typical raptor species for northern New York were observed during the surveys (see Table 2). Two New York endangered species, peregrine falcon and golden eagle, were observed during spring and fall surveys, respectively. One bald eagle, a New York threatened species, was reported during spring surveys. Twenty-three northern harriers, also listed as threatened in New York, were observed during the surveys. Many of these individuals may be residents that were counted during more than one survey; therefore, inflating the total number. Three New York species of special concern: osprey, Cooper's hawk, and sharp-shinned hawk, were observed on several occasions during both spring and fall surveys.

Based on a standardization of raptors observed per surveyor hour, the Jericho Rise Project Area has less traffic than known hawk watch sites. The nearest hawk watch sites are located across the St. Lawrence River southwest of Montreal, approximately 20 – 30 miles north of the Jericho Rise Project Area. The closest spring site, Eagle Crossing, was somewhat comparable over the same survey days; however, the overall mean number of raptors observed per surveyor hour was double that observed at the Project Area

(Table 9). Also important to note are the fewer number of raptors reported at this Canadian site along the St Lawrence River than at U.S. hawk watch sites located further south along the same waterway (e.g., Derby Hill, Braddock Bay). The nearest fall site, Montreal West Island, reported 6 raptors counted on average per surveyor hour, double the number of raptors seen on average at Jericho Rise (Table 9). Franklin Mt, a hawk watch site located in the mountains of central New York, experiences far greater migratory passage during the fall raptor migration.

Spring hawk watch sites in New York are generally located along waterways, such as the St. Lawrence River and Lake Erie, as raptors avoid crossing large bodies of water and become concentrated along shorelines. Though the Jericho Rise Project Area is located within 15 miles of the St. Lawrence River, data indicate that raptors are more dispersed inland than along the shoreline. In fall, hawk watch sites are generally concentrated in eastern or central New York, where raptors are likely taking advantage of mountain ridgelines during their migration south. Though some pulses of raptor migration may cross the St. Lawrence River near the Montreal West Island hawk watch, lack of defined topography in the Project Area (e.g. northeast-southwest oriented ridges or waterways) likely contribute to the lower concentration of raptors in the Project Area during fall migration.

Table 9. Number of raptors observed per surveyor hour in the Project Area and at established New York and Quebec hawk watch sites in 2007.

		SPRING		
Date	**Jericho Rise**	**Eagle Crossing**	**Derby Hill**	**Braddock Bay**
4/04/07	<1	No survey	27	113
4/11/07	4	4	72	21
4/18/07	3	3	30	41
4/26/07	5	12	98	No survey
5/04/07	4	12	56	73
5/10/07	2	4	21	2
5/18/07	3	1	3	No survey
5/28/07	2	No survey	No survey	No survey
Average	**3**	**6**	**44**	**50**
		FALL		
Date	**Jericho Rise**	**Montreal West Island**	**Mohonk Preserve**	**Franklin Mt**
9/12/07	1	<1	7	36
9/18/07	4	1	No survey	26
9/28/07	<1	No survey	No survey	8
10/05/07	3	9	11	15
10/13/07	1	2	No survey	24
10/18/07	3	No survey	No survey	6
10/26/07	3	11	No survey	11
Average	**2**	**5**	**9**	**18**

Daily count data acquired from HMANA 2007.

Raptor mortality at newer generation wind projects has been lower than that reported for older California projects (Erickson et al., 2001; 2002). Few raptor fatalities have been reported for eastern wind projects that have been monitored (see Nicholson 2002, 2003; Kerns and Kerlinger 2004; Koford

2005; Johnson et al. 2000). Only one raptor fatality was found during the first year of monitoring at the recently constructed Maple Ridge wind project in Lewis County, New York (Jain et al. 2007). Based on the study results and results of other monitoring studies, it is not expected that the proposed Jericho Rise wind project will have a substantial impact on raptors.

Exposure indices are a survey-based method for estimating risk to individual species from wind turbines. The exposure index was calculated from a measure of relative abundance in the area (mean use or number observed per 60-minute survey) times the propensity of a species to fly within the zone of risk (percent of observations flying times the percent flying within the rotor-swept area), defined as the height of the rotor-swept area or approximately 53-147 m above ground level. For the Jericho Rise Project Area, Canada goose had the highest exposure index due to observations of large flocks many of which were observed flying within the rotor-swept area. For raptors, only three species (turkey vulture, red-tailed hawk, and northern harrier) had enough observations to make the estimated exposure index meaningful. For both turkey vulture and red-tailed hawk, approximately 50% of the individuals observed flying were estimated within the zone of risk. Northern harrier had a low exposure index, despite being a relatively common raptor. While turkey vultures and red-tailed hawks have been recorded as fatalities at other monitored wind projects, the number of fatalities is relatively small compared to use estimates (see Erickson et al. 2001, 2002) and may be a reflection of the nationwide abundance of these species. Northern harriers have been found at other wind projects; however, they are not a common turbine fatality (see Erickson et al. 2001).

Based on the data collected in the spring and fall 2007, it does not appear as if the Jericho Rise area will have a concentration of spring or fall raptor movement. Though some species may be at risk, the number of fatalities is not expected to be great. Raptor use in this area is lower than reported at nearby hawk watch sites and the most common raptors observed were turkey vulture and red-tailed hawk. A few raptor species of concern, bald and golden eagle, peregrine falcon, Cooper's hawk, and sharp-shinned hawk were reported during migration, but not in great numbers (often one or two individuals). Northern harriers, a state threatened species, were observed regularly and likely nest within the Jericho Rise Project Area due to the predominance of agriculture, particularly in the northern portion of the Project Area, and the presence of old weedy fields and hay meadows. Though northern harriers are relatively common in open agricultural areas, individuals generally fly close to the ground (<5 m) and rarely soar while on breeding grounds. This behavior results in a low exposure index and is not likely to put them at great risk from turbines.

4.2 Migratory Birds

The variation among avian nocturnal radar studies across New York and the northeastern U.S. is not great (Table 6). Most studies have provided results that fall within certain similar parameters with no outliers. Based on the radar data collected at the Noble Clinton and Marble River sites, it does not appear that the Jericho Rise Project Area will occur within an area with a concentration of spring or fall avian migration. The migration characteristics at both sites were similar to numerous other studies conducted at proposed wind projects and similar characteristics would occur at Jericho Rise. Based on these studies, impacts to avian migrants from the Jericho Rise project would be similar or less than other eastern and New York wind projects proposed.

4.3 Breeding Birds

The results of the breeding bird surveys were typical of mixed agricultural settings in northern New York. No unusual or unique bird observations were made. Many of the species recorded were based on auditory observation of birds singing from nearby fields or wood lots. One species listed by NYSDEC, northern harrier, was reported during the breeding bird survey. Northern harrier is discussed in other section survey results. Three species, bay-breasted warbler, chestnut-sided warbler, and wood thrush, are included on the 2002 Birds of Conservation Concern list for the Northern Atlantic region (USFWS 2002) in which the Jericho Rise Project Area occurs.

Based on the survey data, the Jericho Rise Project Area does not appear to have any large or unusual populations of breeding resident birds. Results from mortality studies at other eastern wind plants have reported fatality rates between 3 and 10 bird fatalities per turbine per year (see Kerns and Kerlinger 2004; Nicholson 2002, 2003; Jain et al. 2007). The Maple Ridge wind project in Lewis County, New York, is the closest wind project where monitoring studies have occurred. In that study, the annual per turbine fatality rate estimate was between 3.1 and 9.6 birds depending on the search frequency used (Jain et al. 2007). In all the eastern studies it was estimated that approximately 60-80% of the avian fatalities were migrants. Provided impacts at Jericho Rise are similar, it is not expected that breeding resident birds are at great risk from the wind project. Due to the diversity of birds recorded in the mixed farmland habitat, impacts are expected to be spread over several species.

4.4 Migratory Bats

Migratory bats traveling within the Jericho Rise Project Area were sampled using two different techniques: acoustic and radar. The objective of acoustic AnaBat surveys was to record the relative abundance of echo-locating bats flying through the Project Area during the fall migration season. Six anabat units deployed at 3 locations with in the Project Area (ground and canopy level unit at each location) recorded bat calls from approximately August 2 – October 15. Predicting bat fatality impacts have proven difficult based solely on AnaBat recordings and post-construction mortality data collected at existing regional projects still appears to be the best available predictor of mortality levels and species composition. To date, only 5 wind projects have been constructed that have recorded both pre-construction bat activity and post-construction mortality data (Table 10). At a sixth site, Maple Ridge, New York, some AnaBat data was collected during the summer breeding season prior to the monitoring study, however, this data has not been evaluated in relation to the post-construction mortality studies (A. Hicks, NYSDEC, pers. comm.). The number of bat calls per night as determined from AnaBat detectors shows a rough correlation with bat mortality but may be misleading because effort, timing of sampling, and detector settings (equipment and locations) varied among studies. In addition, risk to bats from turbines is unequal across species and seasons (see Johnson 2005).

Bat activity recorded at the Jericho Rise Project Area during fall migration varies by location within the project and height at which call data was collected (Table 8). On average, activity ranges from 9 calls/night to 68 calls/night. The highest call rates per detector-night occurred on several nights in September when the peak of mortality has been recorded at other studies in the U.S. (Johnson 2005). Based on this data, bat activity expressed as the average number of calls per detector-night recorded in the Project Area was as high or higher than projects recording the highest bat mortality (Table 10). The nature of AnaBat analysis makes it difficult to determine if these are individual calls made by multiple bats or single passes made by one individual throughout the night. Many nights during the survey period were dominated by calls of eastern red bats and little brown bats, both common species in the area. Based on sampling data alone at Jericho Rise and activity/mortality reported from other wind facilities, it is possible that mortality risk to bats may be similar or higher at the proposed Project Area than at other eastern wind facilities.

Table 10. Wind projects in the U.S. with both AnaBat sampling data and mortality data for bat species.

Project Area	Study Period	Detector nights	Bat activity (#/detector/night)	Mortality (bats/turbine/year)	Reference
Mountaineer, WV	Aug 1-Sep 14, 2004	33	38.3	38.0	Arnett 2005
Top of Iowa, IA	Sep 4-Oct 9, 2003; May 26-Sep 24, 2004	42	34.9	10.2	Koford et al. 2005
Foote Creek Rim, WY	Jun 15-Sep 1, 2000-01	39	2.2	1.3	Gruver 2002
Buffalo Ridge, MN	Jun 15-Sep 1, 2001	216	2.1	2.2	Johnson et al. 2003
Buffalo Mountain, TN	Apr 1-Sep 30, 2001-02	149	23.7	20.8	Fiedler 2004

Mist-netting efforts at the Jericho Rise Project Area resulted in the capture of 121 individuals of four species. The majority of the captures were two common species, little brown bat and eastern red bat. No species of special concern, particularly small-footed bat, were captured during summer efforts. Though some individuals may disperse from nearby hibernacula, breeding populations are either absent within the Project Area or exist in such small numbers as to be difficult to detect with capture techniques.

Radar sampling was conducted during August 2007 in an attempt to focus on migratory bats at the Jericho Rise Project Area. Previous radar surveys conducted at proposed wind energy facilities focused on avian migrants and typically sample from mid/late August to late October. Though differentiation of bird targets from bat targets on a radar screen is not reliable, it is assumed that surveys from August 1 – 31 would sample a higher proportion bat migrants than bird migrants by narrowing the survey period to the time when migratory bats appear most at risk. During the month of August, resident birds are not highly active during the nocturnal hours and avian migrants have typically not begun to move in large numbers; therefore the majority of targets on the radar screen are assumed to be bats and/or insects. As a result of this focus, data from the Jericho Rise radar survey cannot be compared directly to other avian radar survey data collected at wind energy facilities (Table 6); however, similarities and differences can provide information on the nature of bat activity at the Project Area. For example, though most avian radar studies report strong southerly (in fall) or northerly (in spring) movements of targets, data from the Jericho Rise August surveys was more variable and recorded most targets moving east or west. While it is unknown, this may indicate that bats do not necessarily migrate in large pulses following favorable weather events such as birds or a large number of resident bats were still present in the Project Area during the study period.

Passage rates at the Jericho Rise Project Area (on average, 11 t/km/hr in horizontal mode and 59 t/km/hr in vertical mode) are very low, particularly when compared to passage rates collected during avian fall migration. These passage rates suggest that concentrations of bat migrants are absent during the sampling period. Passage rate varied greatly by night, with the greatest nightly passage rates in both horizontal and vertical modes occurring on a few nights (particularly August 16, 26, and 30). At its peak on these nights, passage rate was approximately 25 t/km/hr in horizontal mode and 160 t/km/hr in vertical mode (August 26). Mean target flight height (323 m) is similar or slightly lower to that recorded by avian radar surveys; however higher proportions of targets (~31%) had flight altitudes less than 125 m (the zone of risk posed by turbines) and a similar percentage of targets occurred between 100 and 200 m. Potential increased risk to targets also occurred on four nights during the sampling period when more than 50% of the targets were recorded flying within rotor-swept heights. Interestingly, these four nights also have very low passage rates. Passage rates on August 22 and 23 are the two lowest recorded (approximately 20 t/km/hr in vertical mode); these dates also coincide with the lowest average nightly flight altitudes recorded (approximately 150 – 180 m). These data may indicate that though bats are passing within the zone of risk on certain nights, the percentage of bats exposed to this risk is actually quite low.

Mortality studies of bats at wind projects in the U.S. have shown several common trends:

- Risk to bats from wind turbines is unequal across species. The majority of bat fatalities at wind projects in the U.S. and Canada have been in the *Lasiurus* genus, hoary bat (*L. cinereus*) and red bat (*L. borealis*), and silver-haired bats (*Lasionycteris noctivagans*). These species are foliage or forest dwelling long-distance migrant species. The fatality pool for eastern studies also includes a number of eastern pipistrelles (*Pipistrellus subflavus*), also a tree-dwelling species during the summer months. The least common fatalities are of big brown bats and *Myotis* species. Numerous studies across the U.S. and Canada have shown this trend (see Johnson 2005).
- Risk to bats from wind turbines is unequal across seasons. The highest mortality occurs during what is believed to be the fall migration period for bats from roughly late-July to mid-September. Numerous studies across the U.S. and Canada have also shown this trend (see Johnson 2005).
- Information from previous studies indicates that baseline AnaBat data does not appear to be predictive of post-construction impacts. Some new information from the Maple Ridge monitoring study (Fall 2006) has shown higher bat mortality than what was expected based on the pre-project surveys using AnaBats (A. Hicks, NYSDEC, pers. comm.). Studies at Buffalo Ridge, Minnesota (Johnson et al. 2003) and Buffalo Mountain, Tennessee (Nicholson 2002, 2003) did not find a correlation between the number of AnaBat calls recorded and mortality.
- AnaBat surveys and fatality surveys showed a general association between the timing of the greatest number of bat calls and mortality, with both call rates and mortality being the highest during the fall.
- Studies at different location in the U.S. and Canada, appear to indicate that bat mortality is not related to site features or habitat. While it is hypothesized that eastern deciduous forests in mountainous areas may be high risk areas, high bat mortality has also occurred at wind projects in prairie/agricultural settings (Alberta, Canada; Baerwald 2007) and mixed deciduous woods and agricultural settings (Maple Ridge, New York; Jain et al. 2007).

Annual bat fatality estimates from the Maple Ridge wind project, the nearest monitored project to Jericho Rise, varied from 15 to 24 bats per turbine depending on the search frequency used (see Jain et al. 2007). Pre-project surveys at Maple Ridge focused on summer AnaBat surveys to detect bat activity. Approximately 20.6 calls per detector-hour were recorded at the Maple Ridge site (Reynolds 2004);

however, summer bat mortality has generally been lower at all wind projects studied including Maple Ridge (Jain et al 2007, Johnson 2005). No AnaBat surveys were conducted in the fall at Maple Ridge (Reynolds 2004) for comparison when bats are most at risk Summer mortality levels for bats are expected to be lower than the fall. For comparisons, however, the average number of calls per detector hour at Jericho Rise based on the fall AnaBat sampling was approximately 4.6 when averaged across all sampling stations and ranged from 0.4 to 14.9. While it is difficult to compare summer bat activity at Maple Ridge to fall activity at Jericho Rise, overall bat activity appears to be lower at Jericho Rise.

Species-specific surveys were unable to confirm the presence of small-footed bats in the Project Area and they are not expected to occur there in large number. Risk to this species from the project is expected to be low. The species expected to be the most common fatalities would include eastern red bat, hoary bat, and little brown bat with fewer numbers of, big brown bat, silver-haired bat, eastern pipistrelle, and northern myotis.

4.5 Sensitive Species

The only sensitive species with abundant occurrence in the Project Area was northern harrier. Other species seen but in low number included one peregrine falcon, one bald eagle, and one golden eagle documented during migrant raptor surveys. Based on the low occurrence of these raptors, the project is not expected to have any adverse effects on eagles or falcons migrating through the area or substantially increase risk of eagle/falcon collisions with turbines. No known bald eagle casualties have been documented at other wind projects in the U.S. that have been studied (see Erickson et al. 2001, 2002).

Northern harriers were documented in the Jericho Rise project area during all seasons of study. There are numerous agricultural fields and hay fields with scattered deciduous tree woodlots and wetlands, particularly in the northern portions of the Project Area, which could be considered suitable nesting habitat for harriers. It is likely that many of the harriers observed were migrants or transients through the area; however, it is possible that harriers are breeding residents in the Jericho Rise area. This species appears to be somewhat common in northern New York based on the latest Breeding Bird Atlas and is a documented breeding resident in Franklin County (see Andrle and Carroll 1988, NYSDEC 2005). The agriculture setting of the project certainly provides suitable habitat for northern harriers and they would be expected to occur throughout the region.

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Appendix F
Visual Impact Assessment Report

VISUAL IMPACT ASSESSMENT

Jericho Rise Wind Farm

Towns of Bellmont and Chateaugay
Franklin County, New York

Appendix F

Draft Report

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TABLE OF CONTENTS

Section **Page**

TABLES

FIGURES

APPENDICES

ACRONYMS

ASL	above sea level
DEM	digital elevation model
EIS	environmental impact statement
FAA	Federal Aviation Administration
GPS	global positioning system
kV	kilovolt
LSZ	landscape similarity zones
MW	megawatts
NPSDEC	New York State Department of Environmental Conservation
NYSEG	New York State Electric and Gas
O&M	operation and maintenance
Project	Jericho Rise Wind Farm
SCADA	supervisory control and data acquisition
USGS	U.S. Geological Survey
VIA	Visual Impact Assessment
ZVI	Zone of Visual Influence

1. INTRODUCTION

Tetra Tech EC, Inc. prepared a Visual Impact Assessment (VIA) for Jericho Rise Wind Farm LLC, for the proposed Jericho Rise Wind Farm (Project). The purpose of this VIA was to assess the visual impacts associated with the proposed Project and provide documentation of the assessment for the environmental impact statement (EIS) on the project. The primary components of this report are (1) the Project description, focusing on the appearance of the visible components of the proposed Project; (2) the existing visual character of the Project study area, including viewer groups and sensitive visual resources present in the area; (3) the methodology used to conduct the impact analysis, including tools used to determine potential Project visibility within the study area and evaluate the corresponding impacts; (4) the results of the visual assessment, based on analysis of simulated changes to identified key views; (5) mitigation measures available for consideration relative to the identified impacts; and (6) references used in conducting the visual impact assessment for the proposed Project.

2. PROJECT DESCRIPTION

2.1 Project Site

The site for the proposed wind-powered generating Project is located in the Towns of Bellmont and Chateaugay, Franklin County, New York. The proposed Project would be developed on approximately 5,042 acres of leased private land in both towns (Figure 1). The perimeter of the Project Site is located approximately 5 miles south of the United States/Canada border, approximately 1 mile southwest of the Village of Chateaugay, and approximately 2 miles east of the Village of Burke. The Project Site is roughly bordered by the Burke/Chateauguay Town Line to the west, New York State Highway 374 to the east, the Malone-Chateaugay Road to the north, and County Route 24 (Brainardsville Road) to the south.

Land use and cover within the Project Site is rural and predominantly forest and agricultural in nature. Individual farms and single-family rural residences are distributed in a low-density pattern, generally occurring at intervals adjacent to the local roads serving the area. Adirondack Park, a large State-designated recreational land unit that occupies most of Franklin County, is adjacent to the southern edge of the proposed Project Site.

2.2 Proposed Project Facilities

The proposed Project would consist of up to 53 turbines, each with a nameplate generating capacity of 1.65 megawatts (MW) for a total nameplate capacity of 87.45 MW. In addition to the wind turbines, the Project involves construction of associated components including a system of gravel access roads, electrical collection and communication cable networks, an operation and maintenance (O&M) building, an on-site project step-up substation, and an interconnection substation. Additionally, two or three permanent meteorological towers are anticipated to be located within the Project area. The major components of the Project and their visual characteristics are summarized below. A complete project description is provided in Section 1 of the EIS.

2.2.1 Wind Turbines

The wind turbine generator model proposed for this Project is the 1.65 MW Vestas V82, or an alternative wind turbine model of equivalent size and generating capacity. Each wind turbine consists of three major mechanical components. These are the tower, nacelle, and the rotor. The height of the tower proposed for this site (the "hub height," from foundation to the top of the tower), is approximately 262 feet. The nacelle sits atop the tower, and the rotor hub is mounted to the drive shaft within the nacelle. The total turbine height (i.e., height at the highest blade tip position) is approximately 397 feet, including any grading and pedestal height. Descriptions of each of the turbine components are provided below.

2.2.1.1 Towers

The towers proposed for this Project are conical steel structures manufactured in multiple sections. The towers are slightly tapered, with a base diameter of approximately 16 feet, and are mounted on concrete pedestals. Each tower has an access door and an internal safety ladder to access the nacelle. The construction process includes development of a crane pad 60 feet by 100 feet near the base of the tower, to support erection of the turbine. For this Project, the towers would be painted off-white to make the structures less visually obtrusive.

2.2.1.2 Nacelle

The main mechanical components of the wind turbine are housed in the nacelle. These components include the drive train, gearbox, and generator. The nacelle is covered with glass fiber-reinforced polyester to protect the components from weather. It is externally equipped with an anemometer and a wind vane that signals wind speed and direction information to an electronic controller. Attached to the top of some of the nacelles, per specifications of the Federal Aviation Administration (FAA), would be medium intensity aviation warning lights. The nacelle is mounted over a yaw gear, which operates to constantly position the rotor upwind of the tower.

2.2.1.3 Rotor

A rotor assembly is mounted to a driveshaft within the nacelle to operate upwind of the tower. Each rotor consists of three composite blades, each approximately 131 feet in length that would be painted the same off-white color as the towers noted above. The total rotor diameter is 269 feet, including the width of the hub. The rotor attaches to the drive train emerging from the front of the nacelle. Hydraulic motors within the rotor hub feather each blade according to wind conditions, which enables the turbine to operate efficiently at varying wind speeds. The rotor spins clockwise at varying speeds to operate more efficiently at lower wind speeds and to reduce wear and tear on the blades and drive train in higher wind conditions. According to the manufacturer's specifications (Appendix A), the wind turbines begin generating energy at wind speeds as low as 9 mph and shut down if winds continuously exceed 45 mph (10 minute average). Turbines produce full power at wind speeds above 29 mph.

2.2.2 Support Facilities

2.2.2.1 Electrical Collection/Interconnection System

The proposed Project would have an electrical system that includes a network of buried cables to collect electricity from and within groups of wind turbines. This would be transmitted, via a combination of overhead and buried electrical lines, to a collection substation and point of interconnection that would transfer the electricity generated by the Project to the existing New York State Electric and Gas (NYSEG) Willis-Malone 115-kilovolt (kV) transmission line and the regional power grid. A transformer located within the nacelle or on a pad adjacent to the base of each turbine raises the voltage of electricity produced by the turbine generator from roughly 690 volts up to the 34.5 kV voltage level of the collection system. From each turbine transformer, the electricity would flow into the collector circuit that, along with the turbine communication cables, would run predominately underground (typically along the alignment of proposed access roads).

The total length of buried cable placed to carry electricity between the turbines and the collection substation is estimated to be at least 21 miles. Similar to the existing electrical lines in the Project area, overhead 34.5 kV electrical lines mounted on wood poles standing approximately 45 feet high could be used instead of buried cable in selected locations to minimize or avoid disturbance to environmentally sensitive sites, or in areas of safety concern or construction constraints. The collection substation and the point of interconnection would be located on private land adjacent to the NYSEG 115 kV transmission line. Two alternate locations for the substation and point of interconnect facility are analyzed in the EIS. The proposed Substation #1 site is located in the southeast corner of the Project area on Town Line Road in the Town of Bellmont. The alternate Substation #2 site is located just east of the existing Willis Substation on Willis Road in the Town of

Chateaugay. The proposed substation location will be chosen once the interconnection studies are complete.

2.2.2.2 Access Roads

Road access into the Project Site for construction and operation would be provided by a number of existing public roads. The Project Site currently has an extensive network of existing state, county, and local roads, and wherever it is practical existing roads would be used for Project travel to minimize new ground disturbance. A Project construction and delivery plan, which will specify routes and facility needs for the Project, will be developed in the later stages of the permitting process. Certain sections of existing public roads may be improved to facilitate Project construction.

In addition to primary access routes, the Project would require the construction of new or improved private roads to access the proposed turbine sites. The total length of access roads required to service all proposed wind turbine locations is estimated at 15 miles, the majority of which would be existing farm lanes that would be upgraded as necessary. The access roads leading to the first turbine in a string will generally consist of a 20-foot wide compacted graveled surface and a 2-foot wide shoulder on either side. The roads between contiguous turbines in a string will be 34-feet-wide to accommodate the safe movement of large crane equipment between the individual turbine sites.

2.2.2.3 Meteorological Towers

Two or three permanent meteorological towers would be installed to collect wind data and support performance testing of the turbines. It is anticipated that each tower would be a self-supporting (i.e., unguyed), galvanized, lattice-steel structure 262 feet tall, with wind monitoring instruments suspended at the end of short booms attached perpendicular to the tower. Red aviation warning lights would be mounted at the top of each tower. Electrical lines would connect each tower directly to a power source at the nearest distribution line, to provide the power necessary to run the warning lights and wind measuring equipment. The exact location of each meteorological tower remains undetermined pending the results of geotechnical studies. Based on the prevailing southwesterly wind direction at the Project, however, it is anticipated that the meteorological towers would be located upwind of the most westerly row of turbines.

2.2.2.4 Operation and Maintenance Building

An O&M building would house the command center of the Project's supervisory control and data acquisition (SCADA) system. The building would be 5,000 to 8,000 square feet. The building would be linked by fiber-optic cables to each of the turbines through the SCADA system, which allows an operator to control critical functions and monitor the overall performance of each turbine. A storage yard adjacent to the O&M building would house the equipment and materials necessary to service the Project. The O&M building is anticipated to be located near the middle of the Project area, to reduce the travel time for a maintenance crew to reach any turbine. In final site selection, all environmentally and culturally sensitive locations would be avoided and sites that have already been disturbed during construction, such as an area that has been used as a construction lay-down yard, would be preferred.

3. EXISTING VISUAL CHARACTER

The following section describes the existing visual character of the study area for the VIA of the proposed Project. It includes consideration of the visual setting, identified landscape similarity zones, viewer groups and their sensitivity to visual change, and specific types of local resources that have been identified as visually sensitive. Based on a published policy regarding visual assessment methodology developed by the New York State Department of Environmental Conservation (NYSDEC, 2000) the visual study area for the Project was initially defined as the area within a 5-mile radius around the exterior Project boundary. In response to specific scoping requests from representatives of the Towns of Bellmont and Chateaugay, however, for this VIA the area for mapping of sensitive sites and viewshed analysis was extended to a 7.5-mile radius around the Project. The locations of the standard and extended visual study areas are illustrated in Figure 2.

3.1 Visual Setting

3.1.1 Landform and Vegetation

The visual study area is situated within the St. Lawrence-Champlain Lowlands physiographic region of New York. This area features rugged topography with valleys and ridges where elevations and slope vary greatly, especially adjacent to primary waterways. Terrain in the area surrounding the Project is characteristically hilly and undulating, with elevations ranging from approximately 1,480 feet above sea level (ASL) near the summit of Kirby Hill at the southeastern corner of the Project area to 950 feet ASL at the Project's northern end. The northern portion of the study area is predominately agricultural land. The southern portion of the study area is predominately rolling topography characterized by a mix of forest and agricultural vegetation. The southern edge of the Project Site abuts the northern edge of Adirondack Park, which is predominantly forested and hilly terrain. The highest elevations within the study area occur within Adirondack Park, and there is a distinct and progressive downward slope from the Adirondacks northward toward the U.S./Canada border.

Vegetation in the study area is characterized as about 65 percent upland forest and about 34 percent agricultural cover. The remaining 1 percent of the area is made up of developed lands, open water, and wetland habitat. Open fields in the agricultural areas include active cropland and pasture, and tend to occur on more level terrain and gentler slopes. Forest vegetation is primarily deciduous with some conifers mixed in. Mature trees typically occur in hedgerows, woodlots, on steep slopes and ridges, and along river/stream corridors.

3.1.2 Land Use

Land use within the standard and extended visual study area (as defined by both the 5- and 7.5-mile radii around the Project Site), follows the vegetation pattern and is dominated by forest and agricultural uses. Row crops are the primary agricultural activity, with pastures and field crops used for dairy farming also being important in the area. Higher-density residential and commercial land uses are quite limited in area and are primarily located in the villages and hamlets within the study area (such as the Villages of Burke, Chateaugay and Malone) and along major roads such as U.S. Highway 11 and New York State Highway 374. Generally, the villages are characterized by a well-defined central business district surrounded by traditional grid-pattern residential neighborhoods, with some highway commercial development along the outskirts. Hamlets within the Project area are relatively small, well-defined components of a primarily rural/agricultural landscape; they are typically located at major crossroads and along roadways.

3.1.3 Water Features

Most water features within the 5- and 7.5-mile visual study areas are located within the Adirondack Park boundary. These include several lakes, rivers, streams, and ponds that are important features of the landscape, the most significant of which are Upper and Lower Chateaugay Lakes. These two lakes are situated parallel to New York State Highway 374, southeast of the Hamlet of Brainardsville, and are drained by the Chateaugay River. Lower Chateaugay Lake, located closest to the Project area, is a relatively narrow lake approximately 3 miles long and approximately 640 acres in area. Upper Chateaugay Lake is immediately upstream from the lower lake; it is up to over 1 mile wide in places, approximately 7 miles long and occupies approximately 1,920 acres in area. Both lakes are characterized by a wooded shoreline with residential and/or recreational homes on both the eastern and western shores. A public boat launch located on Upper Chateaugay Lake provides access for recreational uses such as boating, fishing, and swimming. Views from the lakes include houses and trees along the shoreline. Views of forested areas can be found at some places along the river.

Other waterbodies near the visual study area include the Salmon River, which flows northwest toward the St. Lawrence River from an area within Adirondack Park. A 12.3-mile segment of the Salmon River from Elbow Pond to the Adirondack Park boundary is designated by the State of New York as a recreational river. Other lakes and streams are also located within the boundaries of Adirondack Park and have adjacent shoreline development in various locations. However, most of these waterbodies are not major visual components of the landscape, due to their relatively small size and/or occurrence within wooded valleys or ravines.

3.2 Landscape Similarity Zones

Four distinct landscape similarity zones (LSZs) were defined within the 5- and 7.5-mile visual study area, based on areas of similar terrain and vegetative cover. The approximate location of these zones is illustrated in Figure 3. Their general landscape character, patterns of use, and potential views to the proposed Project are described below.

3.2.1 Zone 1—Rural Residential/Agricultural Zone

This LSZ makes up approximately 34 percent of the study area, and primarily occurs in the northern portion of the study area. The zone is characterized by open agricultural land with widely dispersed farms and rural residences along a network of state, county, and local roads. Active agricultural fields (e.g., row crops) and pastures bordered by hedgerows and scattered deciduous trees dominate the landscape. The landform within this zone consists primarily of level to gently rolling plateaus and valleys. Views in the rural residential/agricultural zone are generally open, and at times expansive. Typical views include a patchwork of open fields and partially forested areas, punctuated by residences, barns, and silos. Livestock and working farm equipment are often seen in the fields. In places, forest vegetation frames or provides a backdrop to the view. Views in this LSZ occasionally include roadside commercial development. Examples of this landscape occur throughout the visual study area, especially outside of the hamlets. Due to the elevation differences in the study area and the abundance of open fields through much of the visual study area, foreground (less than 0.5 mile), middleground (0.5 to 3.5 miles), and background (greater than 3.5 miles) views of the proposed Project would be available from many areas within the rural residential/agricultural zone.

3.2.2 Zone 2—Forested Zone

This LSZ makes up approximately 65 percent of the study area, and primarily occurs in the southern portion of the study area. Forested upland is characterized by the dominance of native forest vegetation (deciduous, evergreen, and mixed-forest types) in various stages of regeneration/maturity. Mature trees are typically about 45 feet or more in height. This zone is mostly made up of private woodlots, especially in the area outside of Adirondack Park. Views in this LSZ are typically enclosed by the forest vegetation and the topography, which is hillier than in the rural/agricultural zone. View windows are often limited to areas where small clearings, wetlands, ponds, and road cuts provide breaks in the tree canopy. Where long distance views are available, they are typically of short duration, limited distance, and/or framed by trees. Prime examples of this zone include Adirondack Park lands in the Towns of Bellmont and Ellenburg. Generally, views in this zone are hindered by trees in the immediate foreground.

3.2.3 Zone 3—Village/Hamlet Zone

This LSZ is comprised of a number of discrete, relatively small areas and makes up about 1 percent of the study area. The zone includes the Villages of Burke and Chateaugay, as well as a portion of the Village of Malone. It also includes the Hamlets of Bellmont Center, Burke Center, North Burke, Cooks Mill, Sun, Thayers Corner, Brainardsville, Brayton Hollow, Blairs Kiln, Earlville, Harrigan, Malone Junction, Teboville, and Whippleville. This zone is characterized by moderate- to high-density residential development within the villages and primarily low-density residential development within the hamlets, with limited commercial establishments (primarily retail and service facilities) along the main roads. Vegetation and landform may contribute to visual character in the villages and hamlets, but buildings (typically two to three stories tall) and other constructed features dominate the landscape. The buildings can be highly variable in their size, architectural style, and arrangement (e.g., buildings in the villages tend to be older, whereas hamlets may include older buildings mixed with some newer architecture). These buildings are typically organized along a grid pattern that tends to orient views along the streets, while the buildings block views of distant features from most locations. In some areas, street and yard trees further enclose and screen views. Within this zone, potential views of the proposed Project would likely be available only in outskirt areas, and would likely be blocked or at least partially screened by existing structures, mature street trees, and/or the rolling topography surrounding the villages.

3.2.4 Zone 4—Adirondack Park Zone

This zone technically could be considered a subset of the forested upland zone, because it is included within the 65 percent of the study area that is predominantly forested. The study area lands within the Adirondack Park boundary are discussed separately, however, because of some landscape characteristics that differ from Zone 2. The Adirondack Park zone is distinguished by more continuous forest cover and more hilly terrain, resulting in extensive, heavily-wooded slopes. This area also has numerous lakes and other water features, including Upper and Lower Chateaugay Lakes. Finally, Zone 4 in general is also distinguished by its status as a significant recreational and scenic area, and the moderate to heavy use it receives from tourists and recreational users.

Upper and Lower Chateaugay Lakes include shoreline cottages and public access areas for water-based recreational activities, including boating, fishing, and swimming. Views from both lakes toward the proposed Project are at least partially obstructed in most locations, because of the terrain and forest cover. In addition, because there is extensive shoreline development along the lakes, shoreline homes can block views from the nearby highway or other homes. Any views from the Chateaugay Lakes to the Project area would be at the background viewing distance, as the northern end of Lower Chateaugay Lake is at least 3 miles distant from the closest proposed turbine location. Because there is considerable residential development and recreational use at many waterbodies within Adirondack Park, the sensitivity to visual quality and visual changes in this zone is generally high.

3.3 Viewer/User Groups

Three viewer/user group categories were identified for the visual study area.

3.3.1 Local Residents

Local residents include those who live and work within the visual study area. Generally, they view the landscape from their yards, homes, local roads, and places of employment while engaged in daily activities. Residents are concentrated in the villages and hamlets. They are located throughout the study area, but have a minimal presence in the forested southern portion. Except when involved in local travel, these viewers are likely to be stationary, and have frequent or prolonged views of the landscape. Local residents may view the landscape from ground level or from the upper floors of homes or other buildings. Residents' sensitivity to visual quality is variable, and may be tempered by the aesthetic character/setting of their neighborhoods or workplace. For example, residents with a view of existing commercial facilities may be less sensitive to landscape changes than those with a view of open farmland. It is assumed, however, that all local residents are familiar with the local landscape and may be very sensitive to changes in particular views that are important to them.

3.3.2 Commuters/Travelers

Commuters and travelers passing through the area view the landscape from motor vehicles on their way to work or other destinations. Commuters and through travelers are typically moving, have a relatively narrow field of view, and are destination oriented. They would be concentrated on the major roads that traverse the study area, including U.S. Highway 11, New York State Highway 374, and County Route 24. Generally, drivers would be focused on the road and traffic conditions, but do have the opportunity to observe roadside scenery. Passengers in moving vehicles would have greater opportunities for prolonged off-road views toward landscape features than would drivers and, accordingly, may have greater perception of changes in the visual environment.

3.3.3 Tourists/Recreational Users

This viewer group includes local and seasonal residents engaged in recreational activities, and tourists visiting the area. These users can be involved in outdoor recreational activities at parks and other developed recreational facilities or in undeveloped natural settings such as forests, fields, and waterbodies. Tourists and recreational users come to the area for the purpose of experiencing its cultural, scenic, or recreational resources. Some, such as weekend and seasonal homeowners, may spend extended time in the area. They may view the landscape while traveling to these destinations on local roads, or from the sites themselves. This group includes those involved in active recreation (e.g., bicyclists, hikers, joggers, snowmobilers, hunters, recreational boaters) and those involved in more passive recreational activities (e.g., picnicking, sightseeing, walking). For some of these viewers, scenery would be a very important part of their recreational experience, and recreational users would often have continuous views of landscape features over relatively long periods of time. Most recreational viewers would only view the surrounding landscape from ground-level or water-level vantage points. Tourists' and recreational users' sensitivity to visual quality and landscape character would be variable (depending on their reason for visiting the area), although this group is generally considered to have relatively high sensitivity to aesthetic quality and landscape character. Within the study area, this group would be concentrated at park and recreational facilities such as Adirondack Park, High Falls Park and Campground, Ponderosa Campground, and the Chateaugay Lake State Fish Hatchery. The forested character of most public and private recreation areas that are frequented by this viewer group generally limits long-distance visibility from these sites.

3.4 Viewer Group Exposure and Sensitivity

The three viewer/user groups are classes of viewers that differ in their expected visual response to the Project and its setting. Their responses to visual change are affected by their exposure and sensitivity to the change. Viewer exposure is primarily based on the number of people viewing the project, but also considers the degree to which viewers are exposed to a view by their physical location and the duration of the view.

Viewer sensitivity is the degree to which viewers are likely to be receptive to the visual details, character, and quality of the surrounding landscape. Two principle factors affect viewer sensitivity: activity and awareness. Activity relates to whether the viewer's activity encourages him or her to look at the landscape or distracts the viewer from the landscape. Awareness relates to how a viewer's position, recent visual experience, or individual preconceptions and values affect his or her receptivity to visual character.

Tables 1 and 2 describe viewer exposure and sensitivity scales that were used to characterize the respective viewer groups and their expected response to change for each viewpoint selected for the impact analysis. In this analysis, viewer sensitivity is based primarily on the viewer's activity. While viewer groups often vary in their sensitivity, that is, the degree to which a visual impact is felt, they rarely differ in their recognition of a positive or negative visual impact of a project.

Table 1. Viewer Exposure Scale

Rating	Explanation
High	High exposure applies primarily to a high number of viewers, as well as unobstructed views and foreground experience of the Project.
Moderate	Moderate exposure applies primarily to a moderate number of viewers, as well as filtered views and a middleground experience of the Project.
Low	Low exposure applies primarily to a small number of viewers, as well as blocked or non-existent views and background experience of the Project.

Table 2. Viewer Sensitivity Scale

Rating	Explanation
High	High sensitivity applies primarily to viewers whose activity and awareness make them very conscious of changes in the visual environment, such as rural residents and outdoor recreation users.
Moderate	Moderate sensitivity applies primarily to viewers whose activity and awareness make them mildly conscious of changes in the visual environment, such as tourists visiting the region, motorists on local roads, and urban residents.
Low	Low sensitivity applies primarily to viewers whose activity distracts and whose awareness is diverted from changes in the visual environment, such as university students, agricultural workers, and motorists on high-speed roads.

3.5 Visually Sensitive Resources

As identified in the New York State Department of Environmental Conservation (NYSDEC) Visual Policy (DEP-00-2), the standard study area for impacts to scenic and aesthetic resources is the area within 5 miles of the site or project area boundary. As stated previously, this VIA also evaluated the area within an additional 2.5–mile radius (7.5 miles total) from the site boundary, as requested by the Towns of Bellmont and Chateaugay. The latter area is referred to as the extended visual study area. The VIA employed the same procedures for all aesthetic resources within the standard and extended visual study areas.

The NYSDEC (2000) Visual Policy identifies a number of types of features that are considered to be scenic resources of statewide significance. With respect to the NYSDEC list, the inventory identified five (5) specific sensitive sites within the standard visual study area (within a 5-mile radius of the Project) *other than* sites listed on or eligible for the National or State Register of Historic Places (see additional discussion below). These sites include one designated scenic highway, one potential Adirondack Park scenic pull-off, two Adirondack Park scenic corridors, and one large waterbody in the Adirondack Park. No state parks; urban cultural parks; state forest preserves; national wildlife refuges, state game refuges, or state wildlife management areas; national natural landmarks; national park system, recreation areas, seashores, forests; national or state wild, scenic, recreational rivers; scenic areas of statewide significance; designated national or state trails; state nature and historic preserve areas; or Bond Act properties are located within the standard visual study area.

The extended visual study area (including the area between 5 and 7.5 miles from the Project Site) includes additional scenic resources of statewide significance. These include more sites listed on or eligible for the National or State Register of Historic Places (see discussion below) and one boat launch.

In addition to these scenic resources of statewide significance, the standard visual study area also includes areas that are regionally or locally significant or sensitive, due to the type or intensity of land use they receive. These include one state forest, three parks and recreational areas, two villages, ten hamlets, and five transportation corridors. The 21 additional visually sensitive resources in this category includes some overlap or duplication with the sites of statewide significance, with respect to the treatment of travel corridors.

The NYSDEC Visual Policy discusses inventory of cultural sites (sites listed on or eligible for the National or State Register of Historic Places) only within 5 miles of a project. Similarly, the State Historic Preservation Office (SHPO) guidelines prescribe the area of potential effects for historic architecture as the viewshed within 5 miles of a project boundary. Because the VIA included all categories of NYSDEC-defined visually sensitive sites within 7.5 miles of the Project Site, however, the VIA likewise included all cultural sites within the extended visual study area. Please refer to Section 2.6 of the DEIS for a more complete discussion of conditions relative to architectural historic resources.

At the time of this report Tetra Tech was still in the process of conducting archival research on potentially eligible architectural historic resources and mapping the locations of sites that have not been previously inventoried. The results of this work will be summarized in a separate report and will be addressed with respect to updated evaluation of visual impacts in the FEIS. Inventory work completed to date indicated there appeared to be 109 architectural historic resource sites listed on or eligible for the National or State Register of Historic Places within the extended visual study area for the Project. Mapping of these sites based on location data provided in the SHPO files indicated that 11 of these sites are actually beyond 7.5 miles of the Project Site, resulting in identification of 98 such sites that have been confirmed within the extended visual study area. Information currently available suggests that there are up to an additional 69 architectural historic resources that may be located within the extended visual study area. Because the location information provided in the SHPO database is not sufficient to confirm the specific location of these additional sites, they have not yet been mapped.

The known locations of the visually sensitive resources within the extended visual study area (and the 11 architectural historic resources just beyond the study area) are illustrated in Figure 4.. Please refer to Appendix B for a complete listing of these resources, including sites listed or eligible for the historic registers that may be located within the extended visual study area. As indicated in the appendix table and noted previously, there is a minor degree of duplication or overlap among the listed sites. The Chateaugay State Fish Hatchery, for example, is listed as both a visually sensitive resource of regional or local significance (Site 8) and as a cultural site (Site 74). In addition, all of the villages and hamlets within the study area are listed as visually sensitive resources of regional or local significance, and many of the identified cultural sites are located within those villages and hamlets.

3.5.1 Visually Sensitive Resources—Identified in the NYSDEC Visual Policy

As stated above, the extended visual study area includes several sites that the NYSDEC Visual Policy identifies as scenic resources of statewide significance (NYSDEC, 2000). These are summarized in Table 3 and are outlined below in more detail.

3.5.1.1 National or State Register of Historic Places

Preliminary analysis of the New York State Historic Preservation Office (NYSHPO) database of historic resources indicates the extended visual study area may includes a total of up to 167 sites currently listed on or eligible for listing on the National or State Register of Historic Places (NYSHPO, 2007). The NYSHPO database provides general geographic information (e.g., county, town, municipality, and often the street address) on the individual properties, but specific locations for most properties in rural areas are difficult to determine. Consequently, the specific locations for many of the listed or eligible properties identified in the database are still being confirmed. Based on other available records, the analysis determined that at least 98 listed or eligible properties are located within the standard and extended visual study areas. The distribution of these sites by town and village is summarized in Table 4.

Table 3. Visually Sensitive Sites

Item	Identified Sites within the Study Area	View of Turbines
Visually Sensitive Resources—Identified in NYSDEC Visual Policy (5 and 7.5 miles)		
National and State Register of Historic Places	At least sites, mostly located in the villages and hamlets, and other various areas throughout the study area	Varies
State parks	None noted	--
Urban Cultural Parks	None noted	--
State Forest Preserves	None noted	--
National Wildlife Refuges, State Game Refuges, and State Wildlife Management Areas	None noted	--
National Natural Landmarks	None noted	--
National Park System, Recreation Areas, Seashores, and Forests	None noted	--
National or State Wild, Scenic, and Recreational Rivers	None noted	--
Designated Scenic Sites, Lakes, Reservoirs, and Highways/Overlooks	One designated scenic byway (Military Trail Scenic Byway)	Yes
Scenic Areas of Statewide Significance	None noted	--
Designated State or National Trails	None noted	--
Adirondack Park Lands and Scenic Vistas		
	One "potential" Adirondack Park scenic pull-off (County Route 54); two state routes identified as designated scenic corridors (New York State Highways 190 and 374); one lake and one boat launch (Lower Chateaugay Lake, Upper Chateaugay Lake boat launch).	Yes
State Nature and Historic Preserve Areas	None noted	--
Bond Act Properties	None noted	--
Visually Sensitive Resources—Not Identified in NYSDEC Visual Policy (5 miles only)		
State Forests and Unique Areas	One state forest (Franklin 10 State Forest)	Yes
Local Parks and Recreational Areas	Three parks and recreational areas (Chateaugay State Fish Hatchery, High Falls Park and Campground, and Ponderosa Campground)	Yes
Developed Residential and Commercial Areas	Two villages (Villages of Burke and Chateaugay) and 10 hamlets (Hamlets of Bellmont Center, Burke Center, Cooks Mill, Sun, Thayers Corner, Brainardsville, Brayton Hollow, Blairs Kiln, Earlville, Harrigan)	Yes
Transportation Corridors	Five transportation corridors (U.S. Highway 11, New York State Highway 374, New York State Highway 190, County Route 54, County Route 24)	Yes

Table 4. Summary of Sites in the Extended Visual Study Area Listed on or Eligible for the National or State Register of Historic Places[1]

County	Town/Village	Properties	Determination
Franklin	Bellmont (Town)	1	Listed
Franklin	Bellmont (Town)	16	Individually Eligible
Franklin	Burke (Town)	1	Listed
Franklin	Burke (Town)	10	Individually Eligible
Franklin	Chateaugay (Town)	23	Individually Eligible
Franklin	Chateaugay (Village)	21	Districts
Franklin	Chateaugay (Village)	14	Individually Eligible
Clinton	Clinton (Town)	6	Individually Eligible
Clinton	Ellenburg (Town)	5	Individually Eligible
Franklin	Malone (Village)	3	Listed
Franklin	Malone (Village)	5	Districts
Franklin	Malone (Village)	6	Individually Eligible
Franklin	Malone (Town)	2	Individually Eligible

[1] Includes approximately 10 sites determined to be just beyond 7.5 miles of the Project Site.

3.5.1.2 State Parks

No parks designated as state parks under the Parks, Recreation, and Historic Preservation Law, Section 3.09 (NYSOPRHP, 2006a) were identified in or near the standard or extended visual study area. Nearly half of Adirondack Park (i.e., not including privately-owned land within the Adirondack Park boundary) is owned and controlled by NYSDEC and managed by the Adirondack Park Agency, not the New York State Office of Parks, Recreation, and Historic Preservation (NYS Adirondack Park Agency, 2001). Therefore, it is not classified as a state park.

3.5.1.3 Urban Cultural Parks

There are no heritage areas, formerly known as urban cultural parks, as identified by the Parks, Recreation, and Historic Preservation Law, Section 35.15, located in or near the standard or extended visual study area (NYSOPRHP, 2006b).

3.5.1.4 State Forest Preserves

The closest forest preserve to the Project, the Adirondack Forest Preserve, is located in Adirondack Park to the south of the Project. The Adirondack Park was created in 1892 by New York State due to concerns for the water and timber resources of the region. Today the Park is the largest publicly protected area in the contiguous United States. The boundary of the Park encompasses approximately 6 million acres, nearly half of which is owned and controlled by New York State. The remaining half of the Park is privately owned land and includes settlements, farms, timber lands, businesses, homes, and camps. All of the approximately 2.4 million acres of land owned and controlled by NYSDEC (i.e., not including privately-owned land within the Adirondack Park boundary) form part of the Adirondack Forest Preserve and are protected by the "forever wild" clause of Article XIV, Section l of the State Constitution. A small amount of acreage also administered by NYSDEC is considered non-forest preserve (NYS Adirondack Park Agency, 2001).

The Adirondack Forest Preserve also has status as a National Historic Landmark, under a designation by the Secretary of the Interior in 1963.

The standard visual study area includes two small parcels of state-owned forest preserve land, which are located to the south and southwest of the Project area (NYSDEC, [2006a]). Other scattered parcels of forest preserve land identified as the Debar Mountain Wild Forest are located to the south and southeast of the Project area at distances of 5 to 7.5 miles.

3.5.1.5 National Wildlife Refuges, State Game Refuges, and State Wildlife Management Areas

According to U.S. Department of the Interior, Fish and Wildlife Service (2005) listings, no national wildlife refuges were identified in the standard or extended study area. Additionally, no state game refuges or wildlife management areas were identified in the study area. The Lewis Preserve Wildlife Management Area is located approximately 18 miles east of the proposed wind farm (NYSDEC, [2006b]).

3.5.1.6 National Natural Landmarks

No features identified as national natural landmarks by the National Park Service are located in or near the standard or extended visual study area. The nearest national natural landmark, Ironsides Island, is located approximately 75 miles southwest of the study area (U.S. Department of the Interior, National Park Service, 2004).

3.5.1.7 National Park System, Recreation Areas, Seashores, and Forests

There are no national park system areas (e.g., parks, recreation areas, seashores, monuments, scenic trails, historic sites, heritage corridors, memorials, historical parks, and rivers) or national forests in or near the standard or extended visual study area. The nearest unit in the national park system is Fort Stanwix National Monument, located approximately 85 miles south of the study area (U.S. Department of the Interior, National Park Service, [2006]).

3.5.1.8 National or State Wild, Scenic, and Recreational Rivers

There are no national wild, scenic, or recreational rivers located in or near the standard or extended visual study area (U.S. Department of the Interior, National Park Service, [2006]). A 12.3-mile segment of the Salmon River, from the outlet of Elbow Ponds to the point where the river intersects the Adirondack Park Boundary, is designated as a Recreation River under the New York State Wild, Scenic, and Recreational River System Act (ECL Title 27, Article 15). A portion of the designated reach of the Salmon River is located in the Town of Bellmont within the extended visual study area (NYSDEC, [2006c]).

3.5.1.9 Designated Scenic Sites, Lakes, Reservoirs, and Highways/Overlooks

One designated scenic byway traverses the standard and extended visual study area and one scenic byway is located about 0.5 mile outside of the extended study area. Additionally, one heritage trail is located approximately 1 mile north of the extended study area in Canada. These features are discussed in more detail below:

- The Military Trail Scenic Byway traverses the standard and extended visual study area. This is an 84-mile stretch of New York State Highway 37 and U.S. Highway 11 that connects Massena and Rouses Point, traveling through Malone and Chateaugay, along the historic military route used to transport troops and equipment along the Canadian border, between the Saint Lawrence River and Lake Champlain (Adirondack North Country Association, 2006a).

- The Adirondack Trail Scenic Byway is located approximately 0.5 mile outside of the extended visual study area. This is a 188-mile route along New York State Highway 30 that extends from Fonda on the New York State Thruway northward through the heart of Adirondack Park. The route exits the Park north of Duane Center and ends at Malone, traveling through Johnstown, Gloversville, Northville, Speculator, Indian Lake, Blue Mountain Lake, Long Lake, Tupper Lake, and Paul Smiths along the way (Adirondack North Country Association, 2006b).

- The Chateaugay Valley Heritage Trail is located in Canada approximately 1 mile outside of the extended visual study area. This 121-mile scenic roadway traverses the southwestern portion of the Montreal Region, in the Province of Quebec, Canada between the Richelieu River and Lake Saint-Francis. Multiple provincial routes and roadways make up the trail. The nearest point of interest to the study area is the Powerscourt Covered Bridge, located approximately 1 mile north of the extended visual study area.

3.5.1.10 Scenic Areas of Statewide Significance

There were no scenic areas of statewide significance identified in the standard or extended visual study area (NYSDOS, 2004).

3.5.1.11 Designated State or National Trails

No national trails identified by the National Park Service as national trails are located in or near the standard or extended visual study area (U.S. Department of the Interior, National Park Service, [2006]). The designated trails nearest to the Project are two trails outside of the extended visual study area within Adirondack Park, the DeBar Game Management Area Trail/Beaver Valley Trail and the Lyon Mountain Trail.

- DeBar Game Management Area Trail and Beaver Valley Trail are located approximately 5 miles south of the extended visual study area boundary. Approximately 13 miles of hiking trails occur within a unit of the DeBar Mountain Wild Forest area, beginning at the State Highway 26 parking area and terminating at the DeBar Mountain Trail junction. These multiple-use trails allow hiking, mountain biking, horseback riding, snowshoeing, cross-country skiing, and snowmobiling.

- Lyon Mountain Trail is approximately 1 mile south of the extended visual study area. The 2.5-mile hiking trail is located on private property, but is available for use by the public. The trail begins at the Chazy Lake parking area and terminates at the Lyon Mountain lookout tower. This trail accommodates both hiking and snowshoeing activities.

3.5.2 Adirondack Park Lands and Scenic Vistas

None of the proposed wind turbines would be located on land within the Adirondack Park boundary. A portion of the extended visual study area is located within the Park in Franklin and Clinton counties, although most of this land is in private ownership and not available for use by the public. The only publicly-owned lands in this area of the Park are isolated parcels within the Debar Mountain Wild Forest.

The Adirondack Park State Land Master Plan (NYS Adirondack Park Agency, 2001) identifies a "potential" Adirondack Park scenic pull-off on County Route 54, near the Hamlet of Harrigan in the Town of Ellenburg that is located in the extended visual study area. Additionally, designated scenic vistas occur in valley areas 1 mile west of the Hamlet of Owls Head in the Town of Bellmont, located outside of the extended visual study area. The nearest open, mountain-top view is from Lyon Mountain Lookout Tower, which is about 11 miles to the southeast from the nearest proposed turbine location. Lyon Mountain is located approximately 3 miles outside of the extended visual study area.

Adirondack Park travel corridors are identified in the Adirondack Park State Land Master Plan (NYS Adirondack Park Agency, 2001), and include the major travel corridors and principal segments of the local highway network that contribute to the visual integrity of the Park. Identified travel corridors within the standard or extended visual study area include:

- New York State Highway 190. The Adirondack Park State Land Master Plan includes a reference to an approximately 8-mile segment of New York State Highway 190, from the northern park boundary line to New York State Highway 374, as being an Adirondack Park travel corridor. Map review indicates that most of New York State Highway 190 is located outside the Park boundary; only about 1,500 feet at the western end of this highway, near the Hamlet of Brainardsville, occur within the park boundary.

- New York State Highway 374. This highway is located within the standard and extended visual study area. Approximately 27 miles of New York State Highway 374 from the northern park boundary to the Village of Dannemora are identified as an Adirondack Park travel corridor. Approximately 7 to 8 miles of this corridor occur within the extended visual study area.

While multiple lakes are located within the northern part of Adirondack Park, the biggest lakes in the study area are Upper and Lower Chateaugay lakes. Associated features located within the extended visual study area are listed as follows:

- Lower Chateaugay Lake—Town of Bellmont, Franklin County
- Upper Chateaugay Lake Boat Launch—Town of Ellenburg, Clinton County

3.5.2.1 State Nature and Historic Preserve Areas

There are no state nature and historic preserve areas identified by NYSDEC in or near the visual study area.

3.5.2.2 Bond Act Properties

To assure the long-term preservation, enhancement, restoration, and improvement of the quality of New York State's environment, the State has set up a Bond Act where land can be purchased for additional forest preserve lands, and the acquisition, preservation and improvement of certain other environmentally sensitive lands which will preserve aquifer recharge areas, areas of exceptional scenic beauty or exceptional forest character, open space, pine barrens, public access, trailways, unique character, wetlands and wildlife habitats. The NYSDEC visual policy identifies properties acquired with Bond Act funding under the exceptional scenic beauty and open space categories as visually sensitive resources. There are no such properties within the extended visual study area for the Project (Eggleton, 2007).

3.5.3 Visually Sensitive Resources—Not Identified in the NYSDEC Visual Policy

The study area includes several other resources that are not among the types of features identified as visually sensitive resources in the NYSDEC Visual Policy, but are considered visually sensitive from a local perspective. These resources were identified within a 5-mile radius of the Project Site and include the following:

3.5.3.1 State Forests and Unique Areas

Besides the forests located in Adirondack Park described above, published maps indicate the Franklin 10 State Forest is located within the standard visual study area. This forest is located in the Town of Chateaugay, approximately 2 miles from the nearest turbine. Signage or other information denoting the location of this forest was not found during field investigation for the VIA, and local residents who were queried did not know of this specific forest.

No features identified as unique areas are located in the visual study area. The closest unique area, the Gulf State Unique Area (in the Flat Rock Gulf State Forest), is 623 acres and is located in the Town of Mooers, adjacent to the U.S./Canada Border, off Rock Road. This unique area is approximately 15 miles from the northeastern border of the standard visual study area.

3.5.3.2 Local Parks and Recreational Areas

The standard visual study area includes several parks and recreational areas of local significance, including the following:

- Chateaugay State Fish Hatchery—Town of Chateaugay, Franklin County
- High Falls Park and Campground—Town of Chateaugay, Franklin County
- Ponderosa Campground—Town of Chateaugay, Franklin County

3.5.3.3 Developed Residential and Commercial Areas

Several locations in the standard visual study area are considered visually sensitive because they have concentrated residential development and other more-intensive land uses. These include the following villages and hamlets in the Towns of Bellmont, Burke, Chateaugay, and Ellenburg:

- Village of Burke—Town of Burke, Franklin County
- Village of Chateaugay—Town of Chateaugay, Franklin County
- Hamlet of Bellmont Center—Town of Bellmont, Franklin County
- Hamlet of Burke Center—Town of Burke, Franklin County
- Hamlet of Cooks Mill—Town of Burke, Franklin County
- Hamlet of Sun—Town of Burke, Franklin County
- Hamlet of Thayers Corner—Town of Burke, Franklin County
- Hamlet of Brainardsville—Town of Chateaugay, Franklin County
- Hamlet of Brayton Hollow—Town of Chateaugay, Franklin County
- Hamlet of Blairs Kiln—Town of Chateaugay, Franklin County

- Hamlet of Earlville—Town of Chateaugay, Franklin County
- Hamlet of Harrigan—Town of Ellenburg, Clinton County

3.5.3.4 Transportation Corridors

The standard visual study area includes several highways that could be considered visually sensitive due to the number of drivers that travel these roads on a daily basis. These routes include:

- U.S. Highway 11
- New York State Highway 374
- New York State Highway 190
- Franklin County Route 54
- Franklin County Route 24

4. VISUAL IMPACT ASSESSMENT METHODOLOGY

The VIA procedures used for this study are consistent with methodologies developed or prescribed by a variety of federal and state agencies, specifically including the NYSDEC visual policy, and in common use for environmental impact assessment within the industry. A fundamental aspect of this methodology is the evaluation of impacts to the visual quality of key views before and after the project is built. The key steps in the process used to assess potential Project visual impacts include determining (1) the visibility of Project facilities throughout the study area, (2) the existing visual quality at key viewpoints, and (3) the degree of change to the existing visual quality at those viewpoints resulting from the Project facilities. The specific techniques used to implement those steps are described in the following section.

4.1 Project Visibility

Tetra Tech undertook an analysis of Project visibility to identify those locations within the study area where there is potential for the proposed wind turbines to be seen from ground-level vantage points. The wind turbines are not the only Project facilities that would be seen by viewers and not the only sources of potential visual impacts. Because of their height the turbines are by far the dominant visual element of the Project, however, and are the focus of the visibility analysis. This analysis included identifying potentially visible areas on viewshed maps, preparing technical cross sections, and verifying visibility in the field. The procedures employed for each component of the visibility analysis is described below.

4.1.1 Viewshed Analysis

Topographic viewshed maps for the study area were prepared using U.S. Geological Survey (USGS) digital elevation model (DEM) data (7.5-minute series) for the study area as the base. Through the ESRI ArcGIS software with the Spatial Analyst extension, the location and elevation (based on a maximum blade tip height of 397 feet above existing grade) of all proposed turbines were added to the DEM base to create a three-dimensional surface with the wind turbines added to the landscape.

The process of identifying the areas from which the proposed Project's wind turbines might be visible is termed a Zone of Visual Influence (ZVI) analysis. The ArcGIS program defines the viewshed (using topography only) by reading every cell of the DEM data and assigning a value based upon straight, line-of-sight visibility from turbine locations throughout the study area. The ZVI data were overlaid on the map of scenic or sensitive visual resources identified within the study area. The resulting topographic viewshed map defines the areas from which any turbine within the completed Project could be seen during daytime hours, ignoring the screening effects of existing structures or vegetation. The viewshed analysis was run initially to illustrate Project visibility within a 5-mile radius of the Project Site. The viewshed analysis was also run using a 7.5-mile radius to evaluate potential Project visibility at sensitive sites outside the standard visual study area boundary.

The visibility pattern resulting from the ZVI analysis described above is a conservative representation of actual Project visibility. First, in some areas where the model indicates visibility of Project facilities, the only visible parts of the facility might be the tips of the turbine blades, which would be hardly noticeable at some locations. In addition, the basic ZVI model is a line-of-sight model that extends from an approximate eye height of 4.9 feet[1] and does not account for attenuating factors such as distance, haze, humidity, background landscape, or weather, any or all of which could make the proposed facility invisible or barely visible from certain locations under many atmospheric or weather conditions. The basic ZVI model also does not account for the screening effects of existing structures or vegetation. In most rural areas the visual screening effects of structures would be highly localized, and the complex effort to incorporate three-dimensional structure data into the model would have little observable effect on a regional-scale viewshed map. In areas with extensive forest cover, however, the screening effects of tall vegetation can substantially reduce the area from which proposed facilities would be visible.

Therefore, the viewshed analysis was repeated with the inclusion of a vegetation layer to better illustrate the potential screening effect of forest vegetation. The with-vegetation Project viewshed analysis identified the extent of forest vegetation within the study area using a vegetation map layer created from USGS National Land Cover Data. Areas of forest cover indicated in this data set were assigned an assumed tree-canopy elevation of 45 feet above ground level. This layer was added to the DEM terrain layer to produce a modified base layer for the viewshed analysis, as described above (using the blade tip height as input data). The ArcGIS program again defined the viewshed by reading every cell of the combined DEM and vegetation data and assigned values based upon straight, line-of-sight visibility from turbine locations throughout the study area. Because forest cover is extensive within the study area for the Jericho Rise Wind farm, the resulting viewshed map is a more accurate forecast of locations from which Project facilities would actually be visible. It is worth noting, however, that certain key characteristics that influence visibility (such as the color of the turbines, their narrow profile, and their distance from the viewer) are not taken into consideration in the viewshed analysis. In addition, the USGS vegetation layer applied in the analysis represents larger areas that have predominantly forest cover, but it does not include many small patches of trees that can still have screening effects on views. Consequently, the existence of an unobstructed line of sight between a specific viewpoint and one or more turbine locations does not necessarily equate to actual Project visibility from that viewpoint.

4.1.2 Cross-Section Analysis

Tetra Tech also performed selected cross-section analyses to confirm the results of the viewshed mapping process. Three representative line-of-sight cross sections, each approximately 16 miles long, were cut through the study area. These cross section locations were chosen to include some of the visually sensitive areas occurring within the study area (e.g., Adirondack Park, villages/hamlets, historic sites) and to represent the various LSZs. The cross–section graphics depict the elevation profile for all points along the section. The points on that profile are based on the underlying topography, as indicated on the 7.5-minute USGS quadrangle DEMs and digital aerial photographs, combined with the forest vegetation layer used in the visibility analysis. A uniform 45-foot tree height was again assumed for this analysis. The cross-section profiles were generated within ArcPLOT, a module within the ArcGIS Analyst software.

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[1] 4.9 feet, corresponds to an eye height of approximately of 5'3", which would include average heights of male, female and child receptors as well as those traveling in vehicles.

4.1.3 Field Investigation

Field investigation within and near the visual study area provided input to the visibility analysis and the evaluation of impacts, and provided the basis for selecting key viewpoints and documenting the existing visual conditions for those viewpoints. Existing conditions in and near the proposed Project area were investigated in the field November 16 through 18, 2006, following preparation of a preliminary viewshed map and map of scenic or visually sensitive resources. The field investigation was also based on an earlier iteration of the Project layout, which included more turbines and additional acreage to the west of the current proposed Project Site. During the site visit, Tetra Tech personnel drove public roads and visited public vantage points within approximately 10 miles of the Project Site. The scenic areas that the ZVI data demonstrated to have no view of the proposed Project area were, in general, not reviewed during the field investigation. In cases where the ZVI analysis was not definitive and the site was accessible by car, a site visit was made. Four turbine coordinates (located in the northwest corner, northeast corner, southeast corner, and middle of the Project Site) were input into a handheld global positioning system (GPS) unit. At each viewpoint, a compass was used to locate one to four of the turbine coordinates (depending on the viewpoint location), and photographs were taken. The site visit provided locational references to verify visibility of the proposed turbines, and photographs to document existing visual conditions and for subsequent use in the development of visual simulations.

From November 16 to 17, 2006, Tetra Tech personnel took 95 photographs from a wide range of of representative locations within the study area. After careful consideration, Tetra Tech personnel selected a subset of those locations considered to have the highest importance and utility to the study. On November 18, Tetra Tech personnel went back to about one-third of those locations with a professional photographer, who took photographs from 36 representative viewpoints within the study area. All professional photographs were obtained using a Canon (1D Mark 2) digital single-lens-reflex camera. The camera used a focal length of 60 mm. This focal length most closely approximates normal human eyesight relative to scale. Viewpoint locations were determined using a handheld GPS unit and field maps. The time and location of each photograph were documented on the handheld GPS unit, and noted on field maps and in the field notes. Appendix C identifies the 36 viewpoints as discussed above.

4.2 Visual Quality and Impact Evaluation

Beyond evaluating potential Project visibility, the VIA also examined the existing visual quality and the visual impact of the proposed wind turbines on the aesthetic resources and viewers within the visual study area. This assessment involved selecting representative viewpoints within the study area, creating computer models of the proposed Project turbines and layout, and preparing computer-assisted visual simulations of the appearance of the proposed Project on the landscape. These simulations were then evaluated to determine the type and extent of visual impact expected to resulting from the Project, based on the degree of change from existing conditions and the expected response of viewers. Details of the VIA procedures are described below.

4.2.1 Viewpoint Selection

As discussed above, Tetra Tech hired a professional photographer to take pictures of existing visual conditions at 36 specific viewpoint locations during the field investigation. From this set of locations, nine locations were selected for use as key viewpoints for development of visual simulations. These viewpoints were selected based on objectives to (1) provide clear, unobstructed views of the Project; (2) illustrate Project visibility from sensitive sites/resources within the extended visual study area; (3) illustrate typical views from each LSZ where views of the Project would be available; (4) illustrate typical views of the proposed Project that would be available to representative viewer/user groups within the study area; and (5) illustrate typical views of different numbers of turbines, from a variety of viewer distances and directions, and under different lighting conditions, to illustrate the range of visual change that would occur during operation of the Project. The location of each selected viewpoint is indicated in Figure 5. Locational details and the criteria for selection of each simulation viewpoint are summarized in Table 5.

Table 5. Viewpoints Selected for Simulations and Impact Evaluation

Viewpoint Number	Visually Sensitive Resource	LSZ Represented	Viewer Group Represented	Viewing Distance1	View Orientation2
Viewpoint 3 CR 24 near Bellmont Center	Cemetery	Village/ Hamlet and Forested	Residents/ Travelers	F and M	NE
Viewpoint 10 CR 24 near Harrigan	Adirondack Park	Adirondack Park	Residents/ Travelers/ Tourists	M and B	NW
Viewpoint 14 Cassidy Road and Number 5 Road	Family Cemetery	Rural Residential/ Agricultural and Forested	Residents	M	W
Viewpoint 15 U.S. 11 east of Chateaugay	No	Rural Residential/ Agricultural	Residents/ Travelers	M	SW
Viewpoint 19 Entrance to High Falls Park	High Falls Park and Campground	Forested	Residents/ Tourists	F and M	S
Viewpoint 20 River Road and Chase Road	No	Rural Residential/ Agricultural and Forested	Residents	F and M	W-SW, NW
Viewpoint 26 South edge, Village of Burke	No	Village/ Hamlet	Residents	B	E-SE
Viewpoint 31 Callahan Road near Gravel Pit	No	Rural Residential/ Agricultural	Residents	B	SE
Viewpoint 34 NY 30 south of Malone	Adirondack Trail Scenic Byway	Rural Residential/ Agricultural	Residents/ Travelers/ Tourists	B	NE

1 F = Foreground (0-0.5 miles), M = Middleground (0.5-3.5 miles), B = Background (>3.5 miles)

2 N = North, S = South, E = East, W = West, NE = Northeast, etc.

4.2.2 Existing Visual Quality Rating

Visual quality measures the degree to which a view expresses the essence of the subject landscape, including landforms, native vegetation, and built features. Visual quality relates to the intrinsic qualities of a landscape, so analysis of existing visual quality is based on the inherent capacity of a landscape to evoke a perceptual response rather than on individual preferences.

The visual quality of a selected scene from a corresponding viewpoint can be described in terms of the overall vividness, intactness, and unity of the view (American Society of Landscape Architects, 1979). Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns. Intactness is the visual integrity of the natural and man-built landscape and its freedom from encroaching elements. Unity is the visual coherence and compositional harmony of the landscape considered as a whole.

Because it is not feasible or necessary to evaluate all possible views of a project, selected views have been chosen that are considered to represent the range of visual resources in the Project study area. Representative views have been chosen to reflect both views that would be seen by the largest numbers of people (i.e., high exposure, and views of people who would be most impacted; and high sensitivity). Key views are distributed throughout the foreground, middleground, and background to reflect the range of viewing distances. There is an emphasis on views from publicly accessible places, because these have the potential to be viewed by the largest number of people.

To make this analysis relevant to this region, the vividness, intactness, and unity of the selected views are compared to other views within the Project study area, rather than to nationally significant landmarks such as the Grand Tetons. In the evaluation of each key view, most immediate foreground elements such as pavement and street signs have been disregarded because their impact depends primarily on the observer's position.

Vividness, intactness, and unity are evaluated and assigned a score of 3 (high), 2 (moderate), or 1 (low) for each key view. These scores are added together and divided by 3 to derive an overall visual quality rating for each selected view, as follows: high—3.0 or 2.67; moderate—2.33, 2.0, or 1.67; or low—1.33 or 1.0). Table 6 explains these visual quality ratings.

Table 6. Visual Quality Scale

Rating	Explanation
3—High	High visual quality applies to key views with an overall score of 3.0 or 2.67 when their vividness, intactness, and unity scores are averaged. High ratings generally correspond to views that embody the fullest expression of intrinsic qualities potentially visible in the Project study area. These views have distinct and uninterrupted visual patterns and display overall harmony between built and natural features.
2—Moderate	Moderate visual quality applies to key views with a score of 2.33, 2.0, or 1.67 when their vividness, intactness, and unity scores are averaged. Moderate ratings generally correspond to views that embody an average expression of intrinsic qualities potentially visible in the Project study area. These views may lack outstanding or memorable expressions of regional character or may have been diminished by some visual encroachment or disorder, but they retain some appeal as the common visual experience of the basin.
1—Low	Low visual quality applies to key views with a score of 1.33 or 1.0 when their vividness, intactness, and unity scores are averaged. Low ratings generally correspond to views that embody a weak expression of the Project study area. These views may have discordant and incoherent elements, or may have major visual intrusions that do not relate harmoniously to the surrounding landscape.

4.2.3 Impact Evaluation Criteria

Table 7 defines impact level ratings used to assess the significance of potential visual impacts from the proposed Project. The impact ratings are based on a comparison of the visual quality ratings, described in Table 6, of the "before" and "after" versions of the selected views. The impact ratings include consideration of the viewer exposure and sensitivity of the primary viewer group for each selected view described above.

Table 7. Definition of Aesthetic Impact Levels

Rating	Explanation
High	Overall visual quality is substantially decreased (a visual quality score decrease of 1.0 or greater) and turbines are visible in areas with high viewer exposure or sensitivity.
Moderate	Overall visual quality is moderately decreased (a visual quality rating decrease of 0.67) and turbines are visible in areas with moderate to high viewer exposure or sensitivity.
Low	Overall visual quality is minimally decreased (a visual quality rating decrease of 0.33 or less) or the turbines are visible in areas with low viewer exposure and sensitivity.

4.2.4 Visual Simulations

To show anticipated visual changes associated with the proposed Project, high-resolution computer-enhanced image processing was used to create realistic photographic simulations of the completed turbines from each of the selected key viewpoint locations. This process involved using digital terrain data and GPS data collected in the field to create a three-dimensional map using ArcScene. This data assisted in the creation of a panoramic overlay that was imported into Adobe Photoshop as a guide for placing individual turbine images onto a high-resolution version of the same panoramic photograph background. The photographic simulations were developed in Adobe Photoshop based on turbine locations, turbine specifications, representative turbine photographs, and survey coordinates depicted in overlays. Photograph sequences of each viewpoint were manually combined and blended in Adobe Photoshop to create panoramic images of the horizon. For the purposes of this analysis, it was assumed that all new turbines would be Vestas V82 machines. The turbine specifications used in this VIA are shown in Appendix A.

Individual turbine renderings were created in Adobe Illustrator with rotors at various positions, adding color, highlights, and sun shadows. These data were superimposed over the high-resolution panoramic photograph backgrounds in Adobe Photoshop, where the turbines were then manually blended into the high-resolution panoramic site photograph. This process ensures that Project elements are shown in proportion, perspective, and proper relation to the existing landscape elements in the view. Consequently, the alignment, elevations, dimensions, and locations of the proposed turbines would be accurate and true in their relationship to other landscape elements in the photograph.

5. VISUAL IMPACT ASSSESMENT RESULTS

5.1 Project Visibility

5.1.1 Daytime Visibility

Figure 6a and Figure 6b show the viewshed map resulting from implementation of the turbine visibility analysis described above, based on daylight viewing conditions and the blade-tip height of the turbines, including and excluding the vegetation layer, respectively. Based on line-of-sight analysis from all cells in the DEM model (including the vegetation layer) to all turbine-tip elevation points, the GIS software identified how many turbines would be visible from any given point within the study area. As discussed previously, the visibility analysis is considered to be a conservative representation of actual turbine visibility because the slender profile of the turbines, the effects of distance or atmospheric conditions on visibility, and screening from hedgerows, street trees and structures are not accounted for in the viewshed analysis.

Review of the viewshed map indicates that topography and vegetation would block views of the Project turbines from most of the study area, particularly with increasing distance from the Project. Table 8 summarizes the viewshed analysis within the standard (5-mile radius) and extended (7.5-mile radius) visual study area.

Table 8. Summary of Viewshed Analysis

Type of Viewshed/ Turbines Visible	Standard Visual Study Area (5-mile Radius Viewshed)			Extended Visual Study Area (7.5-mile Radius Viewshed)		
	Total Acres	Visible Acres	Percent Visible	Total Acres	Visible Acres	Percent Visible
Daytime Topography with Vegetation Cover	105,382	19,434	18.44%	175,047	23,099	13.20%
0 Visible	105,382	85,948	81.56%	175,047	151,948	86.80%
1-10 Visible	105,382	9,076	8.61%	175,047	10,601	6.06%
11-20 Visible	105,382	4,113	3.90%	175,047	4,705	2.69%
21-30 Visible	105,382	2,455	2.33%	175,047	2,869	1.64%
31-40 Visible	105,382	1,762	1.67%	175,047	2,115	1.21%
41-53 Visible	105,382	2,028	1.92%	175,047	2,810	1.61%
Nighttime Topography with Vegetation Cover – 1 or More Visible	105,382	14,500	13.76%	175,047	16,511	9.43%

Calculations derived from the line-of-sight visibility analysis indicate that one or more turbines would be visible during the day from approximately 18 percent of the standard visual study area, and 13 percent of the extended visual study area. No turbines would be visible from the remaining 82 percent of the standard visual study area, and from 87 percent of the extended visual study area.

As indicated in Figure 6, potential visibility of Project turbines tends to occur in relatively confined patches, and does not extend over broad swaths of the visual study area. Nevertheless, there are a number of somewhat larger patches of Project visibility distributed to the northwest, north, northeast, and east of the Project Site. Many of the visually sensitive sites within 5 miles of the Project area fall within the viewshed (i.e., the ZVI analysis determined that Project facilities could be visible from these locations). These features include some locations in the Villages of Burke and

Chateaugay; the Hamlets of Bellmont Center, Burke Center, Cooks Mill, Sun, Thayers Corner, Brainardsville, Brayton Hollow, Blairs Kiln, Earlville, and Harrigan (note that the visibility analysis ignored the screening effects of existing structures for both villages and hamlets); multiple sites on or eligible for listing on the National and State Register of Historic; and several well-traveled roadways, including multiple areas along U.S. Highway 11 and New York Highways 374 and 190. Conversely, Project turbines would not be visible from the vast majority of the Adirondack Park lands (areas south of County Route 24) within the standard or extended visual study area. The visibility map includes a limited number of relatively small patches from which Project facilities would be visible; most of these are located along the northern boundary of the Park, in scattered locations near the Chateaugay River or on Lower Chateaugay Lake, and in a few locations east of New York Highway 374. Figure 6 also indicates that the rolling terrain would block views of the Project from most of the areas north of U.S. Highway 11.

In most areas where potential Project visibility is indicated, those expected views would include multiple turbines. Within the Project Site, most of the shaded patches on Figure 6 indicate that 21 to 30, 31 to 40, or 41 to 53 turbines would be visible. Similarly, there are a number of patches outside the Project Site, primarily to the east, from which 41 to 53 turbines could be visible. Among all locations outside the Project Site from which the Project could be visible, however, the most common condition is that the view would include from 1 to 10 turbines. This is particularly the case near U.S. Highway 11 and other locations to the north of the Project.

Review of the outer reaches of the viewshed map indicates that potential Project visibility decreases significantly outside of the 5-mile radius of the Project. The proposed Project would be potentially visible from approximately 13 percent of the extended visual study area. Patches of Project visibility are largely absent from the band of the study area more than 5 miles but within 7.5 miles of the Project, as extensive valley and hillside areas and some tree cover would block views toward the Project from most of this area. Notable exceptions include relatively large patches of Project visibility near County Road 122 several miles northwest of Burke, near Canada within about 1 mile of the international border, and between Gagnier Road and U.S. 11 east of the Project in Clinton County. Most of the visually sensitive resources in the 5- to -7.5-mile area, including most areas within the Adirondack Park boundary; the Village of Malone; the Hamlets of North Burke, Sun, Blairs Kiln, Earlville, Harrigan, and Teboville; and the majority of National and State Register-listed or eligible for listing historic sites in the area would be screened from views of the Project by topography and/or vegetation. Sensitive resources in this zone determined to be within the viewshed of the Project include the Hamlets of Cooks Mill and Malone Junction, and a few small portions of Adirondack Park.

As discussed above, there may be up to approximately 167 properties within 7.5 miles of the Project that are listed on or eligible for listing on the National or State Register of Historic properties. Site data provided by the NYSHPO indicate that approximately 81 of these sites are within 5 miles of the Project, and therefore considered visually sensitive resources under the NYSDEC visual policy. The visual impact analysis included assessment of the potential indirect effects of the Project on these architectural historic resources, and on comparable resources within the extended visual study area.

Table 9 summarizes the results of visibility analyses conducted for the identified architectural historic resources within 5 miles of the Project area. When Project visibility was mapped and analyzed on the basis of topography alone, the results indicated that at least 1 turbine would be visible from 70 of the 81 architectural historic resources, and that 31 of the sites could have views of more than 40 of the Project turbines. When the vegetation layer was applied in the analysis, to account for the screening effects of existing larger forest stands, the results showed that 33 of the 81 sites would not likely be exposed to views of the turbines. The vegetation layer does not account for existing buildings and structures, therefore, the multiple sites located within the Village of Chateaugay would likely not be exposed to views of the turbines. In addition, relatively few of the architectural historic resources likely would have views of large numbers of turbines; views from 14 of the sites were calculated to include more than 20 turbines.

Table 9. Visibility Analysis Summary—Number of Architectural Historic Resources and Turbine Visibility[1]

Number of Turbines Visible	Based on Topography Only	Based on Topography and Vegetation
0	11	33
1-10	5	23
11-20	19	11
21-30	10	3
31-40	5	5
41-53	31	6
Total	**81**	**81**

1 Based on sites within standard visual study area

Site-specific investigation would be required to conclusively determine the level of visual impact on any architectural historic resources exposed to views of Project turbines. Most of the historic properties are located amidst other existing development, particularly within villages or hamlets in the study area, where adjacent structures might well block views that the visibility analysis indicates would otherwise exist. In addition, potential impacts on any individual resource would need to be evaluated within the context of the current visual setting for that resource. Depending upon the circumstances, the prominence of Project turbines in views from an historic resource could represent a substantial incremental change to the visual setting for that resource. Conversely, for other resources it may be that visual intrusions from other developed features on the landscape have already compromised the historical setting for a listed or eligible site, and the incremental change created by the Project would be minor. The Final EIS will include a more definitive analysis of potential Project effects on architectural historic resources, based on additional mapping and consideration of site-specific factors.

5.1.2 Cross Section Analysis

The results of the cross-section analyses (Figures 7 - 10) are consistent with the visibility analysis, and illustrate how topography, vegetation, and and/or structures would block potential Project visibility along selected lines of sight. This analysis confirms that potential views of the Project from most of the visually sensitive sites within the extended study area are likely to be at least partially screened. This analysis finds that at least one Project turbine would be visible from 32 percent of the points along Cross Section 1, 26 percent of the points on Cross Section 2, and 19 percent of the points on Cross Section 3. Figures 8, 9, and 10 illustrate the graphic profile for each line of sight section (Cross Sections 1-3). This shows that Section 3, for example, confirms a lack of visibility from most key areas within the Adirondack Park, such as along the Chateaugay River and New York Highway 374. All three sections indicate that woodlots and wooded ravines would effectively screen vies to the Project along stream corridors and sections of area roadways. Buildings would effectively screen ground-level views from within villages and hamlets, such as the Village of Burke (Figure 8, Section 1), and the Village of Chateaugay and Hamlet of Bellmont Center (Figure 9, Section 2). Because many historic sites are located within existing communities, most historic sites in the Towns of Burke and Chateaugay are not likely to have views of Project turbines. The sections do suggest that views of Project turbines are likely to be available from many of the heavily-traveled roads in the study area, and possibly from the upper floors of some homes in the villages and hamlets.

5.1.3 Nighttime Visibility

The visibility analysis was repeated to identify locations within the standard and extended study areas from which Project turbines could be visible at night. The proposed lighting plan for the Project indicates that 22 of the 53 proposed turbines would be equipped with medium-intensity, synchronous-flashing red lights mounted on the nacelles, to meet FAA aviation safety objectives. This analysis followed the same GIS procedures that were used for the daytime visibility analysis, but in this instance the analysis was based on the turbine hub height (262 feet) and the locations of the 22 turbines to be lit.

The FAA reviewed the proposed Project lighting plan submitted by the Applicant and suggested minor changes to the plan. The revised lighting plan, reflecting the FAA review, is included in Appendix D.

The results of the nighttime visibility analysis are shown in Figure 11. The last line of Table 8 above summarizes the calculations derived from the line-of-sight night visibility analysis. They indicate that one or more turbines would be visible from approximately 14 percent of the standard visual study area, and 10 percent of the extended visual study area. Conversely, no lit turbines would be visible from the remaining 86 percent of the standard visual study area, and from 90 percent of the area within the extended visual study area.

5.2 Analysis of Existing and Simulated Views

To illustrate anticipated visual changes associated with the proposed Project, photographic simulations of the completed Project from each of the nine selected viewpoints indicated in Figure 5 were developed. Comparison of photographs of the existing views and the simulations allowed for aesthetic characterization of each view with and without the proposed Project, and provided the basis for evaluation of Project effects on the existing visual quality. The following discussion summarizes the results of the assessment of viewer groups and visual quality for each viewpoint. Each summary includes a description of the viewpoint location, the existing and with-Project landscape conditions, viewer group exposure and sensitivity ratings, and the overall visual quality rating of the selected views.

5.2.1 Viewpoint 3 – Franklin County Route 24, Bellmont Center

Viewpoint 3 is at the edge of a cemetery off County Route 24 (Brainardsville Road) near the Hamlet of Bellmont Center, approximately 0.5 mile to the southwest from the nearest proposed turbine. The scene from this location is typical of views available to local residents and travelers in the village/hamlet and forested LSZs in and along the southern portion of the Project Site.

5.2.1.1 Existing View

The existing view includes a two-lane asphalt road and roadside utility poles in the foreground. Beyond the road but still within the foreground are wooded areas and open fields, backed by a continuous line of forest vegetation in the middleground. Topography is relatively level, and the tree line, field edges, fence, and overhead utility lines all create strong horizontal lines in this view. Distant (background) views are blocked by the middleground tree line. The overall existing visual quality of this viewpoint is rated as moderate (a combined rating of 2.33 when the vividness, intactness and unity scores are averaged). Figure 12A shows the existing view and Figure 12B is a simulation of the view with the Project. Table 10 provides a summary of viewer group exposure and sensitivity characteristics, as well as the existing and with-Project visual quality ratings.

Table 10. Viewpoint 3 Impact Evaluation

Viewer Information		
Viewer	**Viewer Exposure**	**Viewer Sensitivity**
Residents	Moderate. The number of residents is small, but some are very close to the Project and will have direct views of the turbines.	High. Residents are highly sensitive to landscape change visible from their homes, especially residents with a foreground view of the Project.
Travelers	Low. Travelers on this County Route would see glimpses of the Project. However, this route is not heavily trafficked.	Moderate. Travelers driving on local roads are somewhat aware of changes in the visual environment and many of the motorists would be on their way to their homes.
Existing Visual Quality: Moderate (Rating = 2.33)		
Vividness	**Intactness**	**Unity**
2—View contains an average skyline, but does offer views off in the distance. View also offers a range of vegetation consisting of open land and deciduous trees.	2—View affected by utility lines and poles parallel to the existing paved road.	3—Layered progression of visual elements from the valley floor, to the distant landscape. Strong and harmonious vegetation patterns include open land and forest, with housing structures, surrounded by trees in the distance.
With-Project Visual Quality: Moderate (Rating = 1.67)		
Vividness	**Intactness**	**Unity**
1—Dramatic height and light color of turbines are vivid elements in the foreground, but are less noticeable the in the middleground. Foreground turbines appear out of scale.	2—The white turbines contrast sharply with the brown and green colors of the trees and open land, but do not contrast sharply with the sky.	2—Visual progression from foreground to background is severed by the turbines. Their arrangement does not clearly relate to topography or a discrete form.
Impact Level: Moderate (0.67 difference)		

5.2.1.2 Proposed Project

As shown in Figure 12B, several turbines of the completed Project rise above the middleground tree line. The trees screen the bases of the nearest turbines, and all but the blade tips of the more distant turbines. The turbines present a strong contrast with the existing landscape, in terms of their form, line, and (particularly) scale. The nearest turbines appear large and out of scale with the surrounding landscape. The turbines in the background are partially screened from view, however, and their color blends fairly well with the sky. The turbines could have a moderate degree of aesthetic impact, but are compatible with the agricultural land use and may add an element of visual interest to some viewers. The overall visual quality at this viewpoint with the Project is rated as moderate (rating 1.67). The level of visual impact, based on the difference between the existing and with-Project visual quality ratings, is moderate (difference of 0.67).

5.2.2 Viewpoint 10 – Franklin County Route 54

Viewpoint 10 is adjacent to County Route 54 near the Hamlet of Harrigan, approximately 3 miles to the southeast from the nearest proposed turbine and within the Adirondack Park boundary. The scene from this location is typical of views available to local residents and travelers in the village/hamlet zone, as well as the Adirondack Park zone.

5.2.2.1 Existing View

The existing view includes a two-lane asphalt road and roadside utility poles in the foreground. Beyond the road but still within the foreground and middleground are wooded areas and open fields that do not appear to be in active agricultural use. Topography is relatively level with a slight decrease in slope in the middleground and background. The tree line, field edges, and overhead utility lines all create strong horizontal lines in this view. Because the slope decreases in the background, distant views are generally below the middelground tree line. The overall existing visual quality at this viewpoint is rated as moderate (a rating of 2.33). Figure 13A shows the existing view and Figure 13B is a simulation of the view with the Project. Table 11 provides a summary of viewer group exposure and sensitivity ratings, as well as the existing and with-Project visual quality ratings.

Table 11. Viewpoint 10 Impact Evaluation

Viewer Information		
Viewer	**Viewer Exposure**	**Viewer Sensitivity**
Residents	Moderate. The number of residents is small, but some of them will have direct middleground views of the turbines if they look for them.	Moderate. Residents are highly sensitive to landscape change visible from their homes, especially residents with a foreground view of the Project. These views are in the middleground and are less noticeable.
Travelers	Low. Travelers on this County Route would see glimpses of the Project. However, this route is not heavily trafficked.	Moderate. Travelers driving on local roads are somewhat aware of changes in the visual environment and many of the motorists would be on their way to their homes.
Tourists	Low. Tourists would see glimpses of the Project between the trees.	Moderate. Tourists would have relatively high sensitivity based on the viewpoint location within Adirondack Park.

Existing Visual Quality: Moderate (Rating = 2.33)		
Vividness	**Intactness**	**Unity**
3—View contains an average skyline, but does offer some views off in the distance through breaks in trees. View also offers a range of vegetation consisting of open land and deciduous trees.	2—Views includes utility lines and poles parallel to the existing paved road. Colors include yellows, greens, and browns.	2—Layered progression of visual elements from the foreground, to the distant landscape. Strong and harmonious vegetation patterns include predominantly open land and trees.
With-Project Visual Quality: Moderate (Rating = 2.0)		
Vividness	**Intactness**	**Unity**
2—The turbines are barely noticeable in the middleground. Unless the viewer is aware and looking for the turbines, they blend in with the skyline.	2—The white turbines contrast with the predominantly brown colors of the trees in this seasonal view, but do not contrast sharply with the sky.	2—Visual progression from foreground to background is not broken by the turbines. They appear to fit in with the trees and skyline in this view.
Impact level: Low (0.33 difference)		

5.2.2.2 Proposed Project

The visibility analysis conducted for the Project indicated that perhaps five turbines would be visible from this location. As shown in Figure 13B, only the blade and/or upper tower portions of three turbines can be discerned through the trees in the left-center portion of the view (note the arrows in the simulation). Under the cloudy sky conditions of this view, and at this distance, the turbines present minimal color contrast with the sky or vegetation. Their height above the more distant trees indicates their large size, but their vertical line and form (not color) is consistent with the tree trunks and branches included in this view. At this distance, the turbines do not create significant contrast with the strong horizontal lines and foreground elements that dominate the landscape. Given the limited visibility of the turbines, viewers at this location would likely notice the turbines only if they were specifically looking for them. It should be noted that Figure 13B depicts conditions in the fall, after the trees have lost their leaves; during spring and summer, leaves on the trees might screen virtually all evidence of turbines at this location. In addition, most areas along County Route 54 have more tree cover close to the road than is seen at Viewpoint 10, meaning the turbines likely would not be visible at all in most locations along this road. Based on Figure 13B, the turbines do not diminish the aesthetic quality of the view and should not have a significant impact on affected viewers in this location. The overall visual quality at this viewpoint with the Project is rated as moderate (rating 2.0). The overall level of visual impact is low (difference of 0.33).

5.2.3 Viewpoint 14 – Cassidy/Number 5 Roads

Viewpoint 14 is at the intersection of Cassidy Road and Number 5 Road, north of the Hamlet of Brainardsville and approximately 1 mile to the northeast from the nearest turbine. This view is representative of views that are available to local residents in the rural residential/agricultural LSZ.

5.2.3.1 Existing View

The panoramic image of the existing view from this location conveys the sense of openness and the availability of views in multiple directions. The existing view is dominated by large, open agricultural fields in the foreground and forested areas in the middleground. A paved road and roadside utility poles follow the fields in the foreground. Rural homes and farm buildings are located along the road frontage, and are focal points in the existing view. The landform is relatively flat, and forested areas in the background form a gently undulating horizon line. The tree line, field edges, fence, road, and overhead utility lines all create strong horizontal lines in this view. The overall existing visual quality of this viewpoint is moderate (rating 2.33). Figure 14A is a photograph of the existing view and Figure 14B simulates the view with the Project. Table 12 provides a summary of viewer group exposure and sensitivity ratings, as well as the existing and with-Project visual quality ratings.

Table 12. Viewpoint 14 Impact Evaluation

Viewer Information		
Viewer	**Viewer Exposure**	**Viewer Sensitivity**
Residents	Moderate to High. The number of residents is small, but some of them are very close to the Project and would have direct foreground views of the turbines.	High. Residents are highly sensitive to landscape change visible from their homes, especially residents with a foreground and middleground views of the Project.
Existing Visual Quality: Moderate (Rating = 2.33)		
Vividness	**Intactness**	**Unity**
2—View contains a tree-lined skyline. View also offers a range of vegetation consisting of agricultural land, which rises to forested land.	2—Views of utility lines and poles parallel the existing paved road. Several houses are in the view.	3—Layered progression of visual elements from the foreground to the distant tree-lined landscape. Strong and harmonious vegetation patterns include agricultural land and housing structures, surrounded by trees in the distance.
With-Project Visual Quality: Low (Rating = 1.33)		
Vividness	**Intactness**	**Unity**
1—Dramatic height and light color of turbines are vivid elements in the foreground and middleground. Many turbines rise above the tree-line and appear out of scale with the existing landscape.	1—The white turbines contrast sharply with the yellow, brown, and green colors of the trees and agricultural land, but do not contrast as sharply with the sky.	2—Visual progression from foreground to background is severed by the turbines. Their arrangement does not clearly relate to topography or a discrete form and adds a noticeable degree of clutter to the scene.
Impact level: High (1.0 difference)		

5.2.3.2 Proposed Project

As shown in Figure 14B, multiple turbines (more than half of the total Project) would be visible across the full field of view during operation of the proposed Project. These turbines occur at various distances, all beyond the open fields in the foreground and situated in the forested areas in the middleground. Each turbine's line, form, and scale are in strong contrast with the existing features of the landscape. Their scale contrast is heightened by their presence within the existing trees and constructed features in the view. The turbines appear somewhat compatible with the working agricultural landscape in the foreground, but their size and quantity overwhelms the existing features of the landscape. They appear incompatible with the rural residential land use and add an industrial element to the landscape. The turbines now dominate the view and become the visual focal points. The Project would have a high adverse impact on this view, based on the change in visual quality ratings and the exposure and sensitivity for the nearby residents. The with-Project visual quality of this viewpoint is low (rating 1.33). The level of visual impact is rated as high (difference of 1.0).

5.2.4 Viewpoint 15 – U.S. Highway 11

Viewpoint 15 is on U.S. Highway 11, approximately 1 mile east of the Village of Chateaugay and 3 miles to the northeast from the nearest turbine. The view at this location is typical of views that would be available to local residents and commuters/travelers in the rural residential/agricultural LSZ.

5.2.4.1 Existing View

This roadside view features an open field surrounded by trees with foreground views including several buildings and a water tower that hovers above the tree line and are focal points in the existing view. The low-lying buildings of a correctional center can be seen through the trees in the middleground. The landform is relatively level, although elevation appears to decrease slightly with distance. This combination allows fewer distant background views, and tends to compress the middleground and background into a narrow, horizontal band at the tree line. The open fields and lack of large trees in the foreground create a sense of openness and an expansive view of the overcast sky from this viewpoint. The overall existing visual quality of this viewpoint is moderate (rating 2.0). Figure 15A shows the existing view and Figure 15B is a simulation of the view with the Project. Table 13 provides a summary of viewer group exposure and sensitivity ratings, as well as the existing and with-Project visual quality ratings.

Table 13. Viewpoint 15 Impact Evaluation

Viewer Information		
Viewer	**Viewer Exposure**	**Viewer Sensitivity**
Residents	Low. The number of residents is small; some of them are relatively close to the Project, but should not have direct views of the turbines.	Moderate. Residents are highly sensitive to landscape change visible from their homes, especially residents with a foreground view of the Project.
Travelers	Moderate. Travelers on U.S. Highway 11 would see most portions of the Project except where trees block the view. This highway is heavily trafficked.	Moderate. Travelers driving on local roads are somewhat aware of changes in the visual environment and many of the motorists would be on their way to their homes.
Existing Visual Quality: Moderate (Rating = 2.0)		
Vividness	**Intactness**	**Unity**
2—View contained at tree-lined horizon, and does not offer views beyond the middleground. View also offers a range of vegetation consisting of open land and deciduous trees in the distance.	2—Views of existing structures, including a water tower that rises above the tree line. Additional structures are visible beyond the trees.	2—Layered progression of visual elements from open land in foreground to distant trees in the middleground. Vegetation patterns include open land with ground cover and housing and institutional structures, surrounded by trees in the distance.
With-Project Visual Quality: Moderate (Rating = 1.67)		
Vividness	**Intactness**	**Unity**
1—The turbines do not appear out of scale with the existing view, but blend with the existing tree line. They do not reduce the vividness of the scene.	2—The white turbines do not contrast sharply with skyline and cannot be seen through the brown and green colors of the trees.	2—Visual progression from foreground to background remains similar to the existing view.
Impact level: Low (0.33 difference)		

5.2.4.2 Proposed Project

As shown in Figure 15B, multiple turbines appear beyond the tree line along several areas of the horizon. The line, color, and scale of the turbines are consistent with the middleground tree line. At this distance, the turbines are not overwhelming in scale, and do not appear very large relative to the existing trees and the nearby structures. Their color blends well with the cloudy sky, although some shadows on the back of the blades and towers heighten contrast with the sky. Although the turbines punctuate the skyline, they complement the undulation of the vegetation mass, and at this distance, they appear in balance with the land and sky. In this view, the water tower remains the focal point because it stands out above the tree line, whereas the turbines are at the same level with the tree line and nearby buildings. The overall visual quality at this viewpoint with the Project is rated as moderate (rating 1.67). The overall level of visual impact is low (rating 0.33).

5.2.5 Viewpoint 19 – High Falls Park

Viewpoint 19 is at the entrance to High Falls Park, off River Road outside of the Village of Chateaugay. The viewpoint is approximately 0.5 mile to the northwest from the nearest turbine. It is typical of the views that are available to some local residents and tourists within the forested LSZ, and represents a visual resource of local significance.

5.2.5.1 Existing View

The existing view features a gravel entrance road with open fields on either side. The paved road beyond the park entrance provides a defined visual edge that carries the viewer's eye to the point where the topography changes from open fields to forested areas in the middleground view. In the middleground, there are patches of agricultural land intermingled with forested land. A rural residence exists behind some trees in the middleground. Some utility poles and overhead lines are located along the roadway, but are no higher than tree line so do not introduce strong vertical elements to the view. The overall existing visual quality at this viewpoint is moderate (rating 2.33). Figure 16A is a photograph of the existing view and Figure 16B simulates the view with the Project. Table 14 provides a summary of viewer group exposure and sensitivity ratings, as well as the existing and with-Project visual quality ratings.

Table 14. Viewpoint 19 Impact Evaluation

Viewer Information		
Viewer	**Viewer Exposure**	**Viewer Sensitivity**
Residents	Moderate. The number of residents is small, but some of them are very close to the Project and would have direct views of the turbines.	High. Residents are highly sensitive to landscape change visible from their homes, especially residents with a foreground view of the Project.
Tourists/Park Users	Moderate. Tourists and park users would have direct views of the turbines on approach to the park and see glimpses of the Project between the trees while on site.	High. Tourists and park users would have high sensitivity to the Project based on its location in a park setting and the activity orientation of park users.

Existing Visual Quality: Moderate (Rating = 2.33)		
Vividness	**Intactness**	**Unity**
2—View contains an average tree-lined skyline, which offers foreground and middleground views of the Project. View also offers a range of vegetation consisting of open grassy areas deciduous trees, and pockets of agricultural land.	2—Utility lines and poles parallel the existing paved road, but blend in with the existing trees.	3—Layered progression of visual elements from green grassy foreground areas to the distant trees. Strong and harmonious vegetation patterns include open land and forest, with housing structures hidden behind the trees in the distance.
With-Project Visual Quality: Low (Rating = 1.33)		
Vividness	**Intactness**	**Unity**
1—Dramatic height and light color of turbines are vivid elements in the middleground. They create strong contrast with the existing landscape.	1—The white turbines contrast sharply with the brown and green colors of the trees and grassy areas, but do not contrast sharply with the sky. They extend beyond the tree line.	2—The turbines clutter the seam between grassy areas in the foreground and the tree line and disrupt transition from foreground to middleground.
Impact level: High (1.0 difference)		

5.2.5.2 Proposed Project

As shown in Figure 16B, multiple turbines are visible across the full field of view and they alter the horizon line. These turbines occur at various distances, although all are beyond the open fields and road in the foreground. They are situated in the forested and agricultural areas in the middleground. Each turbine's line, form, and scale are in strong contrast with the existing features of the landscape. Their scale contrast is heightened by their vertical presence among the existing trees and few manmade structures in the view. The turbines do not appear compatible with the forested/park-like landscape in the foreground, because their size and quantity overwhelms the existing features of the landscape. They appear incompatible with the current land use and add an industrial element to the landscape. The turbines are now prominent in the view and provide new visual focal points. The Project would have a moderate to high adverse impact on this view, based on the visual quality changes discussed above. When viewer exposure and sensitivity characteristics are factored in the overall impact to views for tourists, local park users and nearby residents would generally be considered high. The overall with-Project visual quality of this viewpoint is rated as low (rating 1.33). The overall level of visual impact is high (difference of 1.0).

5.2.6 Viewpoint 20 – River/Chase Roads

Viewpoint 20 is located at the intersection of River Road and Chase Road outside of the Village of Chateaugay, approximately 0.25 mile to the east from the nearest turbine. This view is representative of typical foreground and middleground views along the eastern portion of the Project area, where agricultural land and forested land connect.

5.2.6.1 Existing View

The panoramic view from this location conveys the sense of openness and the availability of views in multiple directions. The existing view is dominated by large, open agricultural fields in the foreground with forested areas in the middleground and background. A farm home and its associated structures are located within the agricultural land setting, and are focal points in the existing view. Landform is relatively flat, and forested areas in the background give the impression of an undulating horizon line. The tree line and field edges all create strong horizontal lines in this view. The overall existing visual quality of this viewpoint is moderate (rating 2.0). Figure 17A shows the existing view and Figure 17B is a simulation of the view with the Project. Table 15 provides a summary of viewer group exposure and sensitivity ratings, as well as the existing and with-Project visual quality ratings.

Table 15. Viewpoint 20 Impact Evaluation

Viewer Information		
Viewer	**Viewer Exposure**	**Viewer Sensitivity**
Residents	Moderate to High. The number of residents is small, but some of them are very close to the Project and would have direct views of the turbines.	High. Residents are highly sensitive to landscape change visible from their homes, especially residents with a foreground view of the Project.
Existing Visual Quality: Moderate (Rating = 2.0)		
Vividness	**Intactness**	**Unity**
2—View contains an average tree-lined skyline, with foreground views of agricultural fields and houses and buildings. It offers a mix of vegetation.	2—View includes fences and structures, such as a house and farm buildings. Light green and dark green colors appear in this view.	2—Layered progression of visual elements from the agricultural land, to the trees in the distant landscape. Strong and harmonious vegetation patterns and color appear.
With-Project Visual Quality: Low (Rating = 1.33)		
Vividness	**Intactness**	**Unity**
1—Dramatic height and light color of turbines are vivid elements in the foreground and create strong contrast. Views in the middleground are not as distinct.	1—The white turbines contrast sharply with the brown and green colors of the trees and open land, but do not contrast sharply with the sky.	2—Visual progression from foreground to background is diminished by the turbines. Their arrangement does not clearly relate to topography or a discrete form.
Impact level: Moderate (0.67 difference)		

5.2.6.2 Proposed Project

As shown in Figure 17B, multiple turbines are visible across the full field of view in the foreground and middleground. These turbines occur at various distances, within the open fields in the foreground, as well as in the forested areas in the middleground. The turbines present strong contrast with the existing landscape, in terms of their form, line, and scale. The nearest turbines appear large and out of scale with the surrounding landscape. However, the turbines in the background are partially screened at the base by the surrounding trees and their color blends fairly well with the sky. The turbines appear somewhat compatible with the working agricultural landscape in the foreground, but their size and quantity overwhelms the existing features of the landscape, and they add an industrial element to the landscape. The turbines are now prominent in the view and provide new visual focal points. The turbines would cause a moderate degree of change in the visual quality of this scene, although they are compatible with the agricultural land use and could add an element of visual interest for some viewers. The overall with-Project visual quality of this viewpoint is rated as low (rating 1.33), as is the impact level based on the difference (0.67) in visual quality ratings. While the viewer sensitivity in this location is expected to be high and residents would have foreground views of one or two turbines, the low number of viewers is consistent with a moderate overall impact rating.

5.2.7 Viewpoint 26 – Village of Burke

Viewpoint 26 is along Field Road heading south out of the Village of Burke, approximately 2.25 miles to the northwest from the nearest turbine. This viewpoint provides a typical middleground and (primarily) background view toward the Project area. It is representative of both the hamlet/village LSZ and the rural residential/agricultural LSZ in the northwest portion of the study area.

5.2.7.1 Existing View

A house, vehicle, and sidewalk, as well as adjacent open fields and relatively level topography define the foreground of this view, while a solid band of trees backs the field in the middleground. The view is enclosed and framed by a house on the left corner of the photograph and branches of trees along the sidewalk and road on the right side of the photograph. Another rural residence is located in the middleground, but does not stand out above tree line. The overall existing visual quality of this viewpoint is moderate (rating 2.33). Figure 18A shows the existing view and Figure 18B simulates the view with the Project. Table 16 provides a summary of viewer group exposure and sensitivity ratings, as well as the existing and with-Project visual quality ratings.

Table 16. Viewpoint 26 Impact Evaluation

Viewer Information		
Viewer	**Viewer Exposure**	**Viewer Sensitivity**
Residents	Moderate. The number of residents is still relatively small, but because it is at the edge of a village, it is higher than in the rural parts of the study area.	High. Residents are highly sensitive to landscape change visible from their homes, especially residents with a foreground view of the Project.
Existing Visual Quality: Moderate (Rating = 2.33)		
Vividness	**Intactness**	**Unity**
3—View contains structure and trees in the immediate foreground, with open fields in the middleground. Horizon is tree-lined in the background.	2—Structures can be seen in both the foreground and middleground.	2—Layered progression of visual elements from open fields to the distant landscape that includes a band of trees. Strong and harmonious vegetation patterns include open land and trees in the distance with some distant structures surrounded by trees.
With-Project Visual Quality: Moderate (Rating = 2.0)		
Vividness	**Intactness**	**Unity**
2—Dramatic height and light color of turbines are noticeable elements in the middleground and background. The turbines can be seen above the tree-lined horizon.	2—The white turbines contrast with the brown, green, and yellow colors of the trees and open land, but are less noticeable because they are seen against the sky.	2—Visual progression from foreground to background is diminished slightly by the turbines. Their arrangement does not clearly relate to topography or a discrete form.
Impact level: Low (0.33 difference)		

5.2.7.2 Proposed Project

As shown in Figure 18B, multiple turbines stretch across most of the field of view. The turbines rise above the tree line in the middleground and background, accentuating their scale contrast with the existing vegetation and topography. However, their impact is mitigated by the effects of distance and their position above the treeline, where their color blends fairly well with the sky. They appear to recede into the backdrop of the sky and replicate the form and pattern of the existing vertical tree line. At this distance, scale contrast is minimized and rural character is maintained. Given the distance, the turbines could have a low degree of aesthetic impact, based on the visual quality ratings. While the location of the view is at the edge of the Village of Burke, where viewer sensitivity would be high, the low number of viewers does not suggest the impact level should be increased based on viewer characteristics. The overall with-Project visual quality at this viewpoint is rated as moderate (rating 2.0). The overall level of visual impact is low (difference of 0.33).

5.2.8 Viewpoint 31 – Callahan/Covey Roads

Viewpoint 31 is near the intersection of Callahan Road and Covey Road, approximately 4 miles to the north from the nearest turbine. This view represents typical rural residential/agricultural LSZ background views north of the Project area near the U.S./Canada border.

5.2.8.1 Existing View

The existing view is dominated by pastureland with grazing cattle and a barn in the foreground. The land form slopes gently upward, and a solid line of trees in the middleground helps to define the background/horizon line. A paved road and roadside utility poles follow the fields in the foreground. Strong horizontal lines are created by the utility poles and lines located along the road, as well as the barn, and tree line in the distance. The overall existing visual quality of this viewpoint is moderate (rating 2.33). Figure 19A is a photograph of the existing view and Figure 19B simulates the view with the Project. Table 17 provides a summary of viewer group exposure and sensitivity ratings, as well as the existing and with-Project visual quality ratings.

Table 17. Viewpoint 31 Impact Evaluation

Viewer Information		
Viewer	**Viewer Exposure**	**Viewer Sensitivity**
Residents	Low to Moderate. The number of residents is small and the location is distant from the turbines.	Moderate to High. Residents are highly sensitive to landscape change visible from their homes, especially residents with a view of the Project here, however, residents would notice the turbines only if they were looking for them.
Existing Visual Quality: Moderate (Rating = 2.33)		
Vividness	**Intactness**	**Unity**
2—View contains a tree-lined skyline, with views of the pastureland in the foreground, views of trees in the middleground, and background views towards higher upland areas.	2—Views of utility lines and poles parallel the existing paved road.	3—Layered progression of visual elements from the pastureland, to the distant landscape. Strong and harmonious vegetation patterns include green/yellow pastureland and dark green trees in the distant landscape.

With-Project Visual Quality: Moderate (Rating = 2.33)		
Vividness	**Intactness**	**Unity**
2—There is no significant change. Turbines only barely visible.	2—There is no significant change. Turbines no more disruptive than existing utility poles and building structures.	3—There is no significant change. Turbines are very minor element.
Impact level: Low (no difference)		

5.2.8.2 Proposed Project

As shown in Figure 19B, given the cloudy sky conditions at the time of the photograph and the distance to the turbines, the turbines cannot be distinguished because they blend in with the sky and are mostly hidden behind the trees (arrows on the simulation indicate where turbines would be located, based on the visibility analysis) . It may be that on a good day with a cloudless sky a viewer looking carefully could discern the blades of several turbines in the distance behind the middleground trees to the left of the barn. The height of the turbines behind the trees in the middleground indicates their large size, but their vertical line and form are obscured by the tree trunks and branches included in this view. At this distance, the turbines are subordinate visual elements, and do not create significant contrast with the strong horizontal lines and foreground elements that dominate the landscape. The turbines do not diminish the aesthetic quality of the view, and should not have a significant impact on affected viewers in this location. The overall with-Project visual quality of this viewpoint is rated as moderate (rating 2.33), therefore, the overall level of visual impact is low (no difference).

5.2.9 Viewpoint 34 – New York Highway 30

Viewpoint 34 is just outside of the extended visual study area along New York State Highway 30 outside of the Village of Malone, approximately 8 miles to the southwest from the nearest turbine. This view is typical of what residents, travelers, and tourists would see from the rural residential residential/agricultural LSZ. It is also an open, expansive view with the ability to see far in the distance.

5.2.9.1 Existing View

The existing view features cultivated agricultural land in the foreground, with several clusters of farm buildings in the middleground, as well as some buildings and a band of trees in the foreground. The rolling topography, in combination with a lack of foreground vegetation, provides unobscured views of open sky. Strong horizontal lines are created by the utility poles and lines located along roads in the foreground and middleground, as well as various structures, and tree line in the distance. The overall existing visual quality at this viewpoint is moderate (rating 2.33). Figure 20A shows the existing view and Figure 20B is a simulation of the view with the Project. Table 18 provides a summary of viewer group exposure and sensitivity ratings, as well as the existing and with-Project visual quality ratings.

Table 18. Viewpoint 34 Impact Evaluation

Viewer Information		
Viewer	**Viewer Exposure**	**Viewer Sensitivity**
Residents	Low. The number of residents is small and the turbines would be at background viewing distance.	High. Residents are highly sensitive to landscape change visible from their homes, especially residents with a view of the Project; these residents would likely notice the turbines intermittently and at a distance.
Travelers	Low. Travelers on this heavily trafficked road would see glimpses of the Project if they were to stop and look around since the turbines are not distinct elements in the landscape.	Moderate. Travelers driving on local roads are somewhat aware of changes in the visual environment and many of the motorists would be on their way to their homes.
Tourists	Low. Tourists would see glimpses of the Project if they were looking for them.	Low. Most tourists driving on this road to get to Adirondack Park likely would not notice the turbines off in the distance.
Existing Visual Quality: Moderate (Rating = 2.33)		
Vividness	**Intactness**	**Unity**
2—View contains trees off in the distance, with views of agricultural land and farmhouses in the foreground.	2—Views of utility lines and poles parallel the existing roads in the foreground and middleground.	3—Layered progression of visual elements from the agricultural land, to the distant landscape. Strong and harmonious vegetation patterns include green, brown, and yellow colors.
With-Project Visual Quality: Moderate (Rating = 2.0)		
Vividness	**Intactness**	**Unity**
2—There is no significant change. Turbines are barely visible.	2—There is no significant change. Turbines have no more effect than existing farm buildings and utility poles.	2—There is no significant change. Turbines are a very minor element.
Impact level: Low (0.33 difference)		

5.2.9.2 Proposed Project

As shown in Figure 20B, portions of several turbines can be seen rising above the background tree line in the distance. Under the overcast sky conditions, and at this distance, the turbines present minimal color contrast with the sky or vegetation. Their height above the trees indicates their large size, but their vertical line and form is consistent with the tree trunks and branches included in this view. At this distance, the turbines are subordinate visual elements, and do not create significant contrast with the strong horizontal lines and foreground elements that dominate the landscape. The turbines do not diminish the aesthetic quality of the view, and should not have a significant impact on affected viewers in this location. The with-Project visual quality of this view is rated as moderate (rating 2.0). The overall level of visual impact is low (difference of 0.33).

5.3 Impacts of Other Project Facilities

The large scale (primarily the height) of the turbines would be the primary source of the long-term visual impact of the Project. With a maximum height of 397 feet to the tip of the turbine blades, the turbines would be taller than any existing structures in the Project study area. Besides the turbines, the proposed Project would include a number of other structures that would have limited visual impacts. These structures would include a system of gravel access roads, electrical collection and communication cable networks (which would be predominantly located underground, and not visible), two short stretches of overhead electrical collection lines totaling approximately 3,200 feet, a 5,000- to 8,000-square-foot O&M building, an on-site project step-up substation, and an interconnection substation. Additionally, two or three permanent meteorological towers are anticipated to be located within the Project area. These features, including the meteorological towers, would be much smaller and have much less visual impact than the turbines. In comparison to the turbines, views of these structures would be localized, and their scale and impact potential would be more limited.

One of the alternate substation locations is adjacent to Willis Road near Taylor Road, in the west-central part of the project area, in a relatively open, agricultural area. A substation at this location would be visible in the foreground from Willis, Taylor and Toohill Roads and from nearby farms. The new substation structure be viewed within the context of the existing Willis Substation and 230-kV electric transmission lines, however, and would be visually subordinate to the surrounding turbines. The other proposed substation location, in the southwest corner of the Project Site near Town Line Road approximately 1 mile north of Belmont Center, is in an area of predominantly forest vegetation. A substation at this location would be visible within only a limited area, and would also be adjacent to an existing 115-kV transmission line. The meteorological towers would be approximately half the height of the turbines and would be much thinner in profile; therefore, they would be visible within a much smaller area than the turbines, and would be considerably less noticeable.

At night, the Project O&M building and substation would be minimally lit for purposes of operational safety and security. This would create minor new sources of light where there generally are limited existing exterior lights. The impacts associated with this low level lighting would be minimal, especially if the lights were generally kept off and triggered on when necessary by motion sensors.

5.4 Impacts to Visually Sensitive Resources

As illustrated previously in Table 3, the proposed Project would have a visual impact on some of the sensitive resources identified in the standard and extended Project visual study areas. Visually sensitive resources identified in the NYSDEC Visual Policy and found in the study area include multiple sites listed on or eligible for listing on the National or State Register of Historic Places, the Military Trail Scenic Byway (U.S. Highway 11), as well as Adirondack Park and its associated viewing corridors, trails, and lakes.

As discussed previously, many sites listed on or eligible for listing on the National or State Register of Historic Places were identified in the study area. The Applicant is still in the process of completing archival research on potentially eligible architectural historic resources and mapping the locations of such sites that have not been previously inventoried. The results of this work will be summarized in a separate report and will be addressed with respect to visual impacts in the FEIS. Current information on listed and potentially eligible historic sites is provided here in Appendix F and in Section 2.5 in the DEIS.

The visibility analysis indicates that the Project generally would not be visible from many locations within the Villages of Burke and Chateaugay, or from various hamlets within the visual study area. Many of the structures listed or potentially eligible for listing on the National or State Register of Historic Places are concentrated in these villages or hamlets. Most views to the Project from locations within these communities generally would be fully or partially screened by structures and trees. However, given the occurrence of potentially Register-eligible structures within 7.5 miles of the Project and outside of the villages and hamlets, views of turbines from some historic structures/sites are possible. The home of Almanzo Wilder (Site 131 on Figure 4) is a site that is currently listed on the Register and located in a rural area outside of a village or hamlet. The visibility analysis indicates there is an area to the east of the Wilder home from which much of the Project would be visible. Potential views of Project turbines at the Wilder site itself appear to be unlikely, however. There are trees located in the foreground in eastward views from this site, and the nearest turbine would be located in the background about 5 miles away. Based on the impact evaluation from viewpoints at similar distances, the visual impact at this location (if any) would likely be considered low.

Based on the analysis of simulated with-Project conditions from representative key viewpoints, the potential for significant visual impacts on architectural historic resources (and other visually sensitive sites) would be most likely for sites within approximately 0.5 mile of one or more turbines (i.e., within the foreground viewing distance), and would be highly unlikely for sites beyond approximately 1 mile from Project turbines. The potential for significant impacts appears to be greatest for Site 75, which is located on Hartnett Road in the central part of the Project area and within approximately 0.3 mile of the nearest turbine. The visibility analysis run with the vegetation layer indicates that 38 turbines would be visible from this location. Given the number of turbines visible and the proximity of some turbines, it is likely that the visual setting for this historic property would be significantly changed; whether the historic context of the property would be correspondingly diminished would require site-specific evaluation of viewer position and sensitivity, and the specific historic attributes of the property.

Sites 67 and 68 (on Cemetery Road) are not within the Project Site but are both approximately 0.6 mile northeast from the nearest turbine, between the Project and the Village of Chateaugay. The visibility analysis indicates that 24 turbines would be visible at Site 67 and 22 turbines would be visible at Site 68. Views from these sites toward the Project could be similar to the simulated conditions presented for Viewpoint 19. Viewpoint 19 is approximately 0.5 mile or less to the southeast from Sites 67 and 68, is located approximately 0.5 mile from the closest Project turbines, and has a view that includes both open fields and forested areas. While turbines in views from Sites 67 and 68 would be at middleground viewing distances, the closeness of some turbines and the number of turbines visible could result in significant impacts to the visual setting for the historic property; the effect of any visual changes on the historic context of the property would depend on the presence of other modern intrusions and their existing effect on the historic context.

The visibility analysis results indicate that the potential for significant indirect impacts on other identified architectural historic resources is quite limited. For example, while Sites 52, 77 and 78 are located within or very close to the Project Site and no more than approximately 0.7 mile from the nearest turbine, the visibility analysis indicates that no turbines would be visible from these locations. Sites 57 and 58 likely would have views of 20 and 14 turbines, respectively, but the turbines would be seen at distances of 1.5 mile or more; based on the evaluation of simulations for viewpoints at similar viewing distances, the influence of the turbines would not likely create a significant change to the visual setting of the sites.

Military Trail Scenic Byway (U.S. Highway 11) travelers would be exposed to intermittent views of the proposed Project, primarily in the area from approximately the Hamlet of Malone Junction through the Village of Chateaugay (a distance of about 7 miles). In most of the highway locations from which the Project would be visible, from 1 to 10 turbines could be seen at middleground and/or background viewing distances, with the closest turbines 1.5 miles or more from the highway. Viewpoint 15 is located along this highway about 1 mile east of the Village of Chateaugay. It provides a representative example of typical views toward the Project from this scenic byway, with approximately 10 turbines in view at distances of 2 to 3 miles. The impact evaluation of the simulation for this viewpoint (Figure 15B) concluded the turbines would not be prominent in this location and the Project would have a low impact on local residents and travelers. The viewer exposure for scenic byway travelers would vary from low to moderate and, based on their viewing conditions (engaged in travel on a relatively high-speed road), their sensitivity would be low.

As shown in Figure 6, specific resources within the Adirondack Park boundary that could be exposed to views of the Project include a pull-off along County Route 54, segments of two state routes (New York State Highways 190 and 374) identified as designated scenic corridors, and a small portion of Lower Chateaugay Lake. The Upper Chateaugay Lake boat launch would not have views of the Project because there are trees blocking any potential views. Typical views toward the Project from within the Park boundary are illustrated by Viewpoint 10, which is along County Route 54 about 4 miles southeast of the Project area. The impact evaluation for this viewpoint concluded the turbines would be barely visible and the impact on visual quality would be considered low. While Park visitors can be expected to have a high sensitivity to visual change, the Project would have low to no visual impact within the Park because of the extremely limited view exposure and long viewing distances.

As illustrated previously in Table 3, the proposed Project could be visible from some additional sensitive resources within the standard and extended visual study areas that are not identified in the NYSDEC Visual Policy. Such resources include the Franklin 10 State Forest, Chateaugay State Fish Hatchery, High Falls Park and Campground, Ponderosa Campground, two villages, ten hamlets, and five transportation corridors. The visibility analysis indicates the Project would not affect views from the Chateaugay State Fish Hatchery and would have at most minor impacts on views from the southern portion of Franklin 10 State Forest.

High Falls Park and Campground (Site 9) is located near or within the proposed Project Site and would likely have views of Project turbines. A potential view from High Falls Park and Campground is illustrated by Viewpoint 19, which is located at the High Falls Park entrance. Based on the impact evaluation for Viewpoint 19 and the comparatively high viewer exposure and sensitivity attributes, the visual impact of the Project on these resources could be considered moderate to high. The visibility analysis indicates that views toward Project turbines at the Ponderosa Campground (Site 10) would likely be screened by intervening terrain and/or vegetation.

Some locations within the Villages of Burke and Chateaugay, as well as the Hamlets of Bellmont Center, Burke Center, Cooks Mill, Sun, Thayers Corner, Brainardsville, Brayton Hollow, Blairs Kiln, Earlville, and Harrigan could have views of the proposed Project. Viewpoint 26, which is located on the outskirts of the Village of Burke, represents a typical view from village and hamlet locations with visibility of the Project. In general, views to the Project from the outer portions of the villages and hamlets within the study area would be at middleground or background viewing distances, and the distance and vegetation patterns would combine to result in a relatively low level of change to the existing visual quality. Viewpoint 3, located in the Hamlet of Bellmont Center, provides an alternative condition for village/hamlet visual resources. In this instance, turbines would appear within foreground viewing distance and the visual quality impact level would be moderate. Based on the range of viewing conditions at the edges of villages and hamlets in the study area, the visual impact at these locations would likely range from low to moderate. In limited cases, it is possible that consideration of site-specific viewer exposure and sensitivity characteristics would result in somewhat higher impacts. Other than on the outskirts of villages and hamlets, however, structures would block views of the turbines and most village and hamlet residents would not be exposed to those views.

Five transportation corridors would be within viewing distance of the proposed Project. Three of these corridors (U.S. Highway 11, New York State Highway 190, and New York State Highway 374) are discussed above as segments designated as scenic byways or scenic corridors. Project visibility and potential impacts along U.S. Highway 11 are discussed above. The portions of State Highways 190 and 374 that are within the Adirondack Park boundary are designated as Adirondack Park travel corridors. The visibility analysis indicates that the Project would not be visible from the segments of these highways within the Park. Franklin County Routes 24 and 54 are the other two travel corridors within the visual study area. Viewpoint 3, which is located on County Route 24 adjacent to the Adirondack Park boundary, provides an example of visual conditions along this corridor. The impact evaluation for Viewpoint 3, which is approximately 0.5 mile from the closest turbine, concluded that the visual impact at this location along County Route 24 would be considered moderate. The visibility analysis indicated that the Project would not be visible from most locations along County Route 24, and that other locations from which turbines would be visible were generally at somewhat greater distances. The visibility analysis indicated that very few, if any locations along County Route 54 would have views of the Project. Viewpoint 10 is the only viewpoint along this route; the impact evaluation concluded that the visual impact in this location would be low.

The visibility analysis indicates that the Project would not be visible along most of the route of New York State Highway 374 within the study area. Some segments of this highway along or near the eastern edge of the Project area would be exposed to views of the turbines, however, and at viewing distances of less than 1 mile in certain locations. While the nine key viewpoints used in the simulation-based impact analysis do not include a location along Highway 374, Viewpoint 14 is located a slight distance to the east of the highway and may be representative of Project views from this travel corridor. Viewpoint 14 is within the rural residential/agricultural LSZ, is located approximately 1 mile from the nearest turbine, and offers views to the west and southwest that include the Project Site. The visual impact at this location was rated as high, based on the degree of visual quality change and the viewer exposure and sensitivity attributes for residents. Viewer sensitivity for Highway 374 travelers would be relatively low, although viewer exposure would be high based on a larger number of viewers and the availability of foreground views of the Project in selected segments of the route; visual impacts of the Project in these segments would be at least moderate, and could be high.

5.5 Impact Summary

Viewshed mapping, cross-section analysis, and field verification indicate that the Project turbines would be visible from a relatively limited proportion of the visual study areas, because of the influence of topography and vegetation. As noted in Table 8, one or more Project turbines would be visible within approximately 18 percent of the area within 5 miles of the Project boundary, and only 6 percent of this area would have views of 20 or more turbines. The locations with views of the Project would primarily be in open agricultural areas within and close to the Project Site, and in other, more distant locations to the northwest, north and east of the Project where the terrain permits views to the Project. Areas that would generally be screened by vegetation, structures, and/or topography include virtually all of Adirondack Park, valleys, stream corridors, and the interior portions of hamlets and villages. Rolling landform and wide separation of the proposed turbines would limit opportunities to observe the Project in its entirety. Under favorable conditions, views of the wind turbines could be available from certain viewpoints well over 7.5 miles from the Project Site. Visual impact at these distances is typically minimal, however.

Visual quality at several visually sensitive resources and areas of intensive land use within the standard visual study area could be diminished by the Project. These include the outer limits of hamlets and villages, specific local parks and recreation areas, and segments of several well-traveled roads that traverse the study area. Other visually sensitive resources, such as sites within Adirondack Park, generally would not have views of the Project because of the screening effects of terrain, vegetation and/or structures.

Simulations of views toward the proposed Project from key viewpoints indicate that the visibility and visual impact of the wind turbines would be highly variable, based on landscape setting, extent of natural screening, presence of other manmade features in the view, viewer sensitivity, and distance of the viewer from the Project. Table 19 provides a summary of the existing and with-Project visual quality ratings for the key viewpoints, including the numerical difference and combined impact level.

Table 19. Summary of Impacts to Key Viewpoints

Viewpoint Number	Existing Visual Quality Rating	With-Project Visual Quality Rating	Numerical Impact (Difference)	Impact Level
Viewpoint 3	2.33	1.67	0.67	Moderate
Viewpoint 10	2.33	2.0	0.33	Low
Viewpoint 14	2.33	1.33	1.0	High
Viewpoint 15	2.0	1.67	0.33	Low
Viewpoint 19	2.	1.33	1.0	High
Viewpoint 20	2.0	1.33	0.67	Moderate
Viewpoint 26	2.33	2.0	0.33	Low
Viewpoint 31	2.33	2.33	0	Low
Viewpoint 34	2.33	2.0	0.33	Low

As shown in Table 19, the impact evaluation determined that the Project would have a low impact on visual quality at five of the selected viewpoints, a moderate impact at two viewpoints, and a high impact at two viewpoints. The five viewpoints (Viewpoints 10, 15, 26, 31, and 34) considered to have a low impact are located at middleground or background viewing distances of between 2.25 miles and 8 miles from the nearest Project turbine. Viewpoints 15 and 26 are located 2.25 miles and 3 miles from the Project Site (within the middleground viewing distance), respectively, but views of turbines at these locations would be considerably blocked by existing structures and vegetation within the line of sight. Viewpoints 31 and 34 are located at background viewing distances of 4 to 8 miles from the Project area; at these distances, the visible Project turbines were considered subordinate visual elements that did not create significant contrast with the elements that dominate the landscape.

The two viewpoints (Viewpoints 3 and 20) considered to experience moderate impacts to visual quality are located in the foreground between 0.25 mile and 0.5 mile from the nearest turbine in the Project Site. In the simulated views from these viewpoints the turbines appear large and out of scale with the surrounding landscape. These viewpoints also include turbines in the distance, however, the turbines in the background are partially screened by surrounding trees and their colors blended well with the sky. While the closest visible turbines at Viewpoint 3 and 20 are within the foreground viewing distance, where the impact might normally be considered high, the intervening forest vegetation in the foreground obscures the lower part of the towers and softens the impact from the structures.

Visual impacts from the Project were considered to be high for Viewpoints 14 and 19, located 0.5 mile to 1 mile, respectively, from the nearest Project turbine. In both simulated views, multiple turbines are visible in the foreground and middleground, and they alter the horizon line. The turbines do not appear compatible with the park-like setting at Viewpoint 19 and their size and quantity overwhelm the existing features of the landscape.

To generalize from the results of the impact evaluation, locations with foreground (less than 0.5 mile) views of Project turbines would likely experience moderate to high impacts to visual quality, depending upon site-specific circumstances. Even with some tree cover in the immediate foreground, turbines would likely be visible and would create strong contrast with the existing landscape. Project impacts would be higher at locations where the existing visual quality is high and the viewer exposure/sensitivity is high, and would tend to be moderate elsewhere. Viewer locations within foreground viewing distance of Project turbines are limited, however, in large part because the Applicant employed a voluntary setback of 1,200 feet from residences and key travel routes (such as New York Highway 374) in selecting turbine locations. Impacts at locations with middleground (0.5 to 3.5 miles) views of Project facilities would typically range from low to moderate, depending on the degree of screening or view blockage and the existing level of visual quality. The Project would have low to negligible impact on visual quality in areas with background (greater than 3.5 miles) views of Project facilities because at such distances the turbines would typically blend in with the skyline and/or background landscape and would not be prominent features.

A final consideration for the visual impact analysis is the overall context and character of the study area landscape. The proposed Project is situated in an area with a mix of farms and areas of forest vegetation, mostly in relatively small woodlots. Agriculture is actively practiced on many farms, as indicated by fields currently in row crops, although many fields in the area are fallow and appear to no longer be in use. Non-farm rural residences are scattered throughout the study area at low density, and there are a number of towns and smaller communities distributed at intervals. The predominant visual character of the area is that of a working agricultural and forest landscape. While there are localized exceptions, the proposed Project in general appears to be visually compatible with this type of a visual setting.

6. MITIGATION MEASURES

Mitigation options for the expected visual impacts are limited, given the nature of the Project and its siting criteria (tall structures typically located in open fields). In accordance with NYSDEC Program Policy (NYSDEC, 2000), however, various mitigation measures were considered. A variety of possible mitigation measures related to visual impacts of the Project are included below, although most of these are generic (rather than site-specific) measures identified in published reviews of the aesthetic impacts of wind energy development.

Screening. Due to the height of individual turbines and the geographic extent of the proposed Project, screening with earthen berms, fences, or planted vegetation generally would not be effective in reducing Project visibility or visual impact. Planting could be effective in screening views from some cemeteries and other sites in the area that are lacking trees, however. Existing roads should be used as much as possible to access turbines and minimize new road building.

Relocation. Due to the areal extent of the Project, the number of individual turbines, the requirement that a turbine be on the highest ground possible to efficiently harness the wind and the variety of viewpoints from which the Project can be seen, turbine relocation generally would not significantly alter the visual impact. Where the Project would be visible from aesthetic resources of statewide significance within the study area (e.g., scenic highways/byways and a portion of the Lower Chateaugay Lake), numerous turbines may be visible and relocation of individual machines would have little effect on the overall visual impact. Elsewhere within the study area, views of the Project would be highly variable and include different turbines at different vantage points. Therefore, turbine relocation would generally not be effective in mitigating visual impacts.

Camouflage. The white or off-white color of wind turbines, which is preferred for consistency with FAA) aviation safety guidelines, generally minimizes contrast with the sky under most conditions. This is demonstrated by simulations prepared under several sky conditions. Consequently, it is recommended that this color be used on the proposed Project. The size and movement of the turbines prevents more extensive camouflage from being a viable mitigation alternative (i.e., they cannot be made to look like anything else). Neilson (1996) notes that efforts to camouflage or hide wind farms generally fail, while Stanton (1996) feels that such efforts are inappropriate. Stanton believes that wind turbine siting "is about honestly portraying a form in direct relation to its function and our culture; by compromising this relationship, a negative image of attempted camouflage can occur" (Stanton, 1996).

Low Profile. A significant reduction in turbine height is not possible without significantly decreasing power generation. For example, by limiting the tower height to 80m and the tip height to less than 400ft in accordance with local laws, the Applicant is foregoing an additional 13% of energy that would be available for turbines set on 100m towers. To offset a further decrease below an 80m tower, additional turbines would be necessary to achieve the same energy output. There is not adequate land under lease to the Applicant to accommodate a significant number of additional turbines, and a higher number of shorter turbines would not necessarily decrease Project visual impact. In fact, several studies have concluded that people tend to prefer fewer larger turbines to a greater number of smaller ones (Thayer and Freeman, 1987; van de Wardt and Staats, 1988). The visual impact of the electrical collection system would be minimized by placing most of the lines underground rather than on overhead poles, as is proposed. The poles utilized for overhead electrical lines would be as short as required to meet safety requirements and likely would not exceed the height of adjacent trees.

Downsizing. The Project has been downsized from its originally proposed size of 101MW by removing some turbines and relocating some other turbines. With these revisions, visual impact on the surrounding will be somewhat reduced. While further reduction in the number of turbines could potentially reduce the visual impact from other viewpoints, the visual impact of the Project would change only marginally unless these reductions were drastic.

Alternate Technologies. The Applicant is in the business of developing, constructing and operating wind farms and does not have expertise or capabilities in other renewable or non-renewable generation technologies. Alternative utility-scale wind power technologies that would significantly reduce visual impacts do not currently exist.

Nonspecular Materials. Use of low-reflectivity, neutral-color finishes for turbines, equipment boxes, substation equipment, and the operations and management building would generally minimize the visual contrast created by these structures. An earth-tone finish would generally blend in best with the surrounding landscape, although use of earth-tone colors on the turbines would not be consistent with standard industry practice or aviation safety objectives. Non-reflective paints and finishes should be used on the wind turbines to minimize reflected glare. Nonspecular conductor would be used on the aboveground sections of the electrical collection system. Research indicates that public reaction to wind farms has been more adverse when advertising, cell antennas, or other sources of visual clutter have been placed on the turbines.

Lighting. Turbine lighting (aviation warning lighting) should be kept to the minimum allowable by the FAA. New FAA guidelines (FAA, 2007) do not require daytime lighting, and allow nighttime lighting of perimeter turbines only, at a maximum spacing of 0.5 mile. Synchronized, medium–intensity, pulsing red strobe lights should be used at night, rather than white strobes or steady burning red lights. Upwardly directed lighting fixtures should be used to minimize nighttime visual impacts on nearby residents. Lighting at the substation should be kept to a minimum, and should be turned on only as needed, either by switch or motion detector.

Maintenance. The turbines and turbine sites would be maintained to ensure that they are clean, attractive, and operating efficiently. Research and anecdotal reports indicate that viewers find wind turbines more appealing when the rotors are turning (Stanton, 1996). In addition, the Applicant would establish a decommissioning plan and fund to ensure that if the Project goes out of service and is not repowered/redeveloped, all visible above-ground components would be removed.

Offsets. Correction of an existing aesthetic problem within the viewshed is a viable mitigation strategy for wind power projects that result in significant adverse visual impact. Historic structure restoration/maintenance or promotion activities could be undertaken to mitigate potential impacts on cultural resources (see Section 2.6.3 for additional discussion). Based on the VIA work conducted to date, however, the results have not identified widespread significant impacts or significant adverse impacts to historic resources, and therefore do not suggest that such mitigation measures are warranted for the Project.

In addition to the mitigation measures described above, other measures that would reduce or mitigate visual impact should be incorporated into the Project design during and after construction. These include the following:

- Keep construction time to a minimum.
- Remove construction debris.
- Seed or cover temporarily stockpiled materials and disturbed sites to reduce dust and prevent erosion.
- Comply with all required setbacks from roads and residences.
- All turbines would have uniform design, speed, color, height, and rotor diameter.
- Towers would not include exterior ladders or catwalks.

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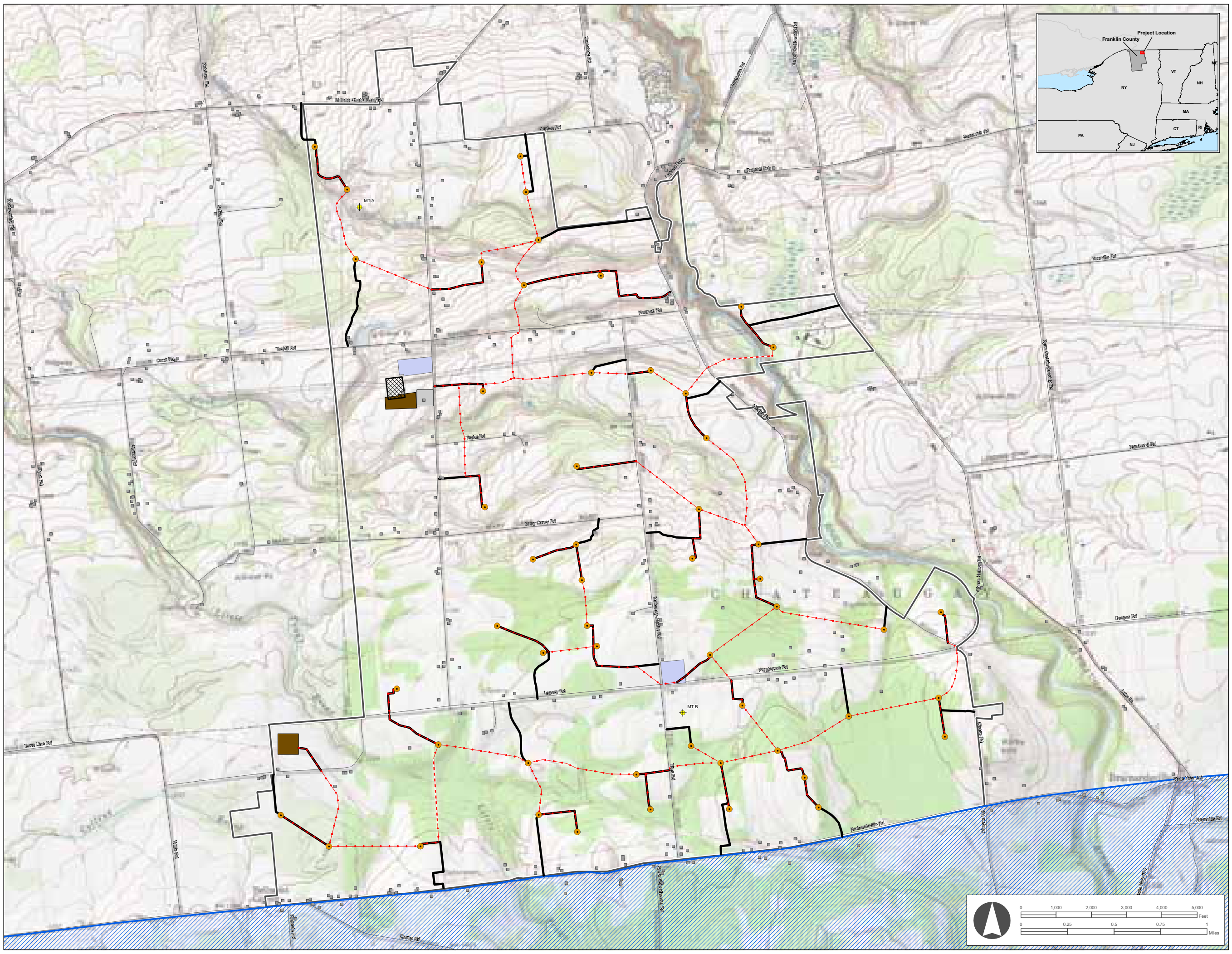
Figures



LEGEND

- ■ Structure
- ✚ Met Tower
- ● Turbine
- Underground Collection System
- Overhead Collection System
- Existing Road
- Access Road
- ▨ O&M Building
- ▨ Adirondack Park Blue Line
- ▨ Existing Willis Substation
- ■ Proposed Substation
- ▨ Proposed Construction Laydown Yard
- ☐ Project Boundary

NOTES

Setbacks Include:
1200 ft Chateaugay/Burke Participating Residence Setback
1320 ft Chateaugay/Burke Non-Participating Residence Setback
1000 ft Bellmont Residence Setback
596 ft Non-WECS Structure Setback
600 ft Chateaugay/Burke Off-Site Parcel Setback
500 ft Bellmont Off-Site Parcel Setback
600 ft Chateaugay/Burke Road Setback
500 ft Bellmont Road Setback
1200 ft Route 374 Setback
596 ft Existing Transmission Line Setback
144 ft Worst Case Fresnel Zone
100 ft NYDEC Wetland Setback

TOTAL # WTG - 53
CHATEAUGAY - 34
BELLMONT - 19

JERICHO RISE
WIND FARM

TETRA TECH EC, INC

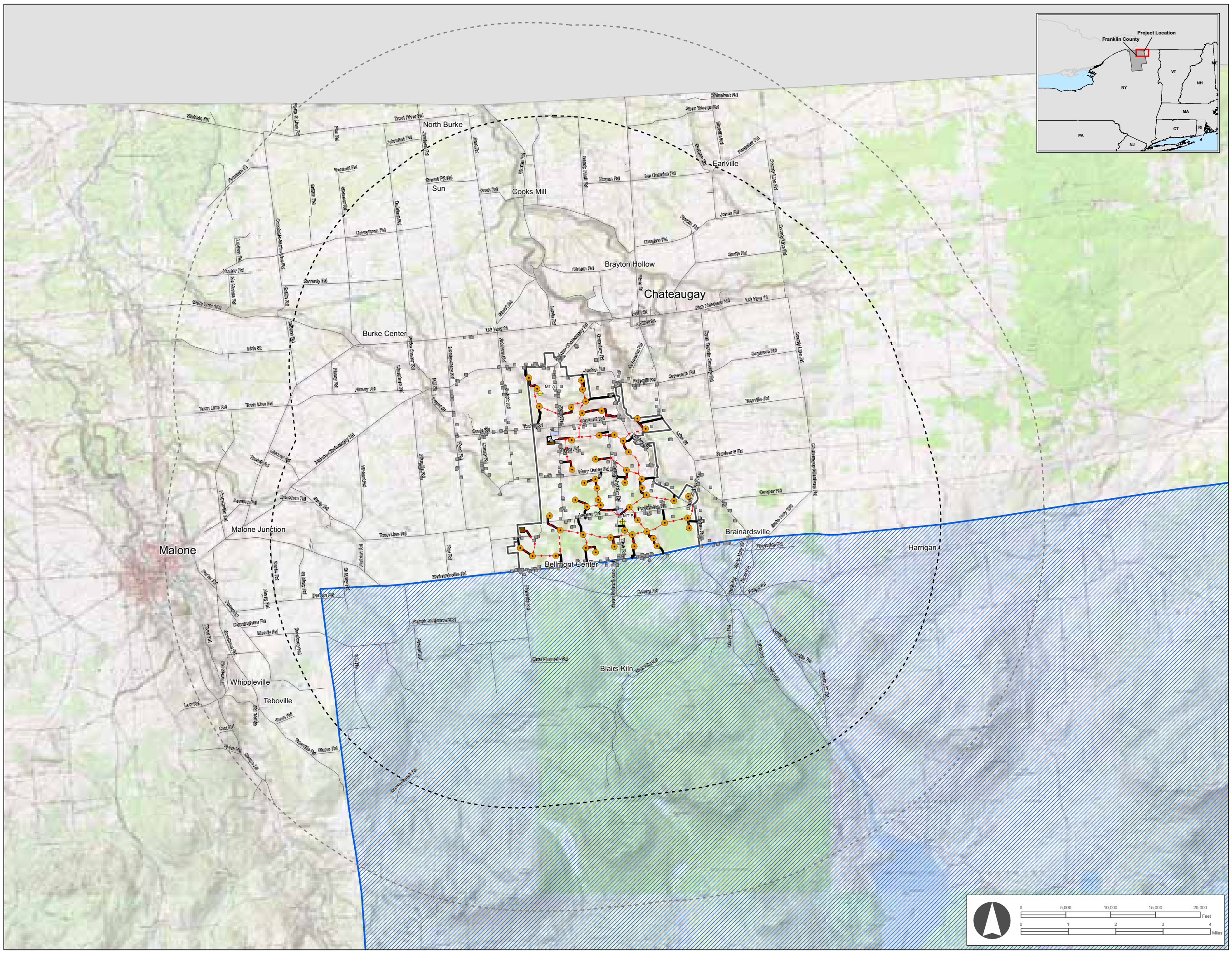
Jericho Rise Wind Farm

Figure 1
Site Location and Project Area

Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008

Parcel Data Source:
Franklin County Real Property Office. Tax Map Department.

Topographic Source:
National Geographic - USGS 7.5 minute Quadrangles
Burke, 1969; Chateaugay, 1969; Chasm Falls, 1969; Brainardsville, 1969



LEGEND

▪	Structure
⌖	Met Tower
●	Turbine
-•-•-	Underground Collection System
- - -	Overhead Collection System
⬚	5 Mile Buffer (Standard)
⬚	7.5 Mile Buffer (Extended)
—	Existing Road
━	Access Road
▭	O&M Building
▨	Adirondack Park Blue Line
▩	Existing Willis Substation
■	Proposed Substation
▭	Proposed Construction Laydown Yard
□	Project Boundary

NOTES

Setbacks Include:

1200 ft	Chateaugay/Burke Participating Residence Setback
1320 ft	Chateaugay/Burke Non-Participating Residence Setback
1000 ft	Bellmont Residence Setback
596 ft	Non-WECS Structure Setback
600 ft	Chateaugay/Burke Off-Site Parcel Setback
500 ft	Bellmont Off-Site Parcel Setback
600 ft	Chateaugay/Burke Road Setback
500 ft	Bellmont Road Setback
1200 ft	Route 374 Setback
596 ft	Existing Transmission Line Setback
144 ft	Worst Case Fresnel Zone
100 ft	NYDEC Wetland Setback

TOTAL # WTG - 53
CHATEAUGAY - 34
BELLMONT - 19

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

Jericho Rise Wind Farm

Figure 2
Visual Study Area

Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008

Parcel Data Source:
Franklin County Real Property Office. Tax Map Department.

Topographic Source:
National Geographic - USGS 7.5 minute Quadrangles
Burke, 1969; Chateaugay, 1969; Chasm Falls, 1969; Brainardsville, 1969

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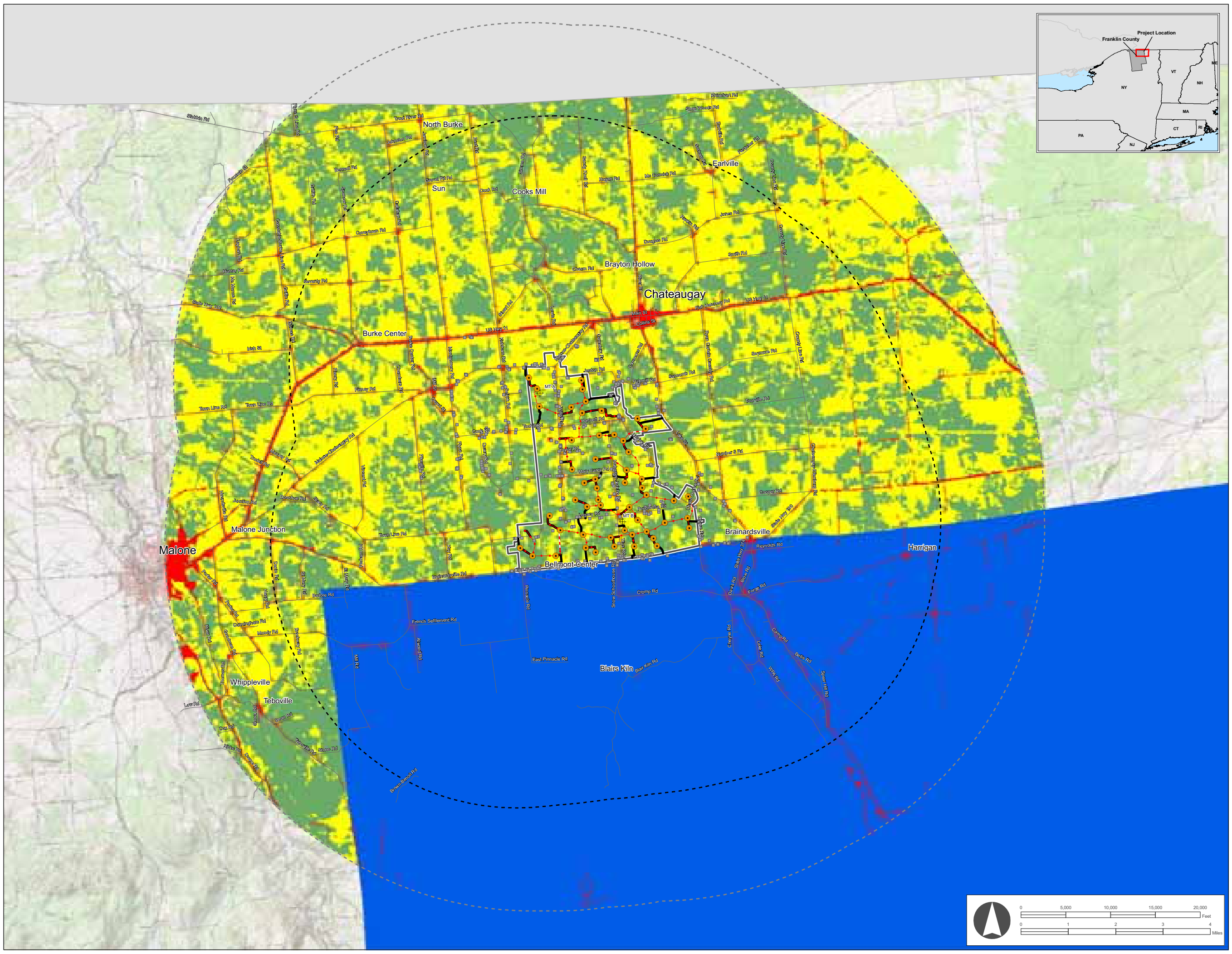

LEGEND

- ▪ Structure
- ✚ Met Tower
- ● Turbine
- Underground Collection System
- Overhead Collection System
- Access Road
- Existing Road
- 5 Mile Buffer (Standard)
- 7.5 Mile Buffer (Extended)
- ☐ Project Boundary
- 🟨 Rural Residential/Agricultural Zone
- 🟩 Forested Zone
- 🟥 Village/Hamlet Zone
- 🟦 Adirondack Park Zone

Note: Given their small size, wetlands and open waters have been combined with the Rural Residential/Agricultural Zone.

NOTES

Setbacks Include:
1200 ft Chateaugay/Burke Participating Residence Setback
1320 ft Chateaugay/Burke Non-Participating Residence Setback
1000 ft Bellmont Residence Setback
596 ft Non-WECS Structure Setback
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500 ft Bellmont Off-Site Parcel Setback
600 ft Chateaugay/Burke Road Setback
500 ft Bellmont Road Setback
1200 ft Route 374 Setback
596 ft Existing Transmission Line Setback
144 ft Worst Case Fresnel Zone
100 ft NYDEC Wetland Setback

TOTAL # WTG - 53
CHATEAUGAY - 34
BELLMONT - 19

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

Jericho Rise Wind Farm

Figure 3
Landscape Similarity Zones

Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008

Parcel Data Source:
Franklin County Real Property Office. Tax Map Department.

Topographic Source:
National Geographic - USGS 7.5 minute Quadrangles
Burke, 1969; Chateaugay, 1969; Chasm Falls, 1969; Brainardsville, 1969

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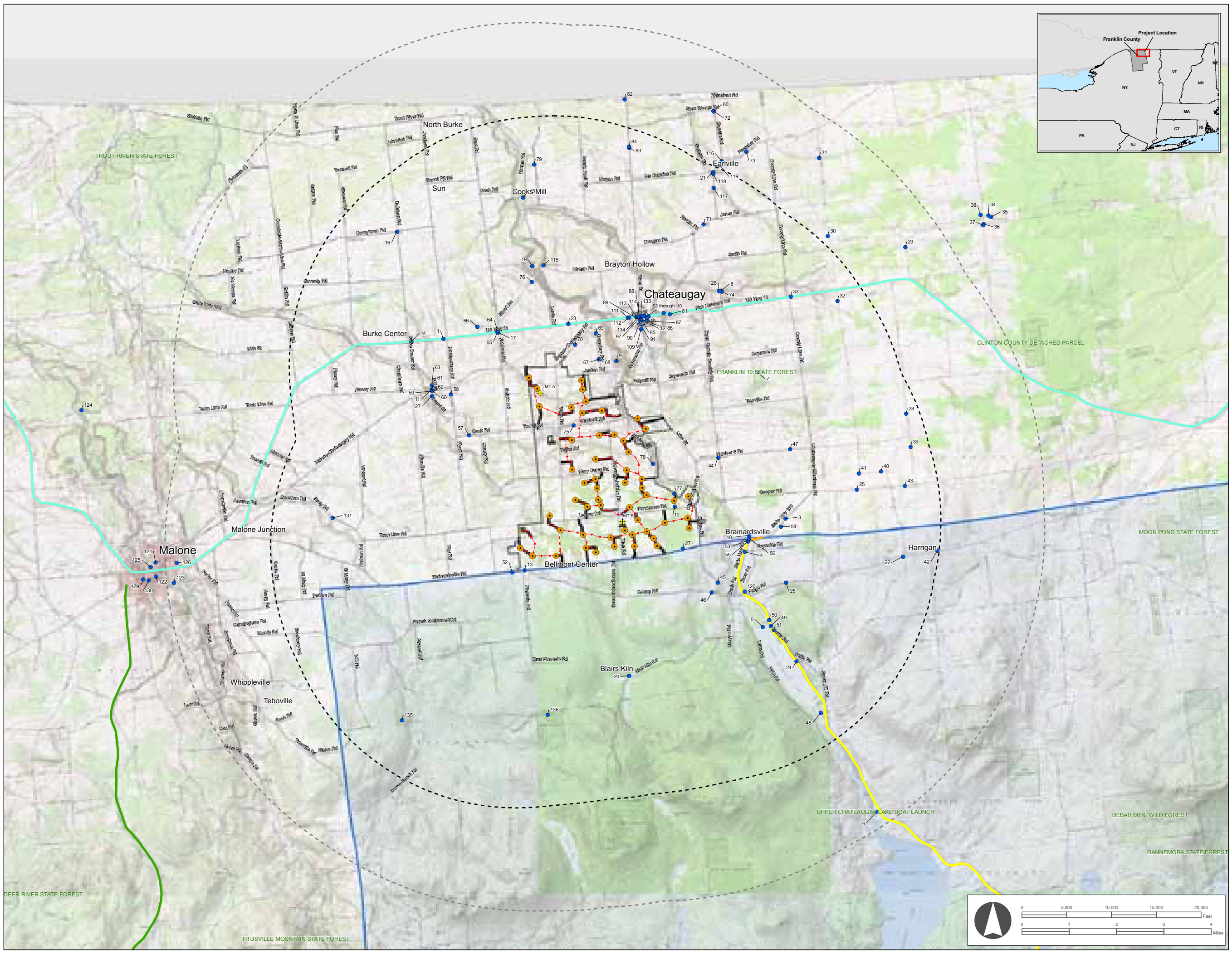

LEGEND

● Visually Sensitive Resource *
⌖ Met Tower
⊙ Turbine
Underground Collection System
Overhead Collection System
5 Mile Buffer (Standard)
7.5 Mile Buffer (Extended)
Adirondack Park Travel Corridor (374)
Adirondack Trail Scenic Byway
Military Trail Scenic Byway
Adirondack Park Travel Corridor (190)
Access Road
Existing Road
O&M Building
▨ Adirondack Park Blue Line
▩ Existing Willis Substation
Proposed Substation
Proposed Construction Laydown Yard
☐ Project Boundary

* See Table for Identification

NOTES

Setbacks Include:
1200 ft Chateaugay/Burke Participating Residence Setback
1320 ft Chateaugay/Burke Non-Participating Residence Setback
1000 ft Bellmont Residence Setback
596 ft Non-WECS Structure Setback
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500 ft Bellmont Road Setback
1200 ft Route 374 Setback
596 ft Existing Transmission Line Setback
144 ft Worst Case Fresnel Zone
100 ft NYDEC Wetland Setback

TOTAL # WTG - 53
CHATEAUGAY - 34
BELLMONT - 19

JERICHO RISE
WIND FARM

TETRA TECH EC, INC

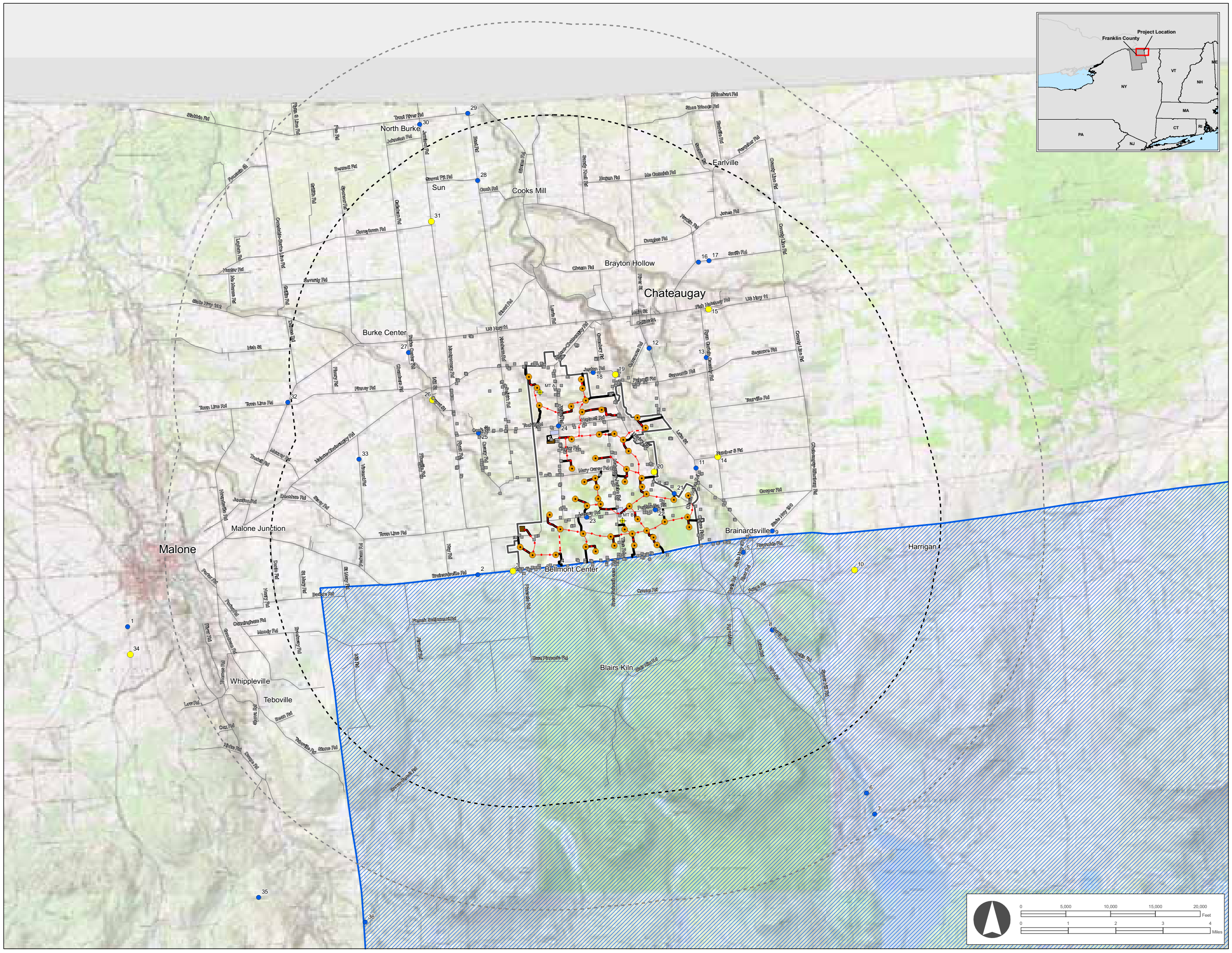
Jericho Rise Wind Farm

Figure 4
Visually Sensitive Resources

Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008

Parcel Data Source:
Franklin County Real Property Office. Tax Map Department.

Topographic Source:
National Geographic - USGS 7.5 minute Quadrangles
Burke, 1969; Chateaugay, 1969; Chasm Falls, 1969; Brainardsville, 1969



LEGEND

- ● Viewpoint
- ● Key Viewpoint
- ▪ Structure
- ⊕ Met Tower
- ⊙ Turbine
- Underground Collection System
- Overhead Collection System
- ☐ 5 Mile Buffer (Standard)
- ☐ 7.5 Mile Buffer (Extended)
- Access Road
- Existing Road
- ▨ Adirondack Park Blue Line
- ▩ Existing Willis Substation
- ■ Proposed Substation
- ■ Proposed Construction Laydown Yard
- ■ O&M Building
- ☐ Project Boundary

NOTES

Setbacks Include:

1200 ft	Chateaugay/Burke Participating Residence Setback
1320 ft	Chateaugay/Burke Non-Participating Residence Setback
1000 ft	Bellmont Residence Setback
596 ft	Non-WECS Structure Setback
600 ft	Chateaugay/Burke Off-Site Parcel Setback
500 ft	Bellmont Off-Site Parcel Setback
600 ft	Chateaugay/Burke Road Setback
500 ft	Bellmont Road Setback
1200 ft	Route 374 Setback
596 ft	Existing Transmission Line Setback
144 ft	Worst Case Fresnel Zone
100 ft	NYDEC Wetland Setback

TOTAL # WTG - 53
CHATEAUGAY - 34
BELLMONT - 19

JERICHO RISE
WIND FARM

TETRA TECH EC, INC

Jericho Rise Wind Farm

Figure 5
Viewpoint Locations

Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008

Parcel Data Source:
Franklin County Real Property Office. Tax Map Department.

Topographic Source:
National Geographic - USGS 7.5 minute Quadrangles
Burke, 1969; Chateaugay, 1969; Chasm Falls, 1969; Brainardsville, 1969

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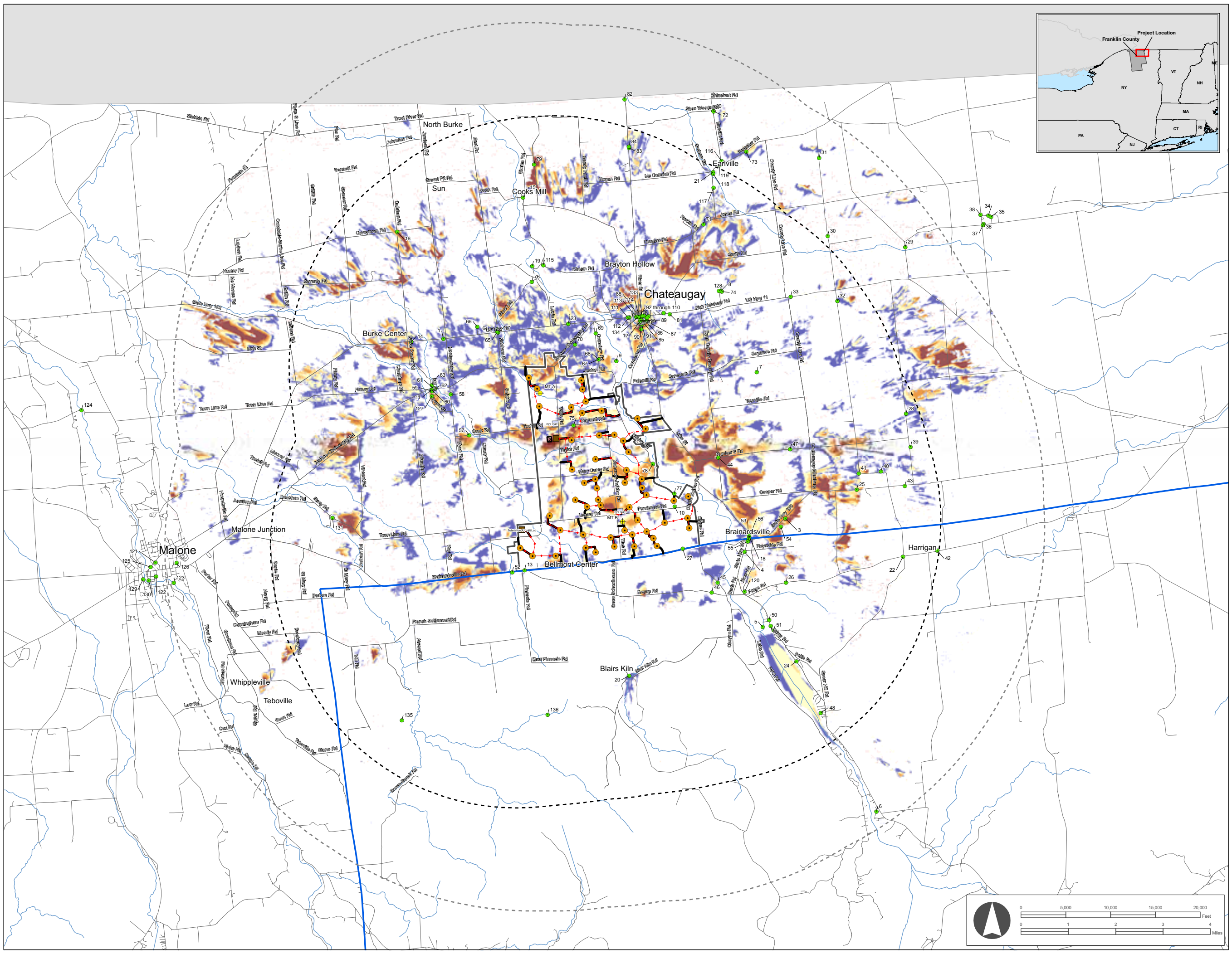


LEGEND

●	Visually Sensitive Resource *
⊕	Met Tower
⊙	Turbine
●—●—●	Underground Collection System
- - -	Overhead Collection System
⬚	5 Mile Buffer (Standard)
⬚	7.5 Mile Buffer (Extended)
━	Access Road
—	Existing Road
☐	Adirondack Park Blue Line
▩	Existing Willis Substation
■	Substation
■	Construction Laydown Yard
■	O&M Building
☐	Project Boundary

Turbines Visible (Includes Vegetation)

☐	0
■	1 - 10
■	11 - 20
■	21 - 30
■	31 - 40
■	41 - 53

* See Table for Identification

NOTES

Setbacks Include:

1200 ft	Chateaugay/Burke Participating Residence Setback
1320 ft	Chateaugay/Burke Non-Participating Residence Setback
1000 ft	Bellmont Residence Setback
596 ft	Non-WECS Structure Setback
600 ft	Chateaugay/Burke Off-Site Parcel Setback
500 ft	Bellmont Off-Site Parcel Setback
600 ft	Chateaugay/Burke Road Setback
500 ft	Bellmont Road Setback
1200 ft	Route 374 Setback
596 ft	Existing Transmission Line Setback
144 ft	Worst Case Fresnel Zone
100 ft	NYDEC Wetland Setback

TOTAL # WTG - 53
CHATEAUGAY - 34
BELLMONT - 19

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

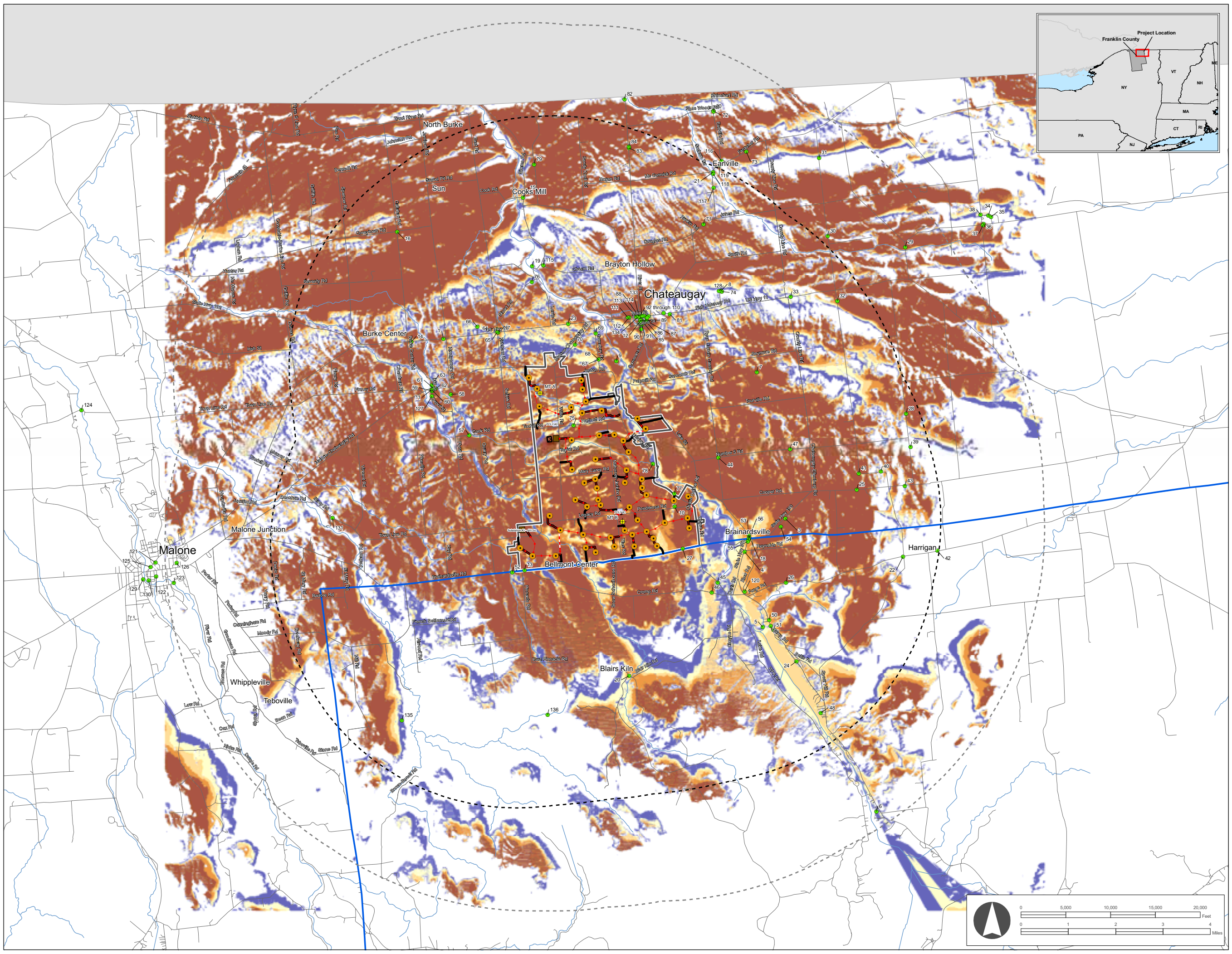
Jericho Rise Wind Farm

Figure 6A
Viewshed Analysis

Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008

Parcel Data Source:
Franklin County Real Property Office. Tax Map Department.

Topographic Source:
National Geographic - USGS 7.5 minute Quadrangles
Burke, 1969; Chateaugay, 1969; Chasm Falls, 1969; Brainardsville, 1969



LEGEND

● Visually Sensitive Resource *
⊕ Met Tower
⊙ Turbine
Underground Collection System
Overhead Collection System
5 Mile Buffer (Standard)
7.5 Mile Buffer (Extended)
Access Road
Existing Road
Adirondack Park Blue Line
▨ Existing Willis Substation
Substation
Construction Laydown Yard
O&M Building
Project Boundary

Turbines Visible (Does not Include Vegetation)

☐ 0
1 - 10
11 - 20
21 - 30
31 - 40
41 - 53

* See Table for Identification

NOTES

Setbacks Include:

1200 ft	Chateaugay/Burke Participating Residence Setback
1320 ft	Chateaugay/Burke Non-Participating Residence Setback
1000 ft	Bellmont Residence Setback
596 ft	Non-WECS Structure Setback
600 ft	Chateaugay/Burke Off-Site Parcel Setback
500 ft	Bellmont Off-Site Parcel Setback
600 ft	Chateaugay/Burke Road Setback
500 ft	Bellmont Road Setback
1200 ft	Route 374 Setback
596 ft	Existing Transmission Line Setback
144 ft	Worst Case Fresnel Zone
100 ft	NYDEC Wetland Setback

TOTAL # WTG - 53
CHATEAUGAY - 34
BELLMONT - 19

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

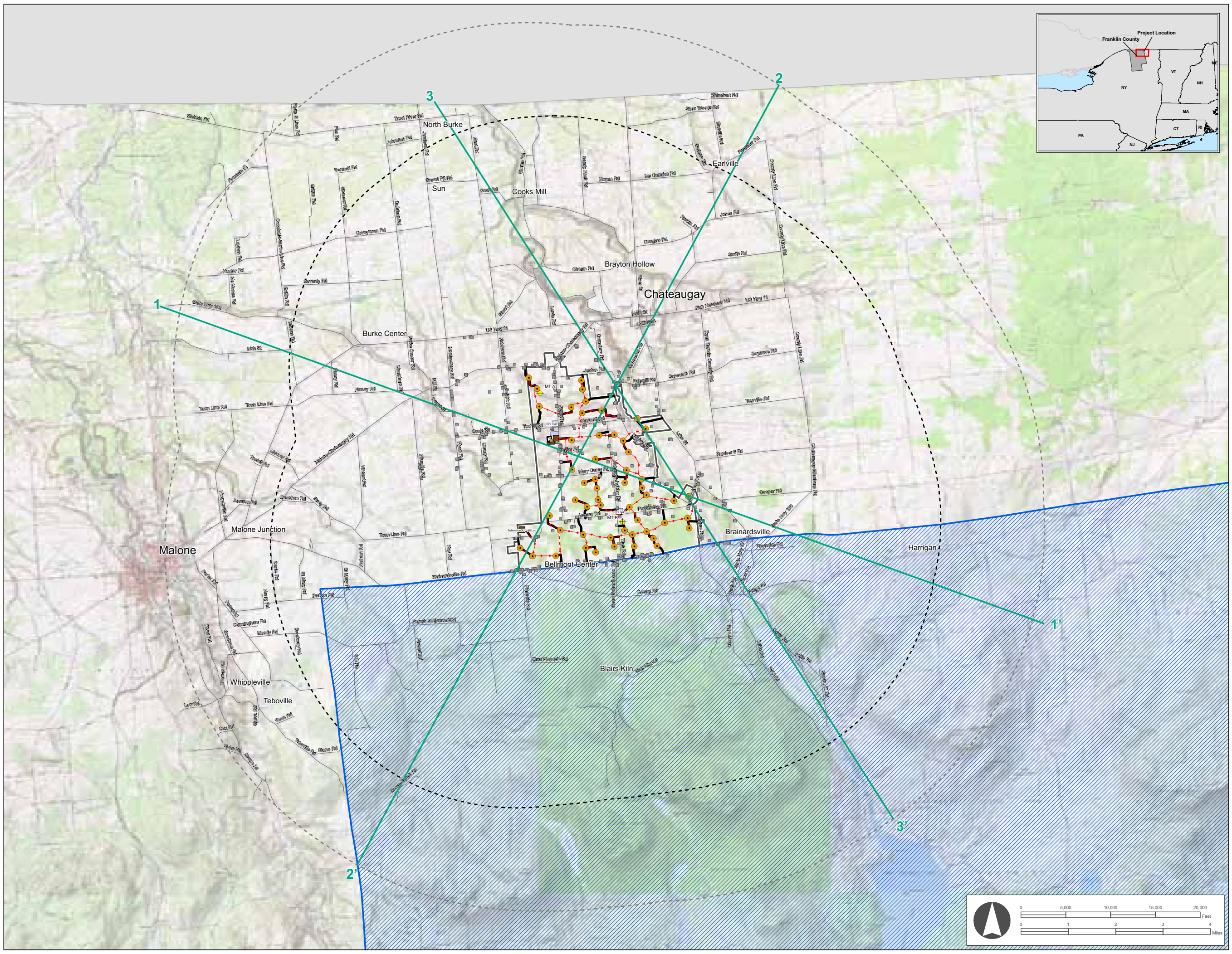
Jericho Rise Wind Farm

Figure 6B
Viewshed Analysis (Topography Only)

Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008

Parcel Data Source:
Franklin County Real Property Office. Tax Map Department.

Topographic Source:
National Geographic - USGS 7.5 minute Quadrangles
Burke, 1969; Chateaugay, 1969; Chasm Falls, 1969; Brainardsville, 1969



LEGEND

■	Structure
⊕	Met Tower
●	Turbine
—	Cross-Section Line
-•-•-	Underground Collection System
- - -	Overhead Collection System
⬚	5 Mile Buffer (Standard)
⬚	7.5 Mile Buffer (Extended)
━	Access Road
—	Existing Road
▢	O&M Building
▨	Adirondack Park Blue Line
▩	Existing Willis Substation
■	Substation
▢	Construction Laydown Yard
□	Project Boundary

NOTES

Setbacks Include:

1200 ft	Chateaugay/Burke Participating Residence Setback
1320 ft	Chateaugay/Burke Non-Participating Residence Setback
1000 ft	Bellmont Residence Setback
596 ft	Non-WECS Structure Setback
600 ft	Chateaugay/Burke Off-Site Parcel Setback
500 ft	Bellmont Off-Site Parcel Setback
600 ft	Chateaugay/Burke Road Setback
500 ft	Bellmont Road Setback
1200 ft	Route 374 Setback
596 ft	Existing Transmission Line Setback
144 ft	Worst Case Fresnel Zone
100 ft	NYDEC Wetland Setback

TOTAL # WTG - 53
CHATEAUGAY - 34
BELLMONT - 19

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

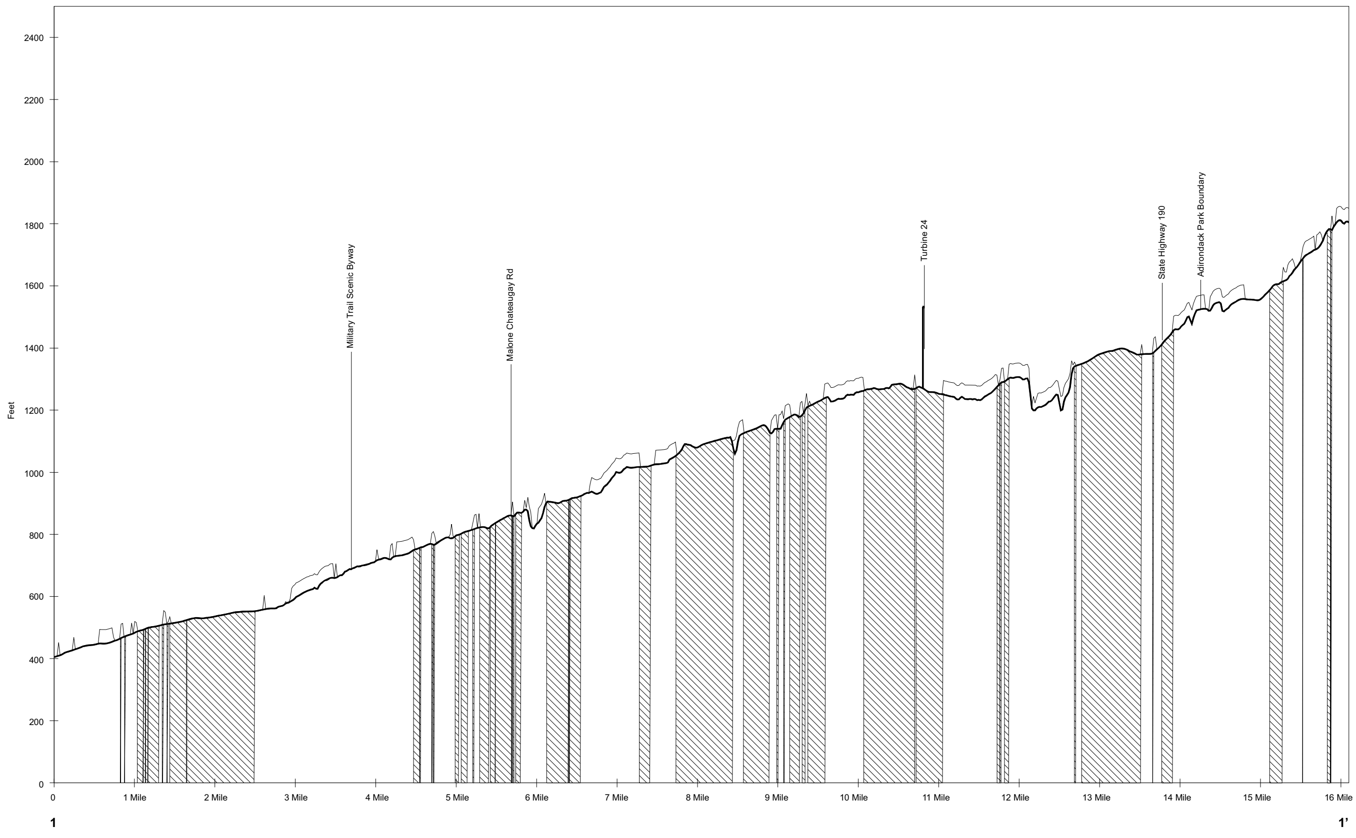
Jericho Rise Wind Farm

Figure 7
Line-of-Sight Cross Sections

Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008

Parcel Data Source:
Franklin County Real Property Office. Tax Map Department.

Topographic Source:
National Geographic - USGS 7.5 minute Quadrangles
Burke, 1969; Chateaugay, 1969; Chasm Falls, 1969; Brainardsville, 1969



LEGEND

▨ Project Potentially Visible

☐ Project Not Visible

▨ Vegetation

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

Jericho Rise Wind Farm

Figure 8
Cross Section Profile 1

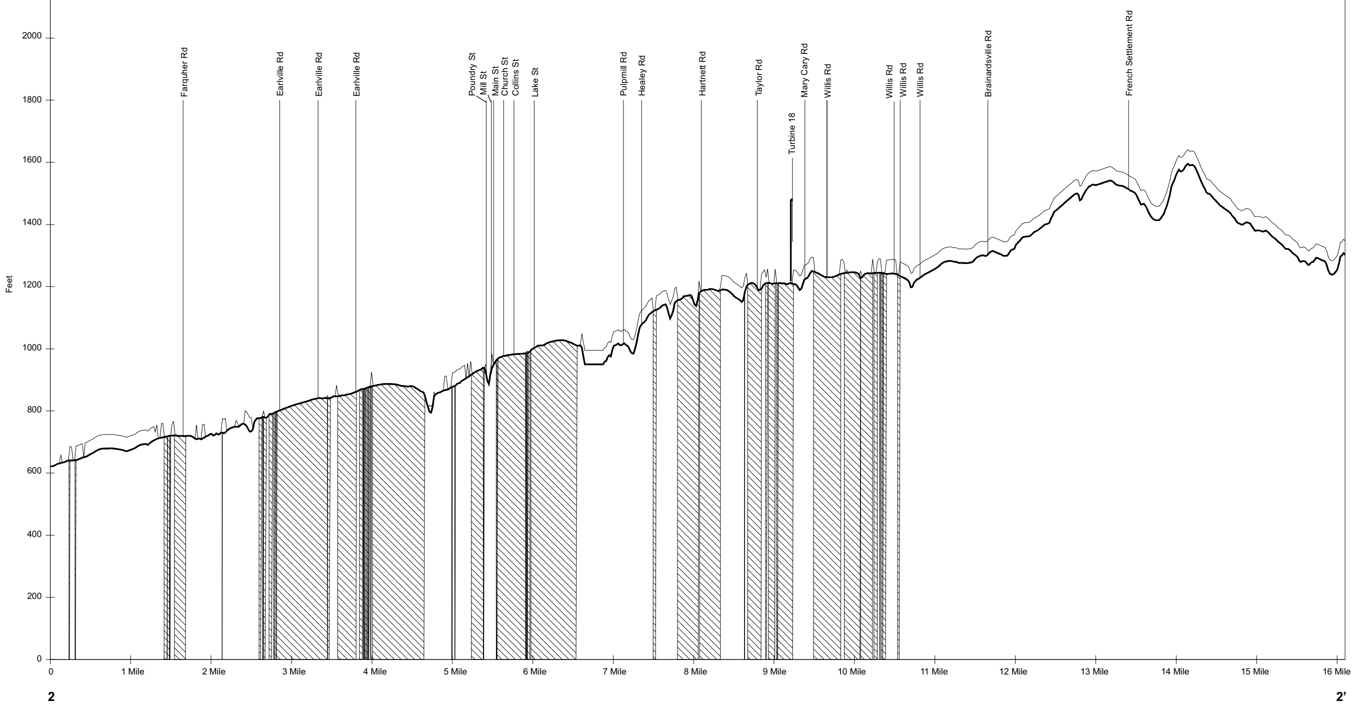
Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008

LEGEND

▨ Project Potentially Visible

☐ Project Not Visible

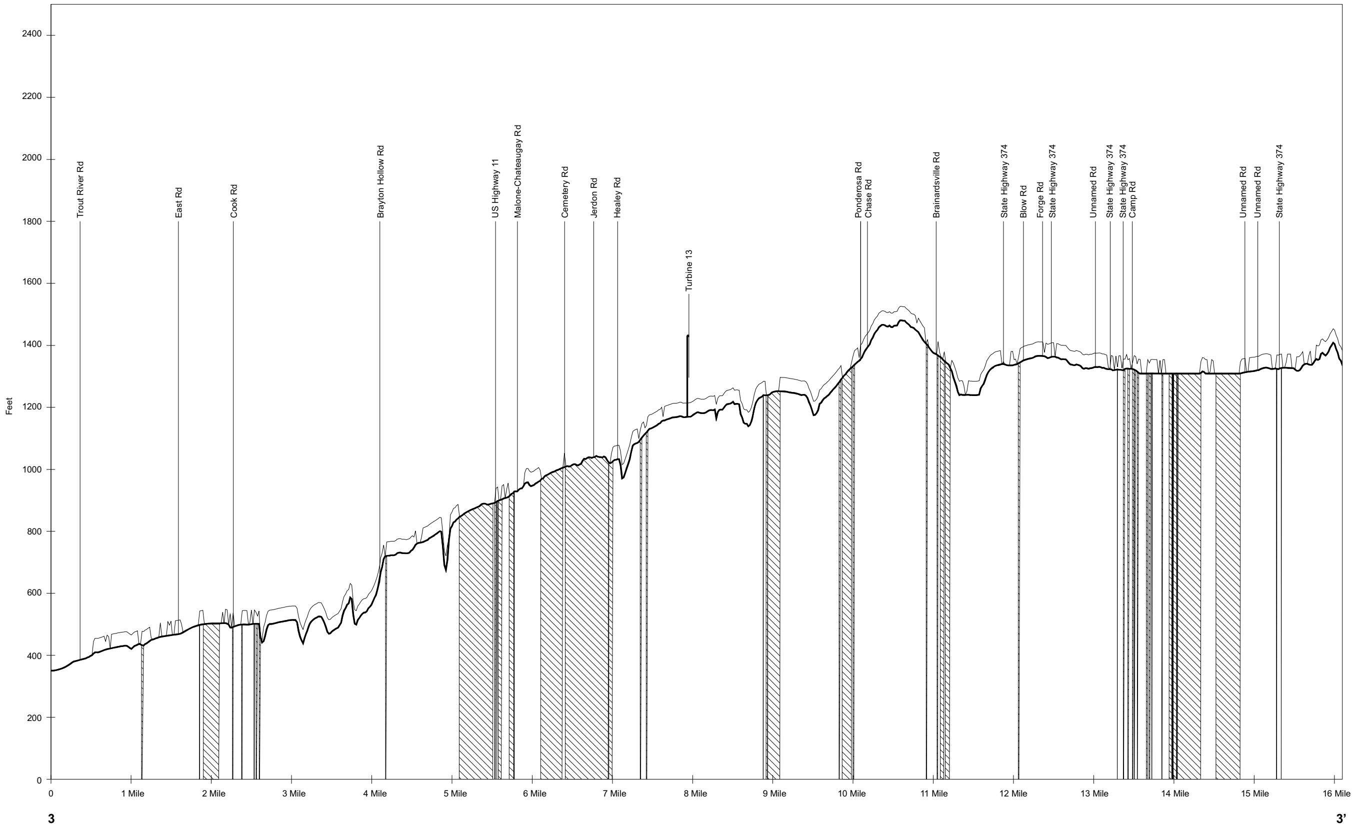
▨ Vegetation



Jericho Rise Wind Farm

Figure 9
Cross Section Profile 2

Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008



LEGEND

▨ Project Potentially Visible

☐ Project Not Visible

▨ Vegetation

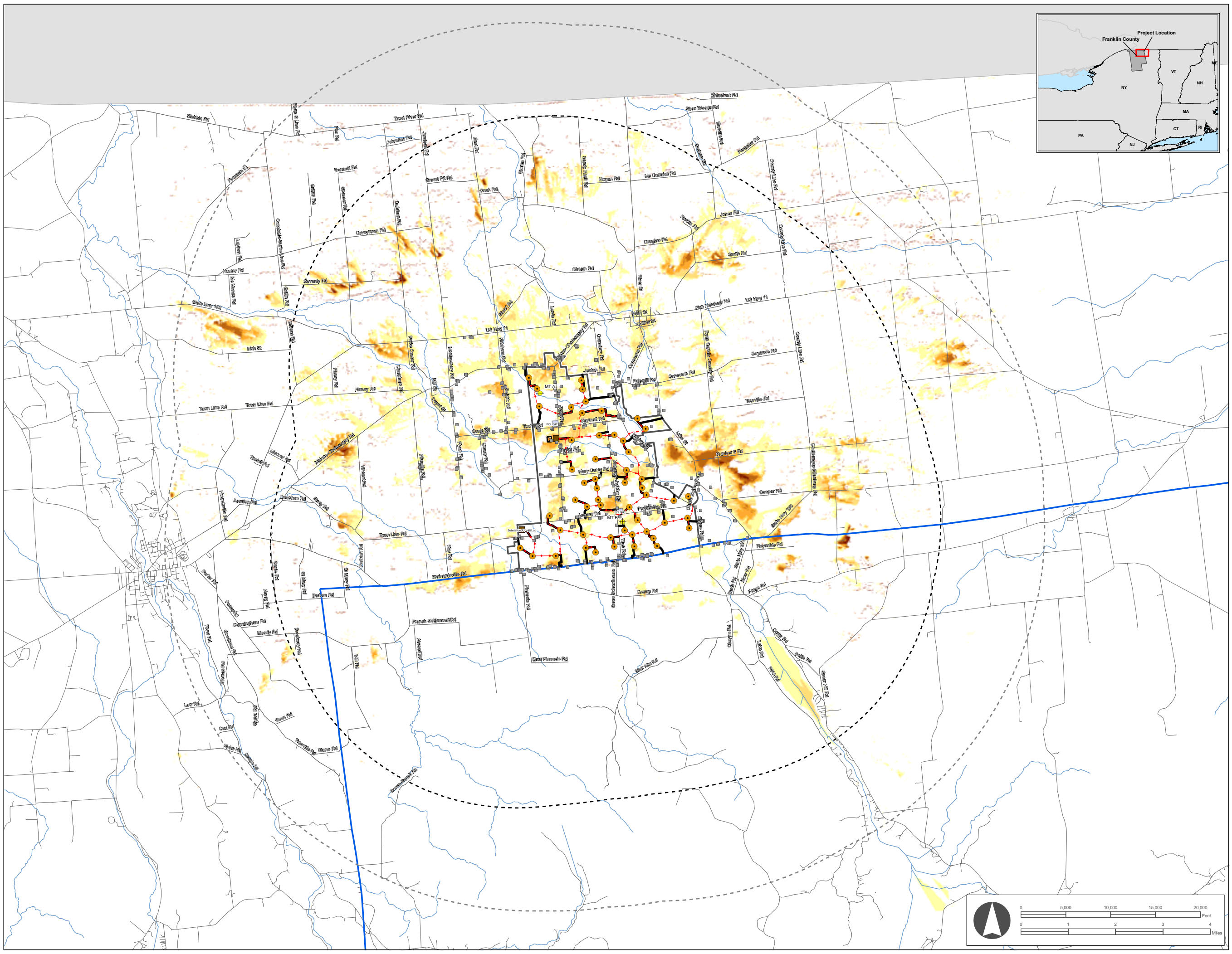
JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

Jericho Rise Wind Farm

Figure 10
Cross Section Profile 3

Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008



LEGEND

- ▪ Structure
- ✚ Met Tower
- ● Turbine
- Underground Collection System
- Overhead Collection System
- Access Road
- Existing Road
- 5 Mile Buffer (Standard)
- 7.5 Mile Buffer (Extended)
- Adirondack Park Blue Line
- ▨ Existing Willis Substation
- Substation
- Construction Laydown Yard
- ☐ Project Boundary

Turbines Visible at Night (Includes Vegetation)

- ☐ 0
- 1-5
- 6-10
- 11-15
- 16-20
- >20

NOTES

Setbacks Include:

1200 ft Chateaugay/Burke Participating Residence Setback
1320 ft Chateaugay/Burke Non-Participating Residence Setback
1000 ft Bellmont Residence Setback
596 ft Non-WECS Structure Setback
600 ft Chateaugay/Burke Off-Site Parcel Setback
500 ft Bellmont Off-Site Parcel Setback
600 ft Chateaugay/Burke Road Setback
500 ft Bellmont Road Setback
1200 ft Route 374 Setback
596 ft Existing Transmission Line Setback
144 ft Worst Case Fresnel Zone
100 ft NYDEC Wetland Setback

TOTAL # WTG - 53
CHATEAUGAY - 34
BELLMONT - 19

JERICHO RISE
WIND FARM

TETRA TECH EC, INC

Jericho Rise Wind Farm

Figure 11
Night Visibility

Jericho Rise Wind Farm LLC
Franklin County, New York
January 9, 2008

Parcel Data Source:
Franklin County Real Property Office. Tax Map Department.

Topographic Source:
National Geographic - USGS 7.5 minute Quadrangles
Burke, 1969; Chateaugay, 1969; Chasm Falls, 1969; Brainardsville, 1969

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Figure 12A. Existing Viewpoint 3 (at the edge of a cemetery off County Road 24 near the Hamlet of Bellmont Center).

Figure 12B. Simulated Viewpoint 3.

Figure 13A. Existing Viewpoint 10 (adjacent to County Route 54 near the Hamlet of Harrigan).

Figure 13B. Simulated Viewpoint 10.

Figure 14A. Existing Viewpoint 14 (at the intersection of Cassidy Road and Number 5 Road).

Figure 14B. Simulated Viewpoint 14.

Figure 15A. Existing Viewpoint 15 (on U.S. Highway 11, east of Village of Chateaugay).

Figure 15B. Simulated Viewpoint 15.

Figure 16A. Existing Viewpoint 19 (at the entrance to High Falls Park, off River Road outside of the Village of Chateaugay).

Figure 15B. Simulated Viewpoint 19.

Figure 17A. Existing Viewpoint 20 (at the intersection of River Road and Chase Road outside of Village of Chateaugay)

Figure 17B. Simulated Viewpoint 20.

Figure 18A. Existing Viewpoint 26 (along Field Road heading south out of the Village of Burke).

Figure 18B. Simulated Viewpoint 26.

Figure 19A. Existing Viewpoint 31 (near the intersection of Callahan Road and Covey Road).

Figure 19B. Simulated Viewpoint 31.

Figure 20A. Existing Viewpoint 34 (on New York State Highway 30 south of Village of Malone).

Figure 20B. Simulated Viewpoint 34.

APPENDIX A

Turbine Specifications

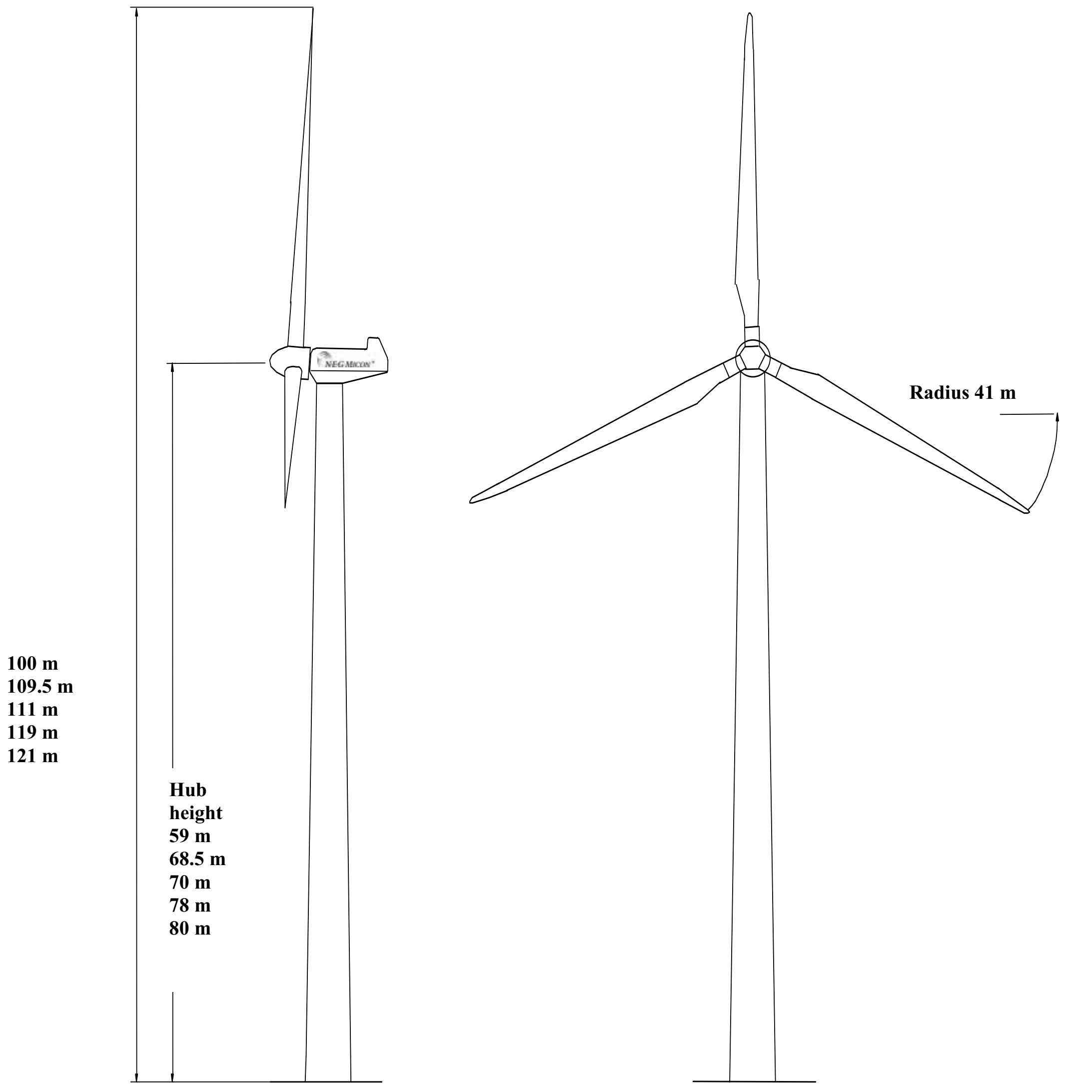
Class I
TSD 4000258-01 EN
2004-10-07

General Specification

V82-1.65 MW MK II
NM82/1650 Vers. 2

Vestas Wind Systems A/S · Alsvej 21 · 8900 Randers · Denmark · www.vestas.com

0 Illustration



1	Main Data			
		50 Hz	**60 Hz**	**60 Hz UL**
	Nominal Power	1650 kW	1650 kW	1650 kW
	Rotor diameter	82 m	82 m	82 m
	Swept area	5281 m^2	5281 m^2	5281 m^2
	Hub height. IEC IIb	59 m, 68.5 m, 70 m, 78 m	70 m, 78 m.	59 m, 70 m, 80 m
	Rotational speed	14.4 rpm	14.4 rpm	14.4 rpm

2	Nacelle Base Frame		
		50Hz	**60Hz**
	Material	EN-GJS-400-18U-LT	EN-GJS-400-18U-LT
	Standard colour	RAL 7035	RAL 7035
	Corrosion class, outside	Acc. to DS EN ISO 12944:C5 I	Acc. to DS EN ISO 12944:C5 I

3	Rotor		
		50Hz	**60Hz**
	Number of blades	3 pieces	3 pieces
	Tip speed (synchronous)	61.8 m/s	61.8 m/s
	Rotor shaft tilt	5°	5°
	Eccentricity (tower center to hub center)	3447 mm	3447 mm
	Solidity (Total blade area/rotor area)	5.0 %	5.0 %
	Power regulation	Active Stall®	Active Stall®
	Rotor orientation	Upwind	Upwind

4	Blades		
		50Hz	**60Hz**
	Type description	AL 40	AL 40
	Blade length	40 m	40 m
	Material	Carbon/wood/glass/epoxy	Carbon/wood/glass/epoxy
	Standard colour	RAL 7035	RAL 7035
	Gloss	Class 2: (30-70%) in accordance with (1), to be measured acc. to DS/ISO2813	Class 2: (30-70%) in accordance with (1), to be measured acc. to DS/ISO2813
	Type of rotor air brake	Full blade	Full blade
	Blade profiles	• FFA -W3, NACA 63.4	• FFA - W3, NACA 63.4
	Twist	20°	20°
	Largest chord	3.08 m	3.08 m
	Blade area (projected)	86 m^2	86 m^2
	Note! (1) Technical Criteria for Danish Approval Scheme for Wind Turbines		

5	Blade bearing		
		50 Hz	**60 Hz**
	Type description	Ball bearing	Ball bearing
	Number of bearings	3 pcs.	3 pcs.

6	Hub		
		50Hz	**60Hz**
	Type description	Spherical	Spherical
	Material	EN-GJS-400-18U-LT	EN-GJS-400-18U-LT
	Corrosion class, outside	Acc. to DS EN ISO 12944:C5 I	Acc. to DS EN ISO 12944:C5 I

7	Main shaft		
		50Hz	**60Hz**
	Type description	Forged shaft and flange	Forged shaft and flange
	Material	34CrNiMo6 + QT	34CrNiMo6 + QT
	Corrosion class	Acc. to DS EN ISO 12944:C2	Acc. to DS EN ISO 12944:C2

8	Main Bearing		
		50Hz	**60Hz**
	Type description	Spherical roller bearing	Spherical roller bearing
	Number of	1 piece	1 piece
	Lubrication	Oil pump	Oil pump

9	Main Bearing Housing		
		50Hz	**60Hz**
	Type description	Flange bearing	Flange bearing
	Material	EN-GJS-400-18U-LT	EN-GJS-400-18U-LT

10	Gearbox		
		50 Hz	**60Hz**
	Type description	1. step planet, 2. step helical	1. step planet, 2. step helical
	Gear house material	Cast	Cast
	Ratio	1:70.2	1:84.3
	Mechanical power	1800 kW	1800 kW
	Bending strength acc. to ISO 6336	S_F > 1.6	S_F > 1.6
	Surface durability acc. to ISO 6336	S_H > 1.25	S_H > 1.25
	Scuffing safety acc. to DNV 41.2	S_S > 1.3	S_S > 1.3
	Shaft seals	Labyrinth	Labyrinth
	Oil sump	App. 250 l	App. 250 l

11	Cartridge Gear Heater - for Arctic Version only		
		50 Hz	**60 Hz**
	Rating	800 W/ pcs.	800 W/ pcs.
	Number of	4 pieces	4 pieces

12	Oil pump		
		50 Hz	**60Hz**
	Voltage	3 x 690 V	3 x 480 V

13	Heat Exchange Unit (Water/Oil)		
		50 Hz	**60 Hz**
	Cooling capacity	41.3 kW	41.3 kW

14	Oil Cooler		
		50 Hz	**60 Hz**
	Cooling capacity	37.5 kW	37.5 kW

15	Water Pump		
		50 Hz	**60Hz**
	Voltage	1 x 230 V	3 x 480 V

16	Water Cooler/ Radiator		
		50 Hz	**60 Hz**
	Cooling capacity	46.2 kW	46.2 kW

17	Electrical Nacelle Heater - for Arctic Version only		
		50 Hz	**60Hz**
	Voltage	3 x 690 V	3 x 600 V
	Power	20 kW	20 kW
	Number of heaters	2 pieces	2 pieces

18	Mechanical Shaft Brake		
		50 Hz	**60Hz**
	Type description	Active Brake	Active Brake
	Brake disc	Steel, mounted on high speed shaft	Steel, mounted on high speed shaft
	Number of calipers	2 piece	2 piece

19	Hydraulic Power Unit for Mechanical Shaft Brake		
		50 Hz	**60Hz**
	Voltage	3 x 690 V	3 x 480 V
	Working pressure range	140-150 bar	140-150 bar
	Oil capacity	11 l	11 l

20	Coupling		
		50 Hz	**60Hz**
	Type description	Flexible coupling, constant rpm	Flexible coupling, constant rpm

21	Generator			
			50 Hz	60 Hz
	Type description		1 speed generator, water cooled	1 speed generator, water cooled
	Rated power	P_N	1650 kW	1650 kW
	Apparent power	S_N	1805 kVA	1808 kVA
	Rated current	I_N	1510 A	1740 A
	Max power at Class F	P_{Fmax}	1815 kW	1815 kW
	Max current at Class F	I_{Fmax}	1661 A	1914 A
	No load current	I_0	400 A	430 A
	Reactive power consumption at rated power (tolerance. acc to IEC 60034-1)	Q_N	731 kvar	740 kvar
	Reactive power consumption at no load (tolerance. acc to IEC 60034-1)	Q_0	478 kvar	447 kvar
	Number of poles	P	6	6
	Synchronous rotation speed	n_0	1000 rpm	1200 rpm
	Rotation speed at rated power	n_N	1012 rpm	1214 rpm
	Slip at rated power	s_N	1.20 %	1.17 %
	Voltage	U_N	3 x 690 V	3 x 600 V
	Frequency	F	50 Hz	60 Hz
	Coupling		Δ	Δ
	Enclosure		IP54	IP54
	Insulation class/ Temperature increase		F/B	F/B

22	Yaw System – Ball Bearing Slewing Ring		
		50 Hz	60 Hz
	Type description	Ball bearing, internal gearing	Ball bearing, internal gearing

23	Yaw System – Yaw Gear and Motors		
		50 Hz	60 Hz
	Type description	Planetary gear motor	Planetary gear motor
	Gear ratio of yaw gear unit	app. 1:1687	app. 1:1687
	Voltage	3 x 690 V	3 x 480 V
	Rotational speed at full load	920 rpm	1140 rpm
	Number of yaw gears	6 pieces	6 pieces

24	Yaw System – Yaw Brake		
		50 Hz	60 Hz
	Type Description	Hydraulic disc brake	Hydraulic disc brake
	Number of Yaw Friction Units	6 pieces	6 pieces

25	Hydraulic Power Unit for Yaw Brake		
		50 Hz	60 Hz
	Voltage	3 x 400/ 3x 690 V	3 x 480 V
	Working pressure range	140-150 bar	140-150 bar
	Oil capacity	App. 10 l.	App. 10 l.

26	Tower		
		50 Hz	60 Hz
	Type Description	Conical, tubular	Conical, tubular
	Material	Welded steel plate	Welded steel plate
	Corrosion class, outside	Acc. to DS EN ISO 12944: C5 I	Acc. to DS EN ISO 12944: C5 I
	Colour	RAL 7035	RAL 7035
	Access conditions	Internal, safety harness, ladder cage	Internal, safety harness, ladder cage

27	Wind Turbine Main Panel/ Control panel/ phase comp. panel		
		50 Hz	**60 Hz**
	Voltage	3 x 690 V	3 x 600 V
	Frequency	50 Hz	60 Hz
	Cut-in system	Soft with thyristors	Soft with thyristors
	Design Standard	IEC	UL

28	Electrical Grid Requirements		
		50 Hz	**60Hz**
	Max. voltage	+10 % (60 sec.)	+10 % (60 sec.)
	Min. voltage	-10 % (60 sec.)	-10 % (60 sec.)
	Max. voltage	+12.5 % (0.1 sec.)	+12.5 % (0.1 sec.)
	Min. voltage	-15 % (0.1 sec.)	-15 % (0.1 sec.)
	High frequency	+1 Hz (0.2 sec.)	+1 Hz (0.2 sec.)
	Low frequency	- 2 Hz (0.2 sec.)	- 2 Hz (0.2 sec.)
	Maximum asymmetri current	15 % (60 sec.) – phase to ground	15 % (60 sec.) – phase to ground
	Maximum asymmetri voltage	2 % (60 sec.) – phase to ground	2 % (60 sec.) – phase to ground
	Maximum short circuit current	25 kA at 690V	30 kA at 600V
	Single harmonic	Max 1% of any single harmonic	Max 1% of any single harmonic
	Total harmonic distortion	Max 3% total harmonic distortion	Max 3% total harmonic distortion
	Connection	• Solidly grounded wye at secondary (690 V) side of transformer	• Solidly grounded wye at secondary (600 V) side of transformer

29	Integrated Grid Connection System, IGC System, Transformer in tower - Optional (IGC is not delivered in the US)		
	Power Transformer incl. Metal Enclosure		
		50 Hz	60 Hz
	Type description	Cast Resin (dry type)	Cast Resin (dry type)
	Apparent power	1800 kVA	1800 kVA
	Primary voltage	10 – 24 kV+/- 2 x 2.5 %	10 – 24 kV+/- 2 x 2.5 %
	Secondary voltage	0.690 kV	0.600 kV
	Frequency	50 Hz	60 Hz
	Coupling group	Dyn, Solidly grounded wye at 690 V	Dyn, Solidly grounded wye at 600 V
	Switch gear		
	Type description	Gas insulated SF6 ring main unit	Gas insulated SF6 ring main unit
	Nominal voltage	24 kV	24 kV
	Frequency	50 Hz	60 Hz

31	Climate and Site Conditions regarding structural design		
		50 Hz – IEC IIb	**60 Hz – IEC IIb**
	Design life time	20 years	20 years
	Temperature interval for operation	See specifications below	See specifications below
	Temperature interval for structure	See specifications below	See specifications below
	A-factor	9.59 m/s	9.59 m/s
	Form factor, c	2.0	2.0
	Annual average wind speed	8.5 m/s	8.5 m/s
	Wind shear	0.20	0.20
	Extreme wind speed	42.5 m/s (10 min. average)	42.5 m/s (10 min. average)
	Survival wind speed	59.5 m/s (3 sec. average)	59.5 m/s (3 sec. average)
	Automatic stop limit	20 m/s (10 min. average)	20 m/s (10 min. average)
	Re-cut in	18 m/s (10 min. average)	18 m/s (10 min. average)
	Characteristic turbulence intensity acc. to IEC 61400-1 (15 m/s)	16% (including wind farm turbulence)	16% (including wind farm turbulence)
	Air density	1.225 kg/m3	1.225 kg/m3
	Maximum in-flow angle	8°	8°

32	Specific Climate and Site Conditions			
		Standard (only 50 Hz)	**Tropical -20 to +40°C (50 + 60 Hz)**	**Arctic (50 + 60 Hz)**
	Temperature interval for operation[1,2,3]	-20 to +30°C	-20 to +35°C (+40°C)	-30 to +30°C
	Temperature interval for structure	-20 to +50°C	-20 to +50°C	-40 to +50°C

[1] Note! For Tropical! Rated power is reduced to 1500 kW for temperature between +35°C and +40°C.

[2] Note! No operation if temperature is below -10°C in control panel or gear oil sump. Heating systems are optional.

[3] Note! If the windturbine is placed more than 1000m above sea level, a higher temperature rise than usual might occur in the generator, the transformer and other electrical components. In this case a periodic reduction of rated power might occur, even if the ambient temperature is within specified limits. Furthermore increased risk of icing up occur at sites more than 1000m above sea level.

33	**Conditions for Power Curve (at hub height)**		
		50 Hz	**60Hz**
	Air density	1.225 kg/m^3	1.225 kg/m^3
	Wind shear	0.12-0.16	0.12-0.16
	Turbulence intensity	11-16 %	11-16 %
	Blades	Clean	Clean
	Ice/snow on blades	No	No
	Leading Edge	No damage	No damage
	Rain	No	No
	Terrain	IEC 61400-12	IEC 61400-12
	Inflow angle	0±2 °	0±2 °
	Grid frequency	50 ±0.5	60±0.5 Hz
	Verification acc. to	IEC 61400-12	IEC 61400-12

Noise Measurement Summary, NM82/1650

Noise measurement summary, NM82/1650

1. Identification of Measuring institute

Windtest Grevenbroich GmbH
Frimmersdorfer str. 73
D 41517 Grevenbroich, Germany

Windtest Grevenbroich is accredited by DAR (DPT-DL-3175.00) to perform noise measurements on wind turbines.

2. Report identification

Acoustic report for a wind energy converter type
NEG Micon NM 82/1650, hub height 93,6m
Report SE03007B1

Authorised signatory: Dr. Markus Koschinsky

3. Measurement date:

May 12. 2003, Grevenbroich test site

4. Description of wind turbine and surroundings

Wind turbine: NM82/1650
Rotor blades: AL 40
Main Gear: Flender PEAS 4390
Generator: ELIN MCS556M31Z7B
Terrain: Flat
Surface: Grass, low vegetation, a few tree lines
Measurement conditions: Optimal

5. Standard of measurement

IEC 61400-11: 1998 " Wind turbine generator systems – Part 11: Acoustic noise measurement techniques"

	Name:	Date:	Signature:
Written by:	ESL	19-01-2004	
Approved by:			
Filename:	Noise measurement summary NM82-1650.doc rev 1		
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6. Measurement results

6.1 Apparent sound power level and uncertainty:

	6 m/s	7 m/s	8 m/s	95% RP (8,6 m/s)
L_{wA} [dB re 1 pW]	100,3	100,7	101,7	101,8
uncertainty	0,9	0,9	>0,9	>0,9

6.2 Frequency analysis at 8 m/s

A-weighted 1/1 octave analysis of the sound power level at 8 m/s

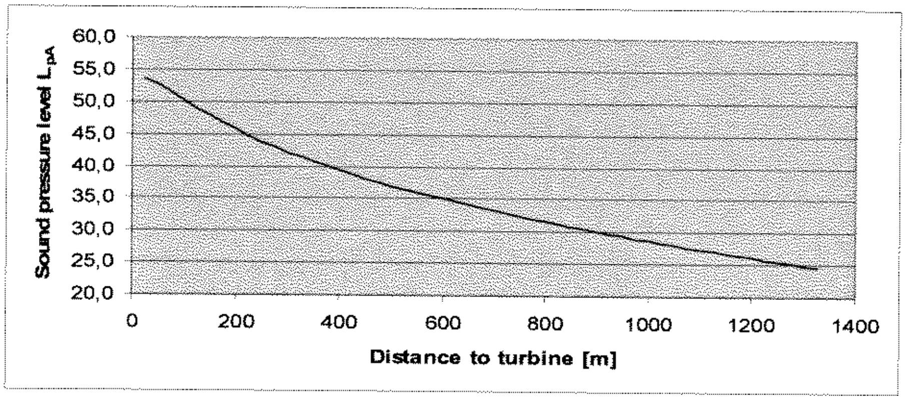
Octave band	63 Hz	125 Hz	250 Hz	500 z	1 kHz	2 kHz	4 kHz	8 kHz
L_{wA} [dB]	83,3	90,3	94,9	95,0	95,9	92,9	91	81,5

6.3 Tonality

The noise from the turbine did not contain any tonal peaks with a calculated ΔL_{tn} above the IEC 61400-11:1998 expression (9). According to IEC 61400-11:1998 no audible tones is present in the noise.

7 Sound pressure level at distances from turbine

The graph below shows the sound pressure level L_{pA} 1.5 m above the ground at a wind speed 10 m above ground of 8 m/s as function of the distance from the turbine. It is calculated for 78 m hub height, and includes air absorption (0.005 dB(m)). At 218 meters distance from the turbine the sound pressure level is 45 dB(A), and at 376 meters distance form the turbine, the sound pressure level is 40 dB(A).



	Name:	Date:	Signature:
Written by:	ESL	19-01-2004	
Approved by:			
Filename:	Noise measurement summary NM82-1650.doc rev 1		
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APPENDIX B

Visually Sensitive Resources within the Project Study Area

Appendix B
Visually Sensitive Resources within the Study Area

SITE ID	RESOURCE NAME	Town	County	Location
Visually Sensitive Resources—Identified in NYSDEC Visual Policy				
1	Military Trail Scenic Byway	Burke,Chateaugay,Clinton	Franklin, Clinton	N, W, and E of Project
2	Adirondack Park Scenic Pull-Off, CR-54	Ellenburg	Clinton	Near Harrigan, Sites 22&42, specific location unidentified
3	(State Route) Highway 190	Bellmont	Franklin	SE of Project
4	(State Route) Highway 374	Bellmont	Franklin	SE of Project
5	Lake (lower Chateaugay Lake)	Bellmont	Franklin	S of Project
6	Boat Launch (upper Chateaugay Lake)	Ellenburg	Clinton	S of Project
Visually Sensitive Resources—Not Identified in NYSDEC Visual Policy				
7	Franklin 10 State Forest	Chateaugay	Franklin	E of Project
8	Chateaugay State Fish Hatchery	Chateaugay	Franklin	Off Rte 11 - 1.2 mile E of Chateaugay Village
9	High Falls Park and Campground	Chateaugay	Franklin	Off Rte 11 - 0.4 miles SW of Chateaugay Village
10	Ponderosa Campground	Chateaugay	Franklin	Ponderosa Road-On Bellmont/Chateaugay Town Line
11	Village of Burke	Burke	Franklin	
12	Village of Chateaugay	Chateaugay	Franklin	
13	Belmont Center Hamlet	Bellmont	Franklin	
14	Burke Center Hamlet	Burke	Franklin	
15	Cooks Mill Hamlet	Chateaugay	Franklin	
16	Sun Hamlet	Burke	Franklin	
17	Thayers Corner Hamlet	Burke	Franklin	
18	Brainardsville Hamlet	Bellmont	Franklin	
19	Brayton Hollow Hamlet	Chateaugay	Franklin	
20	Blairs Kiln Hamlet	Bellmont	Franklin	
21	Earlville Hamlet	Chateaugay	Franklin	
22	Harrigan Hamlet	Ellenburg	Clinton	
23	US Highway 11	Burke,Chateaugay,Clinton	Franklin, Clinton	N, W, and E of Project
24	NY State Highway 374	Bellmont, Chateaugay	Franklin	E, NE, and SE of Project
25	NY State Highway 190	Ellenburg, Bellmont	Franklin, Clinton	E of Project
26	County Route 54	Bellmont	Franklin, Clinton	S of Project / Junction w Route 374
27	County Route 24	Bellmont	Franklin	S of Project / Brainarsdville Road
Visually Sensitive Resources: Listed on or Eligible for the National or State Register of Historic Places				
28	108 Campbell (Bohen) Road	Clinton	Clinton	
29	394 Looby Road	Clinton	Clinton	
30	241 Lost Nation Road	Clinton	Clinton	
31	604 Lost Nation Road	Clinton	Clinton	
32	911/929 Ryan Road	Clinton	Clinton	
33	7631 US Rte 11	Clinton	Clinton	
34	9 Broad Street	Clinton	Clinton	
35	26 Smith Street	Clinton	Clinton	
36	556 and 560 SR 189	Clinton	Clinton	
37	595 SR 189	Clinton	Clinton	
38	1343 SR 189	Clinton	Clinton	
39	68 Campbell (Bohen) Road	Ellenburg	Clinton	

Appendix B
Visually Sensitive Resources within the Study Area

SITE ID	RESOURCE NAME	Town	County	Location
40	94 Ryan Road	Ellenburg	Clinton	
41	197 Ryan Road	Ellenburg	Clinton	
42	West Hills Cemetery	Ellenburg	Clinton	SR 190, Between Tacey and Moore Roads
43	Star Road Cemetery	Ellenburg	Clinton	Star Rd, Between Tacey and Sancombe (Moore) Rds
44	Cassidy Road Cemetery	Bellmont	Franklin	Cassidy Road
45	Merrill Cemetery	Bellmont	Franklin	82 Cheyne Road
46	Bunker Hill Cemetery	Bellmont	Franklin	Cromp Road
47	540 Number 5 Road	Bellmont	Franklin	
48	Morningside Cemetery	Bellmont	Franklin	NY 374 W side / South of Spear Rd / East of Spear Rd
49	5908 NY 374	Bellmont	Franklin	Lower Chateaugay Lake
50	5926 NY 374	Bellmont	Franklin	Lower Chateaugay Lake
51	5880 NY 374 Banner House Inn	Bellmont	Franklin	Lower Chateaugay Lake
52	Bellmont Center Cemetery	Bellmont	Franklin	CR 24 South side, West of Pinnacle Road
53	2 SR 190	Bellmont	Franklin	
54	Brainardsville Cemetery	Bellmont	Franklin	164 SR 190
55	6343 SR 374	Bellmont	Franklin	
56	6361 SR 374	Bellmont	Franklin	
57	Ridgeway Cemetery	Burke	Franklin	Cook Road North Side, East of CR36
58	Mitchell Cemetery	Burke	Franklin	Montgomery Road, W Side, South of CR 33 (W Main St)
59	839 Depot Street	Burke	Franklin	
60	842 Depot Street	Burke	Franklin	
61	1046 East Main Street	Burke	Franklin	
62	1052 East Main Street	Burke	Franklin	
63	Colonial Revival House	Buke	Franklin	Mill Street, East Side, North of Main Street
64	15 East Road	Burke	Franklin	
65	5717 US Route 11 (Bova House)	Burke	Franklin	
66	Thayer Corners Cemetery	Burke	Franklin	US 11 N Side, setback 950 feet, in pine stand on knoll
67	162 Cemetery Road	Chateaugay	Franklin	
68	165 Cemetery Road	Chateaugay	Franklin	
69	St Patrick Cemetery	Chateaugay	Franklin	294 Cemetery Road
70	1742 CR 23	Chateaugay	Franklin	
71	442 Douglas Road	Chateaugay	Franklin	
72	238 Earlville Road	Chateaugay	Franklin	
73	Cosgrove Adult Home	Chateaugay	Franklin	890 Farker (Farquhar) Road
74	Chateaugay Fish Hatchery	Chateaugay	Franklin	Fish Hatchery Road, North of Route 11 on Marble River
75	528 Hartnett Road	Chateaugay	Franklin	
76	Atwater Cemetery	Chateaugay	Franklin	Martin Road, South Side, on top of knoll in pine stand
77	Bigelow Cemetery	Chateaugay	Franklin	304 River Road
78	479 River Road	Chateaugay	Franklin	
79	Sandy Knoll Union Cemetery	Chateaugay	Franklin	Sandy Knoll Road, West Side, North of CR 35
80	389 Shee Woods Road	Chateaugay	Franklin	
81	Eastside Cemetery	Chateaugay	Franklin	7780 SR 11
82	Port of Entry US Customs	Chateaugay	Franklin	SR 374

Appendix B
Visually Sensitive Resources within the Study Area

SITE ID	RESOURCE NAME	Town	County	Location
83	748 SR 374	Chateaugay	Franklin	
84	760 SR 374	Chateaugay	Franklin	
85	Chateaugay United Methodist Church	Chateaugay	Franklin	5 Church Street
86	16 Church Street	Chateaugay	Franklin	
87	20 Church Street	Chateaugay	Franklin	
88	Chateaugay Hotel	Chateaugay	Franklin	2 Depot Street
89	23 Depot Street	Chateaugay	Franklin	
90	36 Depot Street	Chateaugay	Franklin	
91	Rutland Railroad Depot	Chateaugay	Franklin	45 Depot Street
92	160-162 East Main Street	Chateaugay	Franklin	Jackson Block
93	161 East Main Street	Chateaugay	Franklin	Beeman Block
94	163 East Main Street	Chateaugay	Franklin	
95	165 East Main Street	Chateaugay	Franklin	Coonley Block
96	167 East Main Street	Chateaugay	Franklin	Coonley Block
97	169 East Main Street	Chateaugay	Franklin	
98	171 East Main Street	Chateaugay	Franklin	
99	173-175 East Main Street	Chateaugay	Franklin	
100	181 East Main Street	Chateaugay	Franklin	
101	183 East Main Street	Chateaugay	Franklin	
102	Town Hall	Chateaugay	Franklin	191 East Main Street
103	Johnson Brother's Building	Chateaugay	Franklin	194 East Main Street
104	196 East Main Street	Chateaugay	Franklin	
105	First Presbyterian Church	Chateaugay	Franklin	214 East Main Street
106	Smith Green Cemetery (Evergreen Cemetery)	Chateaugay	Franklin	275 East Main Street
107	5 Franklin Street	Chateaugay	Franklin	
108	6 Franklin Street	Chateaugay	Franklin	
109	14 Lake Street	Chateaugay	Franklin	
110	McCoy Building	Chateaugay	Franklin	3 & 5 River Street
111	94 West Main Street	Chateaugay	Franklin	
112	100 West Main Street	Chateaugay	Franklin	
113	St Patrick's Church and Rectory	Chateaugay	Franklin	130 & 132 West Main Street
114	Key Bank	Chateaugay	Franklin	151 West Main Street
115	Boyton Hollow Cemetery	Chateaugay	Franklin	CR 35 W Side, Heavily Wooded Knoll at Boyton Holl. Rd
116	Earlville Cemetery	Chateaugay	Franklin	Earlville Road, North of Farker (Farquhar) Road
117	Wills Cemetery	Chateaugay	Franklin	641 Earlville Road
118	703 Earlville Road	Chateaugay	Franklin	
119	Earlville Methodist Church	Chateaugay	Franklin	Farker (Farquhar) Road, South of Earlville Road
120	Forge Methodist (Seventh Advent) Church	Chateaugay	Franklin	Blow Road, East Side North of Forge Road.
121	Malone (Village) Historic District	Malone	Franklin	Core of Village
122	Franklin County House of History	Malone	Franklin	51 Milwaukee St
123	Macomb Hydro Facility	Malone	Franklin	SE Malone on Salmon River
124	Cargin Road Bridge	Malone	Franklin	Salmon River North of Malone Village
125	St Mark's Episcopal Church and Rectory	Malone	Franklin	34 Elm Street

Appendix B
Visually Sensitive Resources within the Study Area

SITE ID	RESOURCE NAME	Town	County	Location
126	Raymond Street School	Malone	Franklin	26 Raymond Street
127	Burke Town Hall	Burke	Franklin	842 Depot Street
128	Chateaugay Fish Hatchery	Chateaugay	Franklin	Fish Hatchery Road, North of Route 11 on Marble River
129	Anselm Lincoln House	Malone	Franklin	49 Duane Street
130	Horton Grist Mill	Malone	Franklin	
131	Almonzo Wilder Home	Burke	Franklin	0.5 miles east of Donahue Road on Stacy Road
132	First Union Protestant Church of Mountain View	Bellmont	Franklin	7 Church Rd, Owls Head
133	177 East Main Street/ non-contributing	Chateaugay	Franklin	
134	144 West Main Street / non-contributing	Chateaugay	Franklin	
135	Tt20A	Bellmont	Franklin	Adirondack Park National Historic Landmark
136	Tt20B	Bellmont	Franklin	Adirondack Park National Historic Landmark
Visually Sensitive Resources: Listed on or Eligible for the National or State Register of Historic Places - Location Uncertain				
137	n/a	Malone	Franklin	Not enough information to map the location
138	n/a	Malone	Franklin	Not enough information to map the location
139	Poirier Apartments	Malone	Franklin	Not enough information to map the location
140	Main Street Historic District	Chateaugay	Franklin	Not enough information to map the location
141	Main Street Historic District	Chateaugay	Franklin	Not enough information to map the location
142	Main Street Historic District	Chateaugay	Franklin	Not enough information to map the location
143	Main Street Historic District - non contributing	Chateaugay	Franklin	Not enough information to map the location
144	Main Street Historic District	Chateaugay	Franklin	Not enough information to map the location
145	Main Street Historic District	Chateaugay	Franklin	Not enough information to map the location
146	Main Street Historic District	Chateaugay	Franklin	Not enough information to map the location
147	Bank Building Main Street Historic District	Chateaugay	Franklin	Not enough information to map the location
148	Main Street Historic District - non contributing	Chateaugay	Franklin	Not enough information to map the location
149	Malone School for the Deaf	Chateaugay	Franklin	Not enough information to map the location
150	n/a	Malone	Franklin	Not enough information to map the location
151	n/a	Malone	Franklin	Not enough information to map the location
152	n/a	Malone	Franklin	Not enough information to map the location
153	Residence	Burke	Franklin	Not enough information to map the location
154	Residence	Burke	Franklin	Not enough information to map the location
155	Residence	Burke	Franklin	Not enough information to map the location
156	Residence	Burke	Franklin	Not enough information to map the location
157	Residence	Burke	Franklin	Not enough information to map the location
158	Unassigned Number	Chateaugay	Franklin	Not enough information to map the location
159	Farm Complex	Chateaugay	Franklin	Not enough information to map the location
160	Farm Complex	Chateaugay	Franklin	Not enough information to map the location
161	Residence in Earlville	Chateaugay	Franklin	Not enough information to map the location
162	Farm Complex	Chateaugay	Franklin	Not enough information to map the location
163	Farm Complex with Stone Farmhouse	Chateaugay	Franklin	Not enough information to map the location
164	Farm Complex	Chateaugay	Franklin	Not enough information to map the location
165	Farm Complex with Brick Farmhouse and Cemetery	Chateaugay	Franklin	Not enough information to map the location
166	Residence in Earlville	Chateaugay	Franklin	Not enough information to map the location
167	Brick Residence	Chateaugay	Franklin	Not enough information to map the location

Appendix B
Visually Sensitive Resources within the Study Area

SITE ID	RESOURCE NAME	Town	County	Location
168	Farm Complex	Chateaugay	Franklin	Not enough information to map the location
169	Residence	Chateaugay	Franklin	Not enough information to map the location
170	Farm Complex	Chateaugay	Franklin	Not enough information to map the location
171	Farm Complex	Chateaugay	Franklin	Not enough information to map the location
172	Chateaugay Business Park Locus 1 Historic Site	Chateaugay	Franklin	Not enough information to map the location
173	Residence	Chateaugay	Franklin	Not enough information to map the location
174	Residence	Chateaugay	Franklin	Not enough information to map the location
175	Residence	Chateaugay	Franklin	Not enough information to map the location
176	Residence	Chateaugay	Franklin	Not enough information to map the location
177	Duplex Residence	Chateaugay	Franklin	Not enough information to map the location
178	Residence	Chateaugay	Franklin	Not enough information to map the location
179	Residence	Chateaugay	Franklin	Not enough information to map the location
180	Residence	Chateaugay	Franklin	Not enough information to map the location
181	Residence	Chateaugay	Franklin	Not enough information to map the location
182	Pope, William, and Company Iron Works (Catalan Forge)	Bellmont	Franklin	The Forge - Not enough information to map the location
183	n/a	Bellmont	Franklin	Not enough information to map the location
184	n/a	Bellmont	Franklin	Not enough information to map the location
185	n/a	Bellmont	Franklin	Not enough information to map the location
186	Residence	Bellmont	Franklin	Not enough information to map the location
187	Residence	Bellmont	Franklin	Not enough information to map the location
188	Inn/Guest House	Bellmont	Franklin	L Chateaugay L-Not enough information to map location
189	Residence	Bellmont	Franklin	L Chateaugay L- Not enough information to map location
190	Residence	Bellmont	Franklin	L Chateaugay L- Not enough information to map location
191	Residence	Bellmont	Franklin	Brainarsdville Ham.-Not enough information to map location
192	Residence	Bellmont	Franklin	Brainarsdville Ham.-Not enough information to map location
193	Remington Camp	Bellmont	Franklin	Not enough information to map the location
194	Residence	Clinton	Clinton	Not enough information to map the location
195	Residence	Clinton	Clinton	Not enough information to map the location
196	Residence	Clinton	Clinton	Not enough information to map the location
197	Brick Residence	Clinton	Clinton	Not enough information to map the location
198	Residence	Clinton	Clinton	Not enough information to map the location
199	Farm Complex	Clinton	Clinton	Not enough information to map the location
200	Merrill School House	Ellenburg	Clinton	Not enough information to map the location
201	Farm Complex	Ellenburg	Clinton	Not enough information to map the location
202	Northern Adirondack CSD	Ellenburg	Clinton	Not enough information to map the location
203	Farm Complex	Ellenburg	Clinton	Not enough information to map the location
204	Farm Complex/ Stone Farmhouse	Ellenburg	Clinton	Not enough information to map the location
205	Paddock Building	Malone	Franklin	Not enough information to map the location

Note: Locations for Sites 1-136 are mapped on Figure 4.

APPENDIX C

Viewpoint Locations

Appendix C. Viewpoint Locations[1]

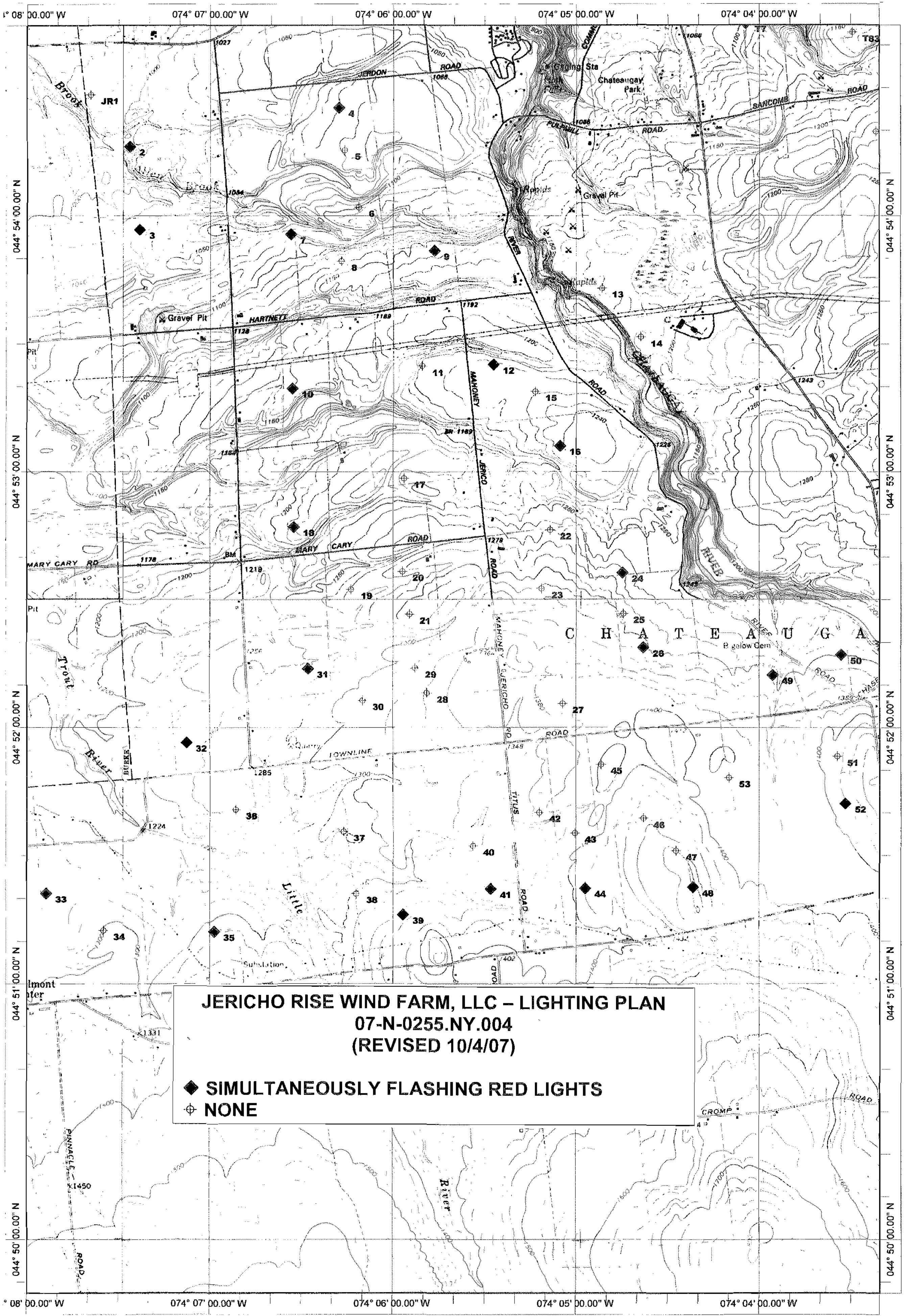
Viewpoint Number	General Location	Landscape Similarity Zone	Compass Direction on Photos
1	Highway 30 just outside of the Village of Malone (Viewpoint 34 below is in the same area).	Rural Residential/Agriculture	Compass at 080 degrees about 10.4 miles from turbine #84
2	Brainardsville Road/CR 24 just before Bellmont Center	Rural Residential/Agriculture	Compass at 056 degrees about 9.21 miles from turbine #02
3	Brainardsville Road/CR 24 just after Bellmont Center at a cemetery	Village/Hamlet and Forested	Compass at 004 degrees about 4.08 miles from turbine #32 Compass at 077 degrees about 2.95 miles from turbine #84 Compass at 353 degrees about 4.04 miles from turbine #02 Compass at 075 degrees about 2.20 miles from turbine #84
4	Brainardsville Road/CR 24 near a white house/rural residence	Rural residential/Agricultural and Forested	Compass at 340 degrees about 4.17 miles from turbine 02 Compass at 030 degrees about 3.60 miles from turbine #32
5	Private fish preserve	Village/Hamlet and Adirondack Park	Compass at 323 degrees about 3.55 miles from turbine #32 Compass at 274 degrees about 2.74 miles from turbine #84
6	Narrows Bridge on Lower Chateaugay Lake	Adirondack Park	Compass at 319 degrees about 9.30 miles from turbine #38 Compass at 329 degrees about 9.24 miles from turbine #32
7	Upper Chateaugay Lake Boat Launch	Adirondack Park	Compass at 320 degrees about 9.75 miles from turbine #338
8	Lower Chateaugay Lake at boat ramp	Adirondack Park	Compass at 310 degrees about 5.46 miles from turbine #38 Compass at 299 degrees about 3.82 miles from turbine #84
9	On NYS 190 just outside Hamlet of Brainardsville	Rural Residential/Agricultural	Compass at 266 degrees about 3.35 miles from turbine #84 Compass at 311 degrees about 3.65 miles from turbine #32
10	On CR 54 and an unnamed road	Adirondack Park	Compass at 277 degrees about 5.11 miles from turbine #84 Compass at 306 degrees about 5.52 miles from turbine #32
11	On NYS 374 approximately 1.5 miles outside Hamlet of Brainardsville	Rural Residential/Agricultural and Forested	Compass at 228 degrees about 2.35 miles from turbine #84 Compass at 293 degrees about 4.72 miles from turbine #02
12	Just outside Village of Chateaugay near some rural residences	Village/Hamlet and Rural Residential/Agricultural	Compass at 191 degrees about 4.19 miles from turbine #84 Compass at 258 degrees about 3.45 miles from turbine #02
13	Around Cassidy Road between Sancomb and Highway 11	Rural Residential/Agricultural	Compass at 207 degrees about 4.38 miles from turbine #84 Compass at 264 degrees about 4.60 miles from turbine #02
14	At intersection of Cassidy Road and Number 5 Road; family plots	Rural Residential/Agricultural and Forested	Compass at 231 degrees about 2.85 miles from turbine #84 Compass at 297 degrees about 1.81 miles from turbine #32
15	Highway 11 outside Village of Chateaugay, just after passing the Chateaugay Fish Hatchery	Rural Residential/Agricultural	Compass at 202 degrees about 5.33 miles from turbine #84 Compass at 252 degrees about 4.87 miles from turbine #02
16	At the intersection of Smith and Earlville roads (location near intersect)	Rural Residential/Agricultural and Village/Hamlet	Compass at 197 degrees about 6.20 miles from turbine #84 Compass at 240 degrees about 5.08 miles from turbine #02
17	Also along Smith and Earville roads before dense tree cluster and homes	Rural Residential/Agricultural and Village/Hamlet	Compass at 199 degrees about 63 miles Compass at 241 degrees about 5.30 miles from turbine #02

Viewpoint Number	General Location	Landscape Similarity Zone	Compass Direction on Photos
18	At the intersection of Jordan Road and Cemetery Road	Rural Residential/Agricultural	Compass at 134 degrees about 1.40 miles from turbine #32 Compass at 265 degrees about 2.20 miles from turbine #02
19	At High Falls Park and Campground closed gate	Forested	Compass at 150 degrees about 1.08 miles from turbine #32 Compass at 267 degrees about 2.67 miles from turbine #302
20	At the intersection of River Road and Chase Road	Rural Residential/Agricultural	Compass at 210 degrees about 1.72 miles from turbine #84 Compass at 347 degrees about 1.17 miles from turbine #32
21	Ponderosa Campground	Forested	Compass at 286 degrees about 2.22 miles from turbine #38
22	Ponderosa Campground with mobile homes	Rural Residential/Agricultural and Forested	Compass at 232 degrees about 1.12 miles from turbine #84 Compass at 352 degrees about 1.96 miles from turbine #32
23	On Legacy Road	Rural Residential/Agricultural	Compass at 134 degrees about 0.79 miles from turbine #84 Compass at 029 degrees about 2.39 miles from turbine #32
24	At intersection of Toohill and Willis roads; substation nearby	Rural Residential/Agricultural	Compass at 159 degrees about 0.88 miles from turbine #3 Compass at 303 degrees about 1.73 miles from turbine #02
25	At intersection of Cook and Quarry Roads	Rural Residential/Agricultural	Compass at 109 degrees about 2.11 miles from turbine #38 Compass at 012 degrees about 1.11 miles from turbine #02
26	Within the outer limits of the Village of Burke; across the street from a church	Village/Hamlet and Rural Residential/Agricultural	Compass at 115 degrees about 3.27 miles from turbine #38 Compass at 72 degrees about 1.26 miles from turbine #02
27	Between Village of Burke and Hamlet of Burke Center	Village/Hamlet and Rural Residential/Agricultural	Compass at 110 degrees about 1.81 miles from turbine #02 Compass at 125 degrees about 4.21 miles from turbine #38
28	Approximately at East Road and Gravel Pit Road	Rural Residential/Agricultural	Compass at 162 degrees about 6.35 miles from turbine #8
29	Trout River Road near the international border	Rural Residential/Agricultural	Compass at 164 degrees about 7.76 miles from turbine #38
30	In Hamlet of North Burke near a cemetery and church	Rural Residential/Agricultural and Forested	Compass at 156 degrees about 7.90 miles from turbine #38
31	Near Callahan Road near gravel pit	Rural Residential/Agricultural	Compass at 150 degrees about 5.96 miles from turbine #38
32	Near Village of Malone off Highway 30	Rural Residential/Agricultural	Compass at 103 degrees about 6.16 miles from turbine #38
33	On Vincent Road	Rural Residential/Agrcicultural	Compass at 092 degrees about 4.52 miles from turbine #38
34	Hwy 30 outside of Malone	Rural Residential/Agriculture	Compass at 067 degrees about 10.2 miles from turbine #38
35	Between Highway 30 and other main roads	Forested	Compass at 036 degrees about 11.3 miles
36	Within Adirondack Park boundary about 1 mile before Hamlet of Owl's Nest in a pull off	Adirondack Park	Compass at 025 degrees about 10.6 miles from turbine #38

[1] Viewpoint numbers in bold were used for simulations.

APPENDIX D

Turbine Lighting Plan



JERICHO RISE WIND FARM, LLC – LIGHTING PLAN
07-N-0255.NY.004
(REVISED 10/4/07)

◆ SIMULTANEOUSLY FLASHING RED LIGHTS

⌖ NONE

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Jericho Rise Wind Farm
Turbine Lighting Plan

Turbine ID	FAA Aeronautical Study Number	Site Elevation	Recommended Lighting
JR1	2007-AEA-4458	968	NONE
2	2007-AEA-4459	1000	SFRL
3	2007-AEA-4460	1017	SFRL
4	2007-AEA-4461	1070	SFRL
5	2007-AEA-4462	1081	NONE
6	2007-AEA-4463	1101	NONE
7	2007-AEA-4464	1081	SFRL
8	2007-AEA-4465	1133	NONE
9	2007-AEA-4466	1156	SFRL
10	2007-AEA-4467	1170	SFRL
11	2007-AEA-4468	1201	NONE
12	2007-AEA-4469	1212	SFRL
13	2007-AEA-4470	1170	NONE
14	2007-AEA-4471	1191	NONE
15	2007-AEA-4472	1219	NONE
16	2007-AEA-4473	1237	SFRL
17	2007-AEA-4474	1243	NONE
18	2007-AEA-4475	1218	SFRL
19	2007-AEA-4476	1273	NONE
20	2007-AEA-4477	1285	NONE
21	2007-AEA-4478	1306	NONE
22	2007-AEA-4479	1271	NONE
23	2007-AEA-4480	1314	NONE
24	2007-AEA-4481	1271	SFRL
25	2007-AEA-4482	1292	NONE
26	2007-AEA-4483	1308	SFRL
27	2007-AEA-4484	1382	NONE
28	2007-AEA-4485	1343	NONE
29	2007-AEA-4486	1322	NONE
30	2007-AEA-4487	1308	NONE
31	2007-AEA-4488	1266	SFRL
32	2007-AEA-4489	1252	SFRL
33	2007-AEA-4490	1269	SFRL
34	2007-AEA-4491	1302	NONE
35	2007-AEA-4492	1316	SFRL
36	2007-AEA-4493	1269	NONE
37	2007-AEA-4494	1295	NONE
38	2007-AEA-4495	1305	NONE
39	2007-AEA-4496	1354	SFRL
40	2007-AEA-4497	1356	NONE
41	2007-AEA-4498	1347	SFRL

Turbine ID	FAA Aeronautical Study Number	Site Elevation	Recommended Lighting
42	2007-AEA-4499	1367	NONE
43	2007-AEA-4500	1391	NONE
44	2007-AEA-4501	1421	SFRL
45	2007-AEA-4502	1400	NONE
46	2007-AEA-4503	1455	NONE
47	2007-AEA-4504	1482	NONE
48	2007-AEA-4505	1486	SFRL
49	2007-AEA-4506	1310	SFRL
50	2007-AEA-4507	1298	SFRL
51	2007-AEA-4508	1417	NONE
52	2007-AEA-4509	1418	SFRL
53	2007-AEA-4510	1392	NONE

Appendix G
Shadow Flicker Impact Analysis

Shadow Flicker Impact Analysis for the Jericho Rise Wind Farm

Appendix G

Prepared for

Jericho Rise Wind Farm LLC

JERICHO RISE
WIND FARM

Prepared by

TETRA TECH EC, INC.

133 Federal Street
Boston, MA 02110
617-457-8200

January 2008

TABLE OF CONTENTS

TABLES

FIGURES

ATTACHMENT

1.0 OVERVIEW

A wind turbine's moving blades can cast a moving shadow on locations within a certain distance of a turbine. These moving shadows are called shadow flicker, and can be a temporary annoyance to people at nearby residences or public gathering places. The impact area depends on the time of year and day (which determines the sun's azimuth and altitude angles) and the wind turbine's physical characteristics (height, rotor diameter, blade width, and orientation of the rotor blades). Shadow flicker generally occurs during low angle sunlight conditions, typical during sunrise and sunset times of the day. However, when the sun angle gets very low (less than 3 degrees), the light has to pass through more atmosphere and becomes too diffuse to form a coherent shadow. Shadow flicker will not occur when the sun is obscured by clouds/fog at night, or when the source turbine(s) is/are not operating. Shadow flicker intensity is defined as the difference in brightness at a given location in the presence and absence of a shadow. Shadow flicker intensity diminishes with greater receptor-to-turbine separation distance. In general, the largest number of shadow flicker hours, along with greatest shadow flicker intensity, occurs nearest the wind turbines. Since the Applicant uses a minimum turbine siting setback requirement (to any residence) of 1,000 feet (304.8 meters), sensitive receptors (homes) are generally not located in the worst case potential shadow flicker impact zones, which ensures that shadow flicker impacts are minimized.

The wind turbine being considered for the Jericho Rise Wind Farm (Project), and evaluated for potential shadow flicker impacts, has the following characteristics:

- **Vestas V82** – 3-blade 82-meter-diameter rotor, with a hub height of 80 meters. The V82 has a nominal rotor speed of 16.7 rpm which translates to a blade pass frequency of 0.84 Hz (less than 1 alternation per second).

Shadow flicker frequency is related to the wind turbine's rotor blade speed and the number of blades on the rotor. From a health standpoint, such low frequencies are harmless. For comparison, strobe lights used in discotheques have frequencies which range from about 3 Hertz (Hz) to 10 Hz (1 Hz = 1 flash per second). As a result, public concerns that flickering light from wind turbines can have negative health effects, such as triggering seizures in people with epilepsy are unfounded. According to Epilepsy Action (working name for the British Epilepsy Foundation), states that there is no evidence that wind turbines can cause seizures. However, they recommend that wind turbine flicker frequency be limited to 3 Hz (http://www.epilepsy.org.uk/info/photo_other.html). Since the proposed Project's wind turbine blade pass frequency is approximately 0.84 Hz (less than 1 alternation per second), no negative health effects to individuals with photosensitive epilepsy are anticipated.

2.0 WINDPRO SHADOW FLICKER ANALYSIS

An analysis of potential shadow flicker impacts from the Project was conducted using the WindPro software package. The WindPro analysis was conducted to determine shadow flicker impacts under realistic impact conditions (actual expected shadow). This analysis calculated the total amount of time (hours and minutes per year) that shadow flicker could occur at receptors out to 1,500 meters (4,921.3 feet). The realistic impact condition scenario is based on the following assumptions:

- The elevation and position geometries of the wind turbines and surrounding receptors (houses). Elevations were determined using USGS digital elevation model (DEM) data. Positions geometries were determined using GIS and referenced to UTM Zone 18 (NAD83).
- The position of the sun and the incident sunlight relative to the wind turbine and receptors on a minute by minute basis over the course of a year.
- Historical sunshine hours availability (percent of total available). Historical sunshine rates for the area (as listed for Burke, NY at www.city-data.com) used in this analysis are as follows:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
41%	48%	51%	50%	57%	59%	63%	59%	54%	45%	32%	33%

- Estimated wind turbine operations and orientation (based on approximately 1.5 years from 8/3/05 to 3/6/07 of on-site measured wind data (wind speed / wind direction frequency distribution)). Receptor viewpoint (i.e., house windows) always directly facing turbine to sun line of sight (“greenhouse mode”). The WindPro calculated wind direction frequency distribution for operating hour winds is as follows:

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	S	WNW	NNW
2.0%	2.3%	4.0%	7.2%	6.3%	3.4%	6.1%	11.2%	20.5%	23.3%	10.2%	3.4%

- Tree line obstructions considered for some receptors where applicable. Obstacles considered were primarily evergreen, or mixed with evergreen, tree stands. The positions and dimensions were determined by use of aerial and ground level (at receptor location) photos. Estimated tree heights ranged from 20 to 30 feet.

WindPro incorporates terrain elevation contour information and the analysis accounts for terrain elevation differences. The sun’s path with respect to each turbine location is calculated by the software to determine the cast shadow paths every minute over a full year. Sun angles less than 3 degrees above the horizon were excluded, for the reasons identified earlier in this section.

A total of 359 sensitive receptor locations were identified within 1,500 meters from any turbine. These locations correspond to structures (primarily houses) in the Project Area. A receptor in the model is defined as a 1 m^2 area (approximate size of a typical window), 1.5 meters (4.9 feet) aboveground level (approximate eye level). Figure 1 shows the sensitive receptor locations considered.

3.0 WINDPRO SHADOW FLICKER ANALYSIS RESULTS

WindPro predicts that shadow flicker impacts will primarily occur near the wind turbines. Figure 2 describes the WindPro predicted expected shadow flicker impact areas. A detailed WindPro shadow flicker analysis results summary, for each of the receptor locations, is provided in Attachment A. Table 1 presents the WindPro predicted shadow flicker impacts for the top 10 most affected receptors (where WindPro predicted greater than 30 hours per year of expected shadow flicker impact. Only 10 of the 359 receptors modeled had shadow flicker impact predicted more than 30 hours per year. These results include consideration of tree obstacles around some of the receptors. The detailed results provided in Attachment A also include results that assume no tree obstacles are present around the receptors.

Table 1. WindPro Predicted Shadow Flicker Impacts for Receptors with Maximum Impacts

Receptor (WindPro ID / TtEC ID)	Shadow Hours per Year (expected) [hh:mm / year]
CL / 197	46:09:00
GV / 377	40:53:00
CH / 189	40:25:00
CN / 201	40:16:00
DW / CR	34:16:00
CR / 206	32:53:00
DK / 234	31:10:00
CU / 209	30:52:00
CM / 198	30:35:00
DP / 240	30:18:00

The maximum predicted shadow flicker impact at any receptor, for the range of potential wind turbine options, is 46 hours, 9 minutes per year, which is only approximately 1.0 percent of the potential available daylight hours.

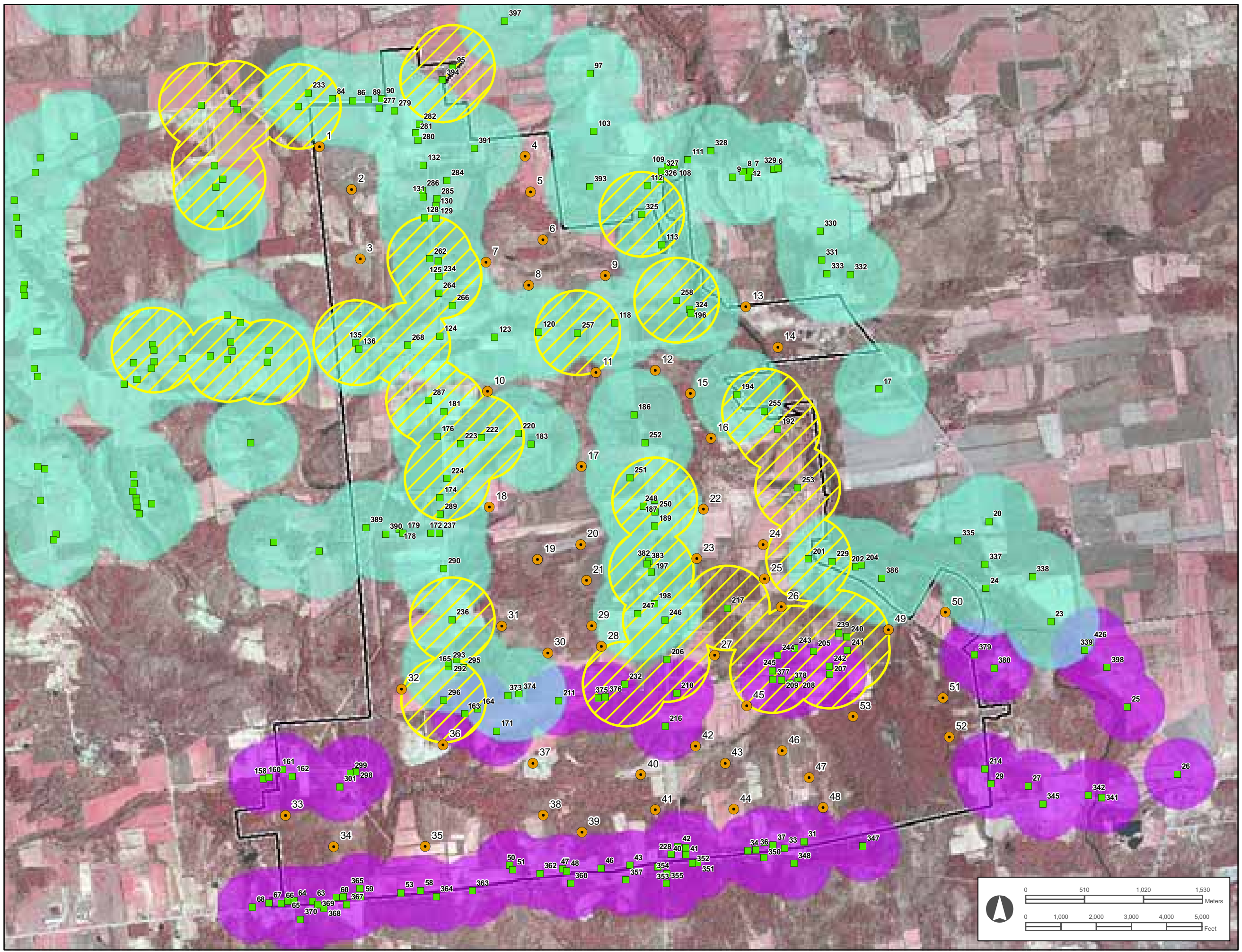
The majority of the receptor locations evaluated have less than 30 hours per year of predicted shadow flicker impact. The shadow flicker impact prediction statistics are as summarized in Table 2.

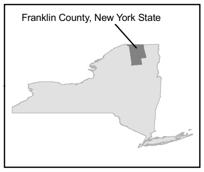
Table 2. Statistical Summary of WindPro Predicted Shadow Flicker Impacts at Modeled Sensitive Receptor Locations

Cumulative Shadow Flicker Time (expected)	Number of Receptors
Total	359
= 0 Hours	98
> 0 Hours	188
> 10 Hours	41
> 20 Hours	22
> 30 Hours	6
> 40 Hours	4

4.0 CONCLUSION

The analysis of potential shadow flicker impacts from the Project on nearby houses (receptors) shows that shadow flicker impacts on the majority of houses within the area of study are expected to be minor. The analysis assumes that the houses all have a direct in line view of the incoming shadow flicker sunlight and does not account for all trees or other obstructions which may block sunlight. In reality, the windows of many houses will not face the sun directly for the key shadow flicker impact times. In addition, potential shadow flicker impacts for wind turbines up to 1,500 meters (4,921 feet) away were determined. In reality, the shadow flicker impacts for turbines beyond 1,000 meters (3,281 feet) will be very low intensity. For these reasons, shadow flicker impacts are expected to be less than estimated with the conservative analysis, and shadow flicker is not expected to be a significant environmental impact.





SOURCE:
USGS 7.5 MINUTE QUADRANGLES
BRAINARDSVILLE, 1964; BURKE, 1993;
CHATEAUGAY, 1993; CHASM FALLS, 1980

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE 1.
MAP DESCRIBING SENSITIVE RECEPTORS (HOUSES) MODELED WITH WINDPRO TO PREDICT POTENTIAL SHADOW FLICKER IMPACTS

JERICHO RISE WIND FARM LLC
JANUARY 2008

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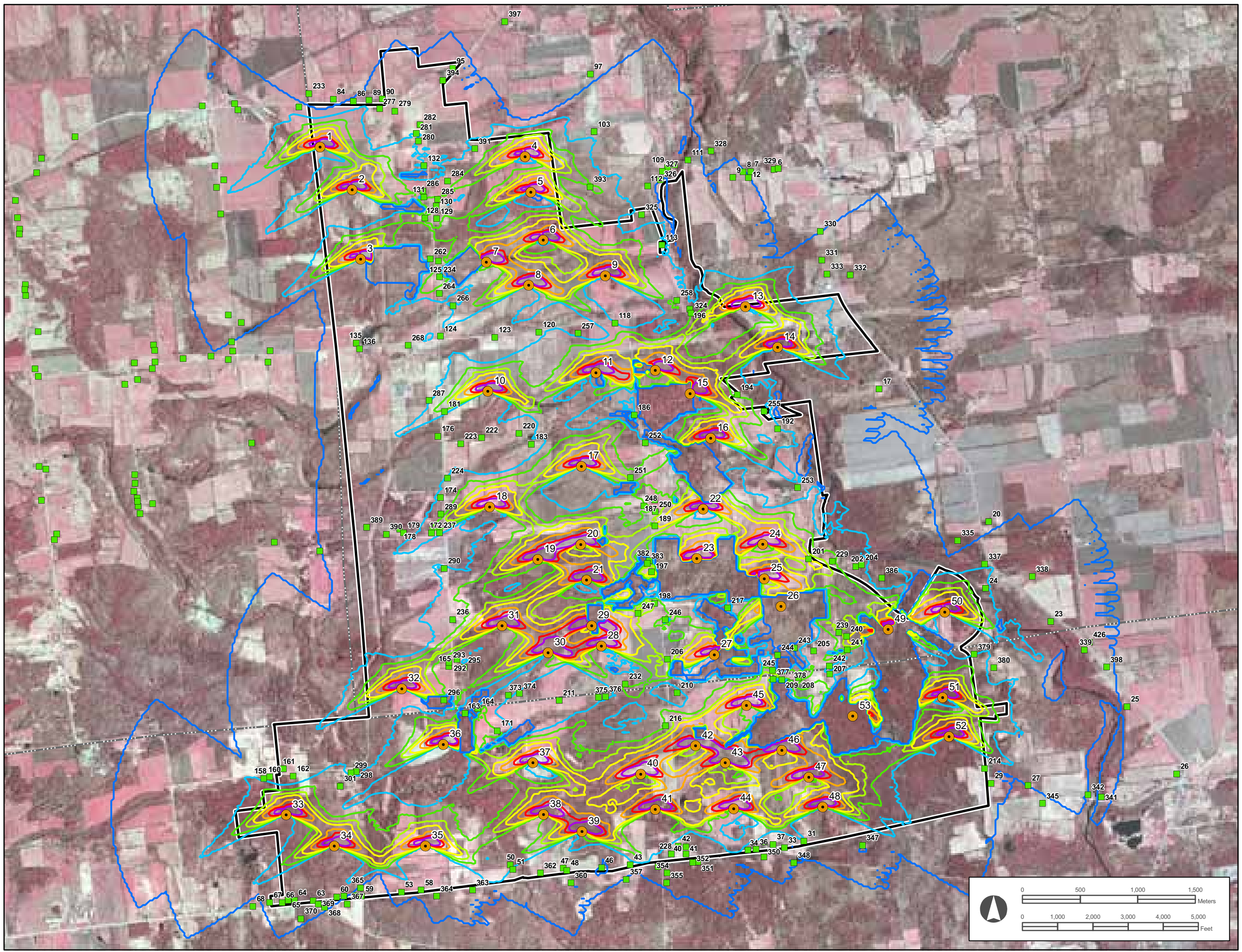

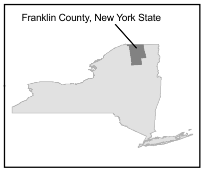

🟩 Receptor

● Turbine

Shadow Flicker Iso Lines

- 0.015 hrs/yr
- 10 hrs/yr
- 20 hrs/yr
- 30 hrs/yr
- 40 hrs/yr
- 60 hrs/yr
- 80 hrs/yr
- 100 hrs/yr

▭ Project Area Boundary

⬚ Town Boundary

Aerial Image Source:
NYS Department of State, Division of Coastal Resources, GIS Unit
NYS 2000 Digitally Enhanced Orthoimagery, 2000

JERICHO RISE
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JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE 2.
WINDPRO PREDICTED POTENTIAL SHADOW FLICKER IMPACT AREAS MAP FOR THE JERICHO RISE WIND FARM PROJECT

JERICHO RISE WIND FARM LLC
JANUARY 2008

P:\Burke Wind Farm\GIS\Spatial\MXD\Revision_A01_101107\DEIS Figures\ShadowFlicker\JRWF_Isolines_11x17.mxd

ATTACHMENT A

Detailed Summary of WindPro Shadow Flicker Analysis Results

Summary of WindPro Predicted Expected Shadow Flicker Impacts for Jericho Rise Wind Farm

WP Receptor No.	TtEC ID	UTM-E (m)	UTM-N (m)	Z (m)	Width (m)	Height (m)	Height a.g.l. (m)	Slope of|window	Direction mode	WindPro Predicted Expected Shadow Flicker with Some Tree Obstacles Considered (hrs / yr)	WindPro Predicted Expected Shadow Flicker with No Tree Obstacles Considered (hrs / yr)	Landowner Name	Town
CL	197	571,777	4,969,428	405.5	1	1	1.5	90	Green house mode	46:09:00	46:09:00	Cook, Harold	Town of Chateaugay
GV	377	572,827	4,968,494	423.9	1	1	1.5	90	Green house mode	40:53:00	42:40:00	Bilow Rolland,	Town of Bellmont
CH	189	571,797	4,969,822	391.2	1	1	1.5	90	Green house mode	40:25:00	40:25:00	Bower, Charles A.	Town of Chateaugay
CN	201	573,136	4,969,548	380.7	1	1	1.5	90	Green house mode	40:16:00	40:16:00	Merrill, Gilbert R.	Town of Chateaugay
DW	247	571,663	4,969,074	412.5	1	1	1.5	90	Green house mode	34:16:00	34:16:00	Dunn, David H.	Town of Chateaugay
CR	206	571,917	4,968,671	416	1	1	1.5	90	Green house mode	32:53:00	32:53:00	Merrill, Gilbert	Town of Chateaugay
DK	234	569,922	4,971,951	325.2	1	1	1.5	90	Green house mode	31:10:00	31:10:00	Covey, Donald	Town of Chateaugay
CU	209	572,910	4,968,499	424.2	1	1	1.5	90	Green house mode	30:52:00	31:14:00	Wilson, James L.	Town of Bellmont
CM	198	571,806	4,969,154	413	1	1	1.5	90	Green house mode	30:35:00	30:35:00	Cook, James	Town of Chateaugay
DP	240	573,433	4,968,873	407.3	1	1	1.5	90	Green house mode	30:18:00	30:18:00	Whalen Walter,	Town of Chateaugay
DO	239	573,405	4,968,894	406.9	1	1	1.5	90	Green house mode	29:51:00	29:51:00	Whalen Walter,	Town of Chateaugay
DZ	251	571,589	4,970,240	379.2	1	1	1.5	90	Green house mode	27:39:00	29:37:00	Rondo, Randy	Town of Chateaugay
GW	378	572,980	4,968,457	425.4	1	1	1.5	90	Green house mode	27:21:00	27:21:00	Wilson, Kenneth	Town of Bellmont
BU	163	570,171	4,968,191	390	1	1	1.5	90	Green house mode	27:00:00	29:42:00	Legacy, Bruce	Town of Bellmont
DQ	241	573,476	4,968,763	413	1	1	1.5	90	Green house mode	25:23:00	25:23:00	Whalen Walter,	Town of Chateaugay
CG	187	571,801	4,970,049	383.3	1	1	1.5	90	Green house mode	24:49:00	24:49:00	Cook, Lyle	Town of Chateaugay
DU	245	572,842	4,968,574	422.3	1	1	1.5	90	Green house mode	24:49:00	26:32:00	Whalen Walter,	Town of Chateaugay
DH	229	573,342	4,969,527	371.6	1	1	1.5	90	Green house mode	24:29:00	24:29:00	Gibbs, Howard	Town of Chateaugay
DY	250	571,806	4,969,948	388.7	1	1	1.5	90	Green house mode	24:24:00	24:24:00	Cook, Rodney J.	Town of Chateaugay
CF	186	571,624	4,970,792	361.7	1	1	1.5	90	Green house mode	23:43:00	28:55:00	Meekin, Peter T.	Town of Chateaugay
DV	246	571,899	4,969,012	419.8	1	1	1.5	90	Green house mode	23:29:00	23:29:00	Merrill, Gilbert R.	Town of Chateaugay
CT	208	573,054	4,968,516	424.4	1	1	1.5	90	Green house mode	23:08:00	23:08:00	Healey Darrell,	Town of Bellmont
HA	383	571,741	4,969,499	401.9	1	1	1.5	90	Green house mode	23:06:00	27:42:00	Demarse Robert E,	Town of Chateaugay
GZ	382	571,768	4,969,518	401.7	1	1	1.5	90	Green house mode	22:20:00	27:04:00	Demarse Robert E,	Town of Chateaugay
BV	164	570,280	4,968,234	390	1	1	1.5	90	Green house mode	22:05:00	22:05:00	Legacy, Bruce H.	Town of Bellmont
DA	216	571,907	4,968,095	412.3	1	1	1.5	90	Green house mode	22:03:00	22:03:00	Titus, Richard	Town of Bellmont
EQ	285	569,904	4,972,642	314.1	1	1	1.5	90	Green house mode	21:49:00	21:49:00	Barcomb Kathleen,	Town of Chateaugay
BH	130	569,895	4,972,584	313.7	1	1	1.5	90	Green house mode	21:35:00	21:35:00	Petrashune, Donna (V	Town of Chateaugay
HG	393	571,225	4,972,754	330	1	1	1.5	90	Green house mode	21:30:00	21:30:00	Tracy, Richard	Town of Chateaugay
BX	171	570,448	4,968,043	390	1	1	1.5	90	Green house mode	20:23:00	20:23:00	Legacy, Jerry R.	Town of Bellmont
BF	128	569,795	4,972,478	311.1	1	1	1.5	90	Green house mode	20:15:00	20:15:00	Richard, Donald	Town of Chateaugay
FH	324	572,106	4,971,670	353.4	1	1	1.5	90	Green house mode	19:45:00	19:45:00	Bracy Bruce,	Town of Chateaugay
BI	131	569,786	4,972,659	311.8	1	1	1.5	90	Green house mode	19:29:00	19:29:00	Bisonette, Garth	Town of Chateaugay
BG	129	569,897	4,972,474	313.4	1	1	1.5	90	Green house mode	19:17:00	19:17:00	Mailloux, Brian	Town of Chateaugay
BE	125	569,916	4,972,106	320	1	1	1.5	90	Green house mode	18:37:00	18:37:00	Nelson, Theodore	Town of Chateaugay
DX	248	571,706	4,969,997	386.3	1	1	1.5	90	Green house mode	18:26:00	18:26:00	Betcher, Patricia J.	Town of Chateaugay
BY	172	569,869	4,969,752	364	1	1	1.5	90	Green house mode	18:13:00	18:13:00	Carley, John	Town of Chateaugay
CK	196	572,093	4,971,701	351.5	1	1	1.5	90	Green house mode	18:06:00	18:06:00	Bracy, Bruce	Town of Chateaugay
DI	232	571,555	4,968,456	410	1	1	1.5	90	Green house mode	17:56:00	17:56:00	Legacy, Kevin	Town of Chateaugay
CD	181	569,975	4,970,803	350	1	1	1.5	90	Green house mode	17:49:00	17:49:00	Plante, Karen	Town of Chateaugay
EE	258	571,981	4,971,777	350	1	1	1.5	90	Green house mode	17:25:00	17:25:00	Bracy, Robert	Town of Chateaugay
CJ	194	572,509	4,970,965	370	1	1	1.5	90	Green house mode	17:05:00	17:05:00	Woodward, Rex A.	Town of Chateaugay
ET	289	569,950	4,969,916	360	1	1	1.5	90	Green house mode	16:37:00	16:37:00	Ingraham, Anita	Town of Chateaugay
DL	236	570,057	4,969,003	380	1	1	1.5	90	Green house mode	15:34:00	15:34:00	Rust, Buddy Lee	Town of Chateaugay
Y	50	570,567	4,966,884	391	1	1	1.5	90	Green house mode	15:21:00	15:21:00	Titus, William	Town of Bellmont
EF	262	569,844	4,972,123	320	1	1	1.5	90	Green house mode	15:08:00	15:08:00	Oconnor, Patrick	Town of Chateaugay
EG	264	569,923	4,971,825	330.3	1	1	1.5	90	Green house mode	14:59:00	14:59:00	Silver, Joseph	Town of Chateaugay
DM	237	569,941	4,969,752	367.1	1	1	1.5	90	Green house mode	14:21:00	14:21:00	Carley, John	Town of Chateaugay
CQ	205	573,185	4,968,751	419.8	1	1	1.5	90	Green house mode	14:16:00	14:16:00	Whalen Walter,	Town of Chateaugay
CO	202	573,544	4,969,483	368.8	1	1	1.5	90	Green house mode	13:54:00	13:54:00	Hodge, Elwood N. II	Town of Chateaugay
EP	284	569,988	4,972,800	316.1	1	1	1.5	90	Green house mode	13:54:00	13:54:00	Patnode Maxim,	Town of Chateaugay
GR	373	570,544	4,968,351	392	1	1	1.5	90	Green house mode	13:46:00	13:46:00	Legacy, Daniel J.	Town of Chateaugay
EC	255	572,746	4,970,823	370	1	1	1.5	90	Green house mode	13:45:00	13:45:00	Covey, Donald	Town of Chateaugay

Summary of WindPro Predicted Expected Shadow Flicker Impacts for Jericho Rise Wind Farm

WP Receptor No.	TtEC ID	UTM-E (m)	UTM-N (m)	Z (m)	Width (m)	Height (m)	Height a.g.l. (m)	Slope of|window	Direction mode	WindPro Predicted Expected Shadow Flicker with Some Tree Obstacles Considered (hrs / yr)	WindPro Predicted Expected Shadow Flicker with No Tree Obstacles Considered (hrs / yr)	Landowner Name	Town
ER	286	569,776	4,972,712	311.9	1	1	1.5	90	Green house mode	13:43:00	13:43:00	Dora Donald,	Town of Chateaugay
EW	293	570,028	4,968,630	384.1	1	1	1.5	90	Green house mode	13:15:00	13:15:00	Sweet, Richard	Town of Chateaugay
HF	391	570,224	4,973,080	319.2	1	1	1.5	90	Green house mode	12:58:00	12:58:00	Young, Kip	Town of Chateaugay
BW	165	570,026	4,968,598	384.6	1	1	1.5	90	Green house mode	12:43:00	12:43:00	Sweet, Theodore R.	Town of Chateaugay
CP	204	573,594	4,969,499	366.7	1	1	1.5	90	Green house mode	12:30:00	12:30:00	Hodge, Elwood N. II	Town of Chateaugay
BZ	174	569,945	4,970,058	359.1	1	1	1.5	90	Green house mode	11:47:00	11:47:00	Torrisi, Adrianna	Town of Chateaugay
CS	207	573,326	4,968,552	422	1	1	1.5	90	Green house mode	11:42:00	11:42:00	Hoit, Edward G.	Town of Bellmont
EV	292	570,096	4,968,659	385	1	1	1.5	90	Green house mode	11:41:00	11:41:00	Gilbride, Crystal	Town of Chateaugay
I	24	574,673	4,969,304	370	1	1	1.5	90	Green house mode	11:39:00	11:39:00	Goggins, Mark	Town of Chateaugay
EA	252	571,714	4,970,544	370	1	1	1.5	90	Green house mode	11:39:00	11:39:00	Cook, Robin L.	Town of Chateaugay
DR	242	573,323	4,968,622	420.9	1	1	1.5	90	Green house mode	11:34:00	11:34:00	Whalen Walter,	Town of Chateaugay
CI	192	572,861	4,970,671	370	1	1	1.5	90	Green house mode	11:33:00	11:33:00	Healey, Herbert J.	Town of Chateaugay
FB	301	569,093	4,967,554	379.6	1	1	1.5	90	Green house mode	11:30:00	11:30:00	Weldrick, Richard	Town of Bellmont
AZ	113	571,850	4,972,257	340	1	1	1.5	90	Green house mode	11:27:00	11:27:00	Healey, Kenneth	Town of Chateaugay
DF	224	570,005	4,970,226	355.9	1	1	1.5	90	Green house mode	11:18:00	11:18:00	Hall, Richard L.	Town of Chateaugay
EH	266	570,043	4,971,720	336.7	1	1	1.5	90	Green house mode	11:17:00	11:17:00	Silver Ernest & Barbar	Town of Chateaugay
EM	280	569,735	4,973,145	312.5	1	1	1.5	90	Green house mode	11:08:00	11:08:00	Chase Michael,	Town of Chateaugay
EX	295	570,159	4,968,589	387.6	1	1	1.5	90	Green house mode	11:07:00	11:07:00	Sweet, Dean	Town of Chateaugay
BA	118	571,446	4,971,578	360	1	1	1.5	90	Green house mode	11:04:00	11:04:00	Labare, Larry J.	Town of Chateaugay
EU	290	569,981	4,969,445	373.9	1	1	1.5	90	Green house mode	10:15:00	10:15:00	Bilow, Vincent A.	Town of Chateaugay
BJ	132	569,784	4,972,931	312.4	1	1	1.5	90	Green house mode	9:56:00	9:56:00	Wilcox, Robert	Town of Chateaugay
GX	379	574,576	4,968,730	420	1	1	1.5	90	Green house mode	9:51:00	9:51:00	Desotelle, Jane	Town of Bellmont
EN	281	569,716	4,973,210	312.6	1	1	1.5	90	Green house mode	9:27:00	9:27:00	Reynolds, Scott M.	Town of Chateaugay
Z	51	570,593	4,966,844	391.7	1	1	1.5	90	Green house mode	9:25:00	9:25:00	Opalka, Jorn	Town of Bellmont
L	31	573,111	4,967,104	440	1	1	1.5	90	Green house mode	9:23:00	9:23:00	King, Richard L.	Town of Bellmont
FA	299	569,184	4,967,673	374.6	1	1	1.5	90	Green house mode	9:13:00	9:13:00	Myers, James R.	Town of Bellmont
ES	287	569,840	4,970,899	350	1	1	1.5	90	Green house mode	8:56:00	8:56:00	Jock, Ricky	Town of Chateaugay
HB	386	573,770	4,969,386	372.7	1	1	1.5	90	Green house mode	8:56:00	8:56:00	Osborne, John W.	Town of Chateaugay
T	42	572,022	4,967,054	420.7	1	1	1.5	90	Green house mode	8:55:00	8:55:00	King, William	Town of Bellmont
EZ	298	569,231	4,967,682	373.8	1	1	1.5	90	Green house mode	8:26:00	8:26:00	Myers, James R.	Town of Bellmont
DB	217	572,437	4,969,119	414.1	1	1	1.5	90	Green house mode	8:23:00	10:42:00	Merrill, Gilbert R.	Town of Chateaugay
GU	376	571,384	4,968,345	406	1	1	1.5	90	Green house mode	8:10:00	8:10:00	Helm, David E.	Town of Bellmont
CE	183	570,730	4,970,526	370	1	1	1.5	90	Green house mode	8:04:00	8:04:00	Diliberto, Judith Dale	Town of Chateaugay
FI	325	571,673	4,972,518	336.3	1	1	1.5	90	Green house mode	8:02:00	8:02:00	Bracy, Robert	Town of Chateaugay
GD	353	571,848	4,966,876	425.1	1	1	1.5	90	Green house mode	8:00:00	8:00:00	Titus, John F.	Town of Bellmont
GS	374	570,640	4,968,367	393.8	1	1	1.5	90	Green house mode	7:53:00	7:53:00	Tam, Felix	Town of Chateaugay
DG	228	571,964	4,966,986	422.4	1	1	1.5	90	Green house mode	7:48:00	7:48:00	King, William	Town of Bellmont
CV	210	572,005	4,968,381	413.7	1	1	1.5	90	Green house mode	7:39:00	7:39:00	Titus, Marvin	Town of Bellmont
AU	103	571,256	4,973,234	326.3	1	1	1.5	90	Green house mode	7:36:00	7:36:00	Tracy, Richard	Town of Chateaugay
GE	354	571,928	4,966,820	426.5	1	1	1.5	90	Green house mode	7:35:00	7:35:00	King, Richie L.	Town of Bellmont
FS	337	574,663	4,969,512	380	1	1	1.5	90	Green house mode	7:30:00	7:30:00	Helm, William J.	Town of Chateaugay
U	43	571,607	4,966,891	427	1	1	1.5	90	Green house mode	7:19:00	7:19:00	King, Jeffery W.	Town of Bellmont
AQ	89	569,305	4,973,495	299.2	1	1	1.5	90	Green house mode	7:04:00	7:04:00	Matthews, Gary	Town of Chateaugay
EB	253	573,037	4,970,163	374	1	1	1.5	90	Green house mode	7:04:00	7:04:00	Healey, Herbert J.	Town of Chateaugay
AR	90	569,420	4,973,506	302.1	1	1	1.5	90	Green house mode	7:03:00	7:03:00	Earl, Dale	Town of Chateaugay
DS	243	573,020	4,968,777	420	1	1	1.5	90	Green house mode	6:57:00	6:57:00	Whalen Walter,	Town of Chateaugay
BQ	158	568,429	4,967,618	380	1	1	1.5	90	Green house mode	6:55:00	6:55:00	Guerin, Linda L.	Town of Bellmont
R	40	572,090	4,967,046	420.3	1	1	1.5	90	Green house mode	6:47:00	6:47:00	Monaghan, Jack L.	Town of Bellmont
GY	380	574,746	4,968,617	423.3	1	1	1.5	90	Green house mode	6:42:00	6:42:00	Piasecki, John A&Mor	Town of Bellmont
BC	123	570,407	4,971,450	350.3	1	1	1.5	90	Green house mode	6:41:00	6:41:00	Buxton, Kathleen G.	Town of Chateaugay
ED	257	571,126	4,971,489	360	1	1	1.5	90	Green house mode	6:40:00	6:40:00	Labare, Larry L.	Town of Chateaugay
AY	112	571,723	4,972,766	320	1	1	1.5	90	Green house mode	6:39:00	6:39:00	Manning, Donald	Town of Chateaugay
AB	58	569,798	4,966,660	413.8	1	1	1.5	90	Green house mode	6:27:00	6:27:00	Otis, Allen	Town of Bellmont

Summary of WindPro Predicted Expected Shadow Flicker Impacts for Jericho Rise Wind Farm

WP Receptor No.	TtEC ID	UTM-E (m)	UTM-N (m)	Z (m)	Width (m)	Height (m)	Height a.g.l. (m)	Slope of window	Direction mode	WindPro Predicted Expected Shadow Flicker with Some Tree Obstacles Considered (hrs / yr)	WindPro Predicted Expected Shadow Flicker with No Tree Obstacles Considered (hrs / yr)	Landowner Name	Town
EK	277	569,397	4,973,421	302.8	1	1	1.5	90	Green house mode	6:26:00	6:26:00	Bracy, Kelly M.	Town of Chateaugay
ME	1174	575,122	4,969,083	394.7	1	1	1.5	90	Green house mode	6:09:00	6:09:00	Boulanger, Raymond	Town of Chateaugay
FJ	326	571,833	4,972,821	306.1	1	1	1.5	90	Green house mode	6:04:00	6:04:00	Rodrigue, Pierre	Town of Chateaugay
EI	268	569,658	4,971,376	336.3	1	1	1.5	90	Green house mode	6:00:00	6:00:00	Jock, Ricky	Town of Chateaugay
BB	120	570,789	4,971,496	353.3	1	1	1.5	90	Green house mode	5:52:00	5:52:00	Cowan, Erwin	Town of Chateaugay
BD	124	569,938	4,971,455	340	1	1	1.5	90	Green house mode	5:49:00	5:49:00	Peterson, David	Town of Chateaugay
GI	362	570,830	4,966,814	401.2	1	1	1.5	90	Green house mode	5:45:00	5:45:00	King, William	Town of Bellmont
CC	179	569,627	4,969,751	360	1	1	1.5	90	Green house mode	5:44:00	5:44:00	Mossow, Ricky	Town of Chateaugay
GT	375	571,325	4,968,338	405	1	1	1.5	90	Green house mode	5:43:00	5:43:00	Helm, Anne E.	Town of Bellmont
GJ	363	570,245	4,966,662	410.8	1	1	1.5	90	Green house mode	5:38:00	5:38:00	Titus, Dawn	Town of Bellmont
DE	223	570,119	4,970,527	354.4	1	1	1.5	90	Green house mode	5:31:00	5:31:00	Beach Scott,	Town of Chateaugay
KH	1123	568,178	4,967,589	380	1	1	1.5	90	Green house mode	5:31:00	5:31:00	Hibbert Michelle,	Town of Bellmont
AK	75	568,051	4,972,799	292	1	1	1.5	90	Green house mode	5:21:00	5:21:00	Wood, Hamilton	Town of Burke
EO	282	569,747	4,973,286	313.1	1	1	1.5	90	Green house mode	5:17:00	5:17:00	Plattsburgh Wholesale	Town of Chateaugay
DC	220	570,621	4,970,617	365.3	1	1	1.5	90	Green house mode	5:15:00	5:15:00	Cook Jay D & Carrie	Town of Chateaugay
HE	390	569,477	4,969,739	358.8	1	1	1.5	90	Green house mode	5:08:00	5:08:00	Lye, Okley	Town of Chateaugay
N	34	572,628	4,967,023	430	1	1	1.5	90	Green house mode	4:59:00	4:59:00	Labombard, Steven	Town of Bellmont
FD	303	567,989	4,972,730	293.1	1	1	1.5	90	Green house mode	4:54:00	4:54:00	Labarge, Alfred	Town of Burke
GP	369	568,909	4,966,533	404	1	1	1.5	90	Green house mode	4:52:00	4:52:00	Soucia, Stuart	Town of Bellmont
EL	279	569,530	4,973,400	307.7	1	1	1.5	90	Green house mode	4:46:00	4:46:00	McElwain, Kenneth Jr	Town of Chateaugay
CB	178	569,593	4,969,783	358.6	1	1	1.5	90	Green house mode	4:43:00	4:43:00	Merrill, Louann	Town of Chateaugay
CW	211	570,984	4,968,309	400	1	1	1.5	90	Green house mode	4:22:00	4:22:00	Legacy, Keith	Town of Bellmont
GB	351	572,193	4,966,915	423.7	1	1	1.5	90	Green house mode	4:22:00	4:22:00	Hiscock, Gordon C.	Town of Bellmont
AD	60	569,068	4,966,597	400	1	1	1.5	90	Green house mode	4:16:00	4:16:00	Cromp, Harold W.	Town of Bellmont
DD	222	570,303	4,970,566	360	1	1	1.5	90	Green house mode	4:16:00	4:16:00	Cook, Arlend	Town of Chateaugay
GC	352	572,149	4,966,913	423.8	1	1	1.5	90	Green house mode	4:06:00	4:06:00	Lavalley, Lena	Town of Bellmont
H	23	575,236	4,969,018	397.7	1	1	1.5	90	Green house mode	3:58:00	3:58:00	Meagher, James W.	Town of Chateaugay
FE	304	568,209	4,971,563	315.7	1	1	1.5	90	Green house mode	3:57:00	3:57:00	Selkirk, Dale	Town of Burke
S	41	572,090	4,966,986	421.8	1	1	1.5	90	Green house mode	3:48:00	3:48:00	Monaghan, Jack L.	Town of Bellmont
FC	302	567,975	4,972,917	289.9	1	1	1.5	90	Green house mode	3:44:00	3:44:00	Mcgillicuddy, Joseph	Town of Burke
LX	1167	570,742	4,966,700	391.3	1	1	1.5	90	Green house mode	3:39:00	3:39:00	Beers, John E.	Town of Bellmont
AE	63	568,863	4,966,563	402.6	1	1	1.5	90	Green house mode	3:32:00	3:32:00	Roulston, John	Town of Bellmont
FK	327	571,847	4,972,894	312.7	1	1	1.5	90	Green house mode	3:32:00	3:32:00	Rodrigue, Luce	Town of Chateaugay
AM	79	568,170	4,973,404	271.3	1	1	1.5	90	Green house mode	3:30:00	3:30:00	Wood, Hamilton	Town of Burke
AL	78	568,142	4,973,456	270	1	1	1.5	90	Green house mode	3:23:00	3:23:00	Wood, Hamilton	Town of Burke
JK	1024	571,728	4,973,551	304.7	1	1	1.5	90	Green house mode	3:22:00	3:22:00	Tracy, Richard	Town of Chateaugay
JL	1024	571,728	4,973,551	304.7	1	1	1.5	90	Green house mode	3:22:00	3:22:00	Chateaugay High Falls	Town of Chateaugay
AW	109	571,894	4,972,930	310.4	1	1	1.5	90	Green house mode	3:12:00	3:12:00	Rodrigue, Jean	Town of Chateaugay
GK	364	569,934	4,966,608	417.6	1	1	1.5	90	Green house mode	3:10:00	3:10:00	Nichols, Donald J.	Town of Bellmont
AN	83	568,698	4,973,431	284.2	1	1	1.5	90	Green house mode	3:09:00	3:09:00	Wood, Hamilton F.	Town of Burke
HP	738	573,652	4,971,380	371.8	1	1	1.5	90	Green house mode	3:06:00	3:06:00	Patnode, Robert	Town of Chateaugay
JZ	1071	567,928	4,967,611	378.1	1	1	1.5	90	Green house mode	3:05:00	3:05:00	Payne, Rose	Town of Bellmont
O	35	572,769	4,967,094	430	1	1	1.5	90	Green house mode	3:03:00	3:03:00	Titus, Donald	Town of Bellmont
KF	1121	567,722	4,967,120	380	1	1	1.5	90	Green house mode	3:03:00	3:03:00	Jock Jason,	Town of Bellmont
AV	108	571,956	4,972,950	302.4	1	1	1.5	90	Green house mode	3:01:00	3:01:00	Mailhot, Herman	Town of Chateaugay
JM	1025	571,729	4,973,463	306	1	1	1.5	90	Green house mode	3:01:00	3:01:00	Tracy, Richard	Town of Chateaugay
FO	331	573,234	4,972,134	360	1	1	1.5	90	Green house mode	2:56:00	2:56:00	Perry, Bradley J.	Town of Chateaugay
FT	338	575,074	4,969,406	393.1	1	1	1.5	90	Green house mode	2:49:00	2:49:00	Curtin, Jonathan P.	Town of Chateaugay
KS	1136	567,908	4,966,396	398.3	1	1	1.5	90	Green house mode	2:49:00	2:49:00	Legacy, Richard	Town of Bellmont
FQ	333	573,281	4,972,015	360	1	1	1.5	90	Green house mode	2:48:00	2:48:00	Sampica, John W.	Town of Chateaugay
FU	339	575,528	4,968,774	401.4	1	1	1.5	90	Green house mode	2:47:00	2:47:00	McDonald, Ronald R.	Town of Bellmont
KQ	1134	567,983	4,966,424	397.5	1	1	1.5	90	Green house mode	2:41:00	2:41:00	Ricks, Renia E.	Town of Bellmont
HD	389	569,307	4,969,796	353.6	1	1	1.5	90	Green house mode	2:39:00	2:39:00	Fraser, Mark	Town of Chateaugay

Summary of WindPro Predicted Expected Shadow Flicker Impacts for Jericho Rise Wind Farm

WP Receptor No.	TtEC ID	UTM-E (m)	UTM-N (m)	Z (m)	Width (m)	Height (m)	Height a.g.l. (m)	Slope of|window	Direction mode	WindPro Predicted Expected Shadow Flicker with Some Tree Obstacles Considered (hrs / yr)	WindPro Predicted Expected Shadow Flicker with No Tree Obstacles Considered (hrs / yr)	Landowner Name	Town
KG	1122	567,729	4,967,323	377.5	1	1	1.5	90	Green house mode	2:39:00	2:39:00	Laplante, Randy	Town of Bellmont
BR	160	568,481	4,967,632	380	1	1	1.5	90	Green house mode	2:27:00	2:27:00	Guerin, Linda Underw	Town of Bellmont
HK	426	575,575	4,968,841	404.4	1	1	1.5	90	Green house mode	2:26:00	2:26:00	LaPoint, Lawrence J.	Town of Bellmont
JY	1070	567,652	4,967,179	380	1	1	1.5	90	Green house mode	2:23:00	2:23:00	Soulia, Michael	Town of Bellmont
AP	86	569,170	4,973,485	294.6	1	1	1.5	90	Green house mode	2:21:00	2:21:00	Smythe, Stephanie J.	Town of Chateaugay
KI	1126	568,085	4,966,698	390	1	1	1.5	90	Green house mode	2:21:00	2:21:00	Messina, Michael	Town of Bellmont
JN	1026	571,840	4,973,532	302.8	1	1	1.5	90	Green house mode	2:19:00	2:19:00	Chateaugay High Falls	Town of Chateaugay
KR	1135	567,955	4,966,483	395.6	1	1	1.5	90	Green house mode	2:17:00	2:17:00	Tavernia, Gary	Town of Bellmont
Q	37	572,845	4,967,073	430	1	1	1.5	90	Green house mode	2:16:00	2:16:00	King, Richard	Town of Bellmont
AX	111	572,070	4,972,993	307.5	1	1	1.5	90	Green house mode	2:12:00	2:12:00	Sibbert, Jorge	Town of Chateaugay
IF	960	567,960	4,973,532	265.2	1	1	1.5	90	Green house mode	2:11:00	2:11:00	Johnston, James W.	Town of Burke
F	17	573,737	4,971,022	378.8	1	1	1.5	90	Green house mode	2:04:00	2:04:00	Hanover, Lawrence H	Town of Chateaugay
JS	1031	571,736	4,973,861	300	1	1	1.5	90	Green house mode	2:01:00	2:01:00	Chateaugay High Falls	Town of Chateaugay
JI	1023	571,726	4,973,621	303.8	1	1	1.5	90	Green house mode	2:00:00	2:00:00	Tracy, Richard	Town of Chateaugay
JJ	1023	571,726	4,973,621	303.8	1	1	1.5	90	Green house mode	2:00:00	2:00:00	Chateaugay High Falls	Town of Chateaugay
P	36	572,696	4,967,031	430	1	1	1.5	90	Green house mode	1:59:00	1:59:00	Labombard, Donald	Town of Bellmont
IR	1005	571,873	4,973,482	303	1	1	1.5	90	Green house mode	1:58:00	1:58:00	Chateaugay High Falls	Town of Chateaugay
JE	1019	571,853	4,973,362	305	1	1	1.5	90	Green house mode	1:58:00	1:58:00	Chateaugay High Falls	Town of Chateaugay
GQ	370	568,760	4,966,406	409.1	1	1	1.5	90	Green house mode	1:57:00	1:57:00	Legacy, Jeffrey M.	Town of Bellmont
CX	213	568,027	4,972,501	296.8	1	1	1.5	90	Green house mode	1:55:00	1:55:00	LaBarge, Leonard	Town of Burke
D	9	572,458	4,972,846	328.4	1	1	1.5	90	Green house mode	1:53:00	1:53:00	Godding, Lynn	Town of Chateaugay
CA	176	569,918	4,970,588	350	1	1	1.5	90	Green house mode	1:50:00	1:50:00	Downs Doug & Jodi,	Town of Chateaugay
IY	1013	571,936	4,973,570	300.4	1	1	1.5	90	Green house mode	1:50:00	1:50:00	Chateaugay High Falls	Town of Chateaugay
HH	394	569,944	4,973,670	311.3	1	1	1.5	90	Green house mode	1:49:00	1:49:00	Green, Kenneth J.	Town of Chateaugay
V	46	571,359	4,966,863	429.7	1	1	1.5	90	Green house mode	1:47:00	1:47:00	Titus, Francis	Town of Bellmont
EJ	271	567,860	4,973,437	269.9	1	1	1.5	90	Green house mode	1:47:00	1:47:00	Wood, Hamilton	Town of Burke
IS	1006	571,913	4,973,453	302.4	1	1	1.5	90	Green house mode	1:46:00	1:46:00	Chateaugay High Falls	Town of Chateaugay
JG	1021	571,671	4,973,768	302.3	1	1	1.5	90	Green house mode	1:46:00	1:46:00	Chateaugay High Falls	Town of Chateaugay
MK	1180	575,280	4,969,860	399.4	1	1	1.5	90	Green house mode	1:46:00	1:46:00	Martin Michael,	Town of Chateaugay
JD	1018	571,935	4,973,354	302.6	1	1	1.5	90	Green house mode	1:44:00	1:44:00	Chateaugay High Falls	Town of Chateaugay
HZ	763	567,896	4,966,463	396.1	1	1	1.5	90	Green house mode	1:43:00	1:43:00	Valant, Joseph R.	Town of Bellmont
GA	350	572,766	4,966,965	430	1	1	1.5	90	Green house mode	1:41:00	1:41:00	Titus, Donald F.	Town of Bellmont
GO	368	568,964	4,966,507	404.5	1	1	1.5	90	Green house mode	1:41:00	1:41:00	Laplante, Paul	Town of Bellmont
HJ	398	575,723	4,968,627	410	1	1	1.5	90	Green house mode	1:35:00	1:35:00	Walley, Gleason E. Jr	Town of Bellmont
AF	64	568,703	4,966,566	401.1	1	1	1.5	90	Green house mode	1:34:00	1:34:00	Otis, Gerald J.	Town of Bellmont
JC	1017	571,993	4,973,412	300.4	1	1	1.5	90	Green house mode	1:32:00	1:32:00	Chateaugay High Falls	Town of Chateaugay
DN	238	569,131	4,966,603	400	1	1	1.5	90	Green house mode	1:31:00	1:31:00	Cromp, Harold W.	Town of Bellmont
BO	142	568,097	4,971,627	312.1	1	1	1.5	90	Green house mode	1:30:00	1:30:00	Cook, Shannon M.	Town of Burke
BK	135	569,208	4,971,392	330	1	1	1.5	90	Green house mode	1:28:00	1:28:00	Thibault, Romeo	Town of Chateaugay
BT	162	568,683	4,967,640	380.7	1	1	1.5	90	Green house mode	1:28:00	1:28:00	Nason, Albert	Town of Bellmont
FV	341	575,684	4,967,501	387.2	1	1	1.5	90	Green house mode	1:28:00	1:28:00	Hoy, Malcolm G.	Town of Bellmont
AA	53	569,627	4,966,641	410.3	1	1	1.5	90	Green house mode	1:26:00	1:26:00	Thompson, Alice May	Town of Bellmont
GF	355	571,925	4,966,736	428.5	1	1	1.5	90	Green house mode	1:23:00	1:23:00	King, Adam R.	Town of Bellmont
FP	332	573,482	4,972,007	365.8	1	1	1.5	90	Green house mode	1:22:00	1:22:00	Otis, Harry	Town of Chateaugay
C	8	572,549	4,972,893	330	1	1	1.5	90	Green house mode	1:20:00	1:20:00	Vermette, George	Town of Chateaugay
JH	1022	571,674	4,973,630	304.7	1	1	1.5	90	Green house mode	1:19:00	1:19:00	Chateaugay High Falls	Town of Chateaugay
K	29	574,728	4,967,615	439.4	1	1	1.5	90	Green house mode	1:18:00	1:18:00	Hoy, Jacqueline L.	Town of Bellmont
AG	65	568,648	4,966,563	400.1	1	1	1.5	90	Green house mode	1:18:00	1:18:00	Paige, Candace	Town of Bellmont
JR	1030	571,763	4,973,803	300.3	1	1	1.5	90	Green house mode	1:18:00	1:18:00	Chateaugay High Falls	Town of Chateaugay
CY	214	574,673	4,967,743	442.8	1	1	1.5	90	Green house mode	1:14:00	1:14:00	Rogers, George L.	Town of Bellmont
KB	1073	567,610	4,967,513	374.7	1	1	1.5	90	Green house mode	1:14:00	1:14:00	Butchino, Patricia	Town of Bellmont
M	33	572,943	4,967,047	430.6	1	1	1.5	90	Green house mode	1:13:00	1:13:00	King, Richard L.	Town of Bellmont
BS	161	568,598	4,967,701	380	1	1	1.5	90	Green house mode	1:10:00	1:10:00	Smith, Bruce	Town of Bellmont

Summary of WindPro Predicted Expected Shadow Flicker Impacts for Jericho Rise Wind Farm

WP Receptor No.	TtEC ID	UTM-E (m)	UTM-N (m)	Z (m)	Width (m)	Height (m)	Height a.g.l. (m)	Slope of|window	Direction mode	WindPro Predicted Expected Shadow Flicker with Some Tree Obstacles Considered (hrs / yr)	WindPro Predicted Expected Shadow Flicker with No Tree Obstacles Considered (hrs / yr)	Landowner Name	Town
KA	1072	567,600	4,967,567	374.3	1	1	1.5	90	Green house mode	1:10:00	1:10:00	Butchino, Patricia	Town of Bellmont
FY	347	573,621	4,967,070	441.3	1	1	1.5	90	Green house mode	1:09:00	1:09:00	Wood, Debbie Bignes	Town of Bellmont
JF	1020	571,666	4,973,908	300	1	1	1.5	90	Green house mode	1:08:00	1:08:00	Chateaugay High Falls	Town of Chateaugay
AH	66	568,595	4,966,543	400	1	1	1.5	90	Green house mode	1:07:00	1:07:00	Allen, Candy M.	Town of Bellmont
JP	1028	571,749	4,973,681	302.5	1	1	1.5	90	Green house mode	1:06:00	1:06:00	Chateaugay High Falls	Town of Chateaugay
KC	1074	567,693	4,968,101	365	1	1	1.5	90	Green house mode	1:01:00	1:01:00	Rovito, Lawrence	Town of Burke
BL	136	569,236	4,971,340	330	1	1	1.5	90	Green house mode	0:59:00	0:59:00	Toohill, William	Town of Chateaugay
KJ	1127	568,556	4,966,553	398.8	1	1	1.5	90	Green house mode	0:58:00	0:58:00	Nason, Richard Jr	Town of Bellmont
IU	1009	571,880	4,973,868	300	1	1	1.5	90	Green house mode	0:56:00	0:56:00	Chateaugay High Falls	Town of Chateaugay
JW	1060	567,497	4,968,076	363.4	1	1	1.5	90	Green house mode	0:55:00	0:55:00	Rovito, Lawrence	Town of Burke
JO	1027	571,861	4,973,676	300.4	1	1	1.5	90	Green house mode	0:54:00	0:54:00	Chateaugay High Falls	Town of Chateaugay
W	47	571,026	4,966,856	411.8	1	1	1.5	90	Green house mode	0:53:00	0:53:00	Robbins, Edward	Town of Bellmont
JX	1061	567,475	4,968,088	362.5	1	1	1.5	90	Green house mode	0:53:00	0:53:00	Rovito, Lawrence	Town of Burke
MM	1182	573,949	4,971,167	377.7	1	1	1.5	90	Green house mode	0:53:00	0:53:00	Ashline, Paul	Town of Chateaugay
JQ	1029	571,865	4,973,780	300	1	1	1.5	90	Green house mode	0:52:00	0:52:00	Chateaugay High Falls	Town of Chateaugay
KL	1129	568,496	4,966,472	400	1	1	1.5	90	Green house mode	0:50:00	0:50:00	Judware, Paul	Town of Bellmont
IA	764	567,741	4,966,481	395.1	1	1	1.5	90	Green house mode	0:49:00	0:49:00	Nason, Richard	Town of Bellmont
E	12	572,595	4,972,844	332.5	1	1	1.5	90	Green house mode	0:48:00	0:48:00	Burnham, Victor J.	Town of Chateaugay
IZ	1014	571,972	4,973,532	300	1	1	1.5	90	Green house mode	0:48:00	0:48:00	Chateaugay High Falls	Town of Chateaugay
AI	67	568,488	4,966,545	397.7	1	1	1.5	90	Green house mode	0:47:00	0:47:00	Larose, Theodore	Town of Bellmont
IX	1012	571,940	4,973,634	300	1	1	1.5	90	Green house mode	0:47:00	0:47:00	Chateaugay High Falls	Town of Chateaugay
KE	1092	567,763	4,966,668	390	1	1	1.5	90	Green house mode	0:47:00	0:47:00	Messina, Michael	Town of Bellmont
KT	1137	567,708	4,966,374	398	1	1	1.5	90	Green house mode	0:46:00	0:46:00	Secore, Mark	Town of Bellmont
IW	1011	571,937	4,973,716	300	1	1	1.5	90	Green house mode	0:45:00	0:45:00	Chateaugay High Falls	Town of Chateaugay
IB	765	567,708	4,966,443	396	1	1	1.5	90	Green house mode	0:44:00	0:44:00	Soulia, Tracy A.	Town of Bellmont
IV	1010	571,929	4,973,800	300	1	1	1.5	90	Green house mode	0:43:00	0:43:00	Chateaugay High Falls	Town of Chateaugay
JB	1016	572,031	4,973,479	300	1	1	1.5	90	Green house mode	0:41:00	0:41:00	Chateaugay High Falls	Town of Chateaugay
JA	1015	572,032	4,973,517	300	1	1	1.5	90	Green house mode	0:40:00	0:40:00	Chateaugay High Falls	Town of Chateaugay
KD	1075	567,371	4,968,115	360	1	1	1.5	90	Green house mode	0:40:00	0:40:00	Cooley, Stanley R.	Town of Burke
JV	1059	567,401	4,967,997	364.3	1	1	1.5	90	Green house mode	0:38:00	0:38:00	Cooley, Stanley	Town of Burke
MD	1173	575,765	4,968,584	410.7	1	1	1.5	90	Green house mode	0:37:00	0:37:00	Walley, Gleason E. Jr	Town of Bellmont
MF	1175	575,452	4,969,681	404.2	1	1	1.5	90	Green house mode	0:33:00	0:33:00	Jones, William J.	Town of Chateaugay
X	48	571,060	4,966,837	413.8	1	1	1.5	90	Green house mode	0:32:00	0:32:00	King, William	Town of Bellmont
JT	1056	567,288	4,967,903	365.5	1	1	1.5	90	Green house mode	0:32:00	0:32:00	Nason, Albert	Town of Bellmont
JU	1058	567,317	4,967,991	363.1	1	1	1.5	90	Green house mode	0:32:00	0:32:00	Cooley Stanley,	Town of Burke
MH	1177	575,478	4,969,719	404.2	1	1	1.5	90	Green house mode	0:31:00	0:31:00	Jones, William J.	Town of Chateaugay
MJ	1179	575,498	4,969,738	404.5	1	1	1.5	90	Green house mode	0:28:00	0:28:00	Jones, William J.	Town of Chateaugay
IQ	1004	571,354	4,973,720	307.3	1	1	1.5	90	Green house mode	0:27:00	0:27:00	Raville, Kevin J.	Town of Chateaugay
GH	360	571,096	4,966,730	414.7	1	1	1.5	90	Green house mode	0:26:00	0:26:00	Hesseltine, Douglas	Town of Bellmont
MI	1178	575,514	4,969,729	405.1	1	1	1.5	90	Green house mode	0:26:00	0:26:00	Jones, William J.	Town of Chateaugay
AS	95	570,029	4,973,776	310	1	1	1.5	90	Green house mode	0:25:00	0:25:00	Green, Kenneth J.	Town of Chateaugay
MG	1176	575,526	4,969,692	406.2	1	1	1.5	90	Green house mode	0:25:00	0:25:00	Jones, William J.	Town of Chateaugay
IG	992	570,069	4,973,849	307.8	1	1	1.5	90	Green house mode	0:24:00	0:24:00	Susky, Christine A.	Town of Chateaugay
IH	993	570,097	4,973,880	305.9	1	1	1.5	90	Green house mode	0:22:00	0:22:00	Brown, Steven	Town of Chateaugay
LA	1144	568,986	4,966,495	404.5	1	1	1.5	90	Green house mode	0:21:00	0:21:00	Laplante, Paul	Town of Bellmont
ML	1181	575,315	4,969,967	400	1	1	1.5	90	Green house mode	0:21:00	0:21:00	Martin Michael,	Town of Chateaugay
FZ	348	573,026	4,966,915	439.8	1	1	1.5	90	Green house mode	0:18:00	0:18:00	Gopal, Raja G.	Town of Bellmont
IT	1007	571,755	4,974,025	291.8	1	1	1.5	90	Green house mode	0:07:00	0:07:00	Chateaugay High Falls	Town of Chateaugay
FF	305	568,127	4,971,394	319.7	1	1	1.5	90	Green house mode	0:03:00	0:03:00	Franklin County Treas	Town of Burke
A	6	572,817	4,972,916	340	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Palmer, Judy G.	Town of Chateaugay
B	7	572,613	4,972,897	330	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Harrigan, Jill	Town of Chateaugay
G	20	574,695	4,969,881	385.8	1	1	1.5	90	Green house mode	0:00:00	0:00:00	King Richie,	Town of Chateaugay
J	27	575,050	4,967,597	430	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Perry, Emma	Town of Bellmont

Summary of WindPro Predicted Expected Shadow Flicker Impacts for Jericho Rise Wind Farm

WP Receptor No.	TtEC ID	UTM-E (m)	UTM-N (m)	Z (m)	Width (m)	Height (m)	Height a.g.l. (m)	Slope of|window	Direction mode	WindPro Predicted Expected Shadow Flicker with Some Tree Obstacles Considered (hrs / yr)	WindPro Predicted Expected Shadow Flicker with No Tree Obstacles Considered (hrs / yr)	Landowner Name	Town
AC	59	569,283	4,966,604	397.6	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Soucia, Peggy J.	Town of Bellmont
AJ	68	568,342	4,966,511	393.4	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Nason, Carl	Town of Bellmont
AO	84	568,995	4,973,502	289.7	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Bligh, Robert M.	Town of Chateaugay
AT	97	571,222	4,973,733	308.9	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Tracy, Richard	Town of Chateaugay
BM	139	568,461	4,971,322	327.7	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Roulston, Bernard E.	Town of Burke
BN	141	568,139	4,971,316	324.2	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Lancto, Bryan	Town of Burke
BP	144	568,099	4,971,241	326.9	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Cook, Alden	Town of Burke
CZ	215	573,811	4,968,404	420	1	1	1.5	90	Green house mode	0:00:00	26:06:00	King, Richard L.	Town of Bellmont
DJ	233	568,784	4,973,548	284.2	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Fredenburgh, Warren	Town of Chateaugay
DT	244	572,873	4,968,713	420	1	1	1.5	90	Green house mode	0:00:00	10:36:00	Whalen Walter,	Town of Chateaugay
EY	296	569,983	4,968,315	388.4	1	1	1.5	90	Green house mode	0:00:00	30:40:00	Legacy, Jerry R.	Town of Chateaugay
FG	323	568,444	4,971,220	330	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Cook, Alden	Town of Burke
FL	328	572,268	4,973,073	310	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Sibbert Jorge G,	Town of Chateaugay
FM	329	572,853	4,972,925	340	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Rankin, Arthur	Town of Chateaugay
FN	330	573,220	4,972,384	357.2	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Lavoie, Gary P.	Town of Chateaugay
FR	335	574,427	4,969,714	377	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Collins, Herbert	Town of Chateaugay
FW	342	575,570	4,967,520	392.8	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Hoy, Malcolm	Town of Bellmont
FX	345	575,175	4,967,443	420	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Estabrook, Joel	Town of Bellmont
GG	357	571,573	4,966,765	430	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Titus, Harley E.	Town of Bellmont
GL	365	569,274	4,966,676	396.6	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Soucia, Peggy J.	Town of Bellmont
GM	366	569,229	4,966,606	400	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Dibble, Alice L.	Town of Bellmont
GN	367	569,160	4,966,534	400	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Russell, Gerald	Town of Bellmont
HC	388	568,903	4,969,591	353.8	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Carey, Donald	Town of Burke
HI	397	570,477	4,974,183	292.8	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Malone, Del	Town of Chateaugay
HL	733	573,183	4,972,956	340	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Lord, James C.	Town of Chateaugay
HM	734	572,901	4,972,936	339.9	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Rankin, Arthur W.	Town of Chateaugay
HN	736	573,296	4,972,883	344	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Lavoie, Catherine	Town of Chateaugay
HO	737	573,306	4,972,783	348.9	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Jones, Mary L.	Town of Chateaugay
HQ	739	574,226	4,970,544	390	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Trainer Real Estate LL	Town of Chateaugay
HR	740	574,244	4,970,517	390	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Trainer Real Estate LL	Town of Chateaugay
HS	741	574,269	4,970,472	390	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Trainer Real Estate LL	Town of Chateaugay
HT	742	574,317	4,970,529	390	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Leavitt, Mary Lou	Town of Chateaugay
HU	743	574,509	4,970,314	388.6	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Tallman, Leonard	Town of Chateaugay
HV	744	574,485	4,970,319	388	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Tallman, Leonard	Town of Chateaugay
HW	745	574,477	4,970,340	388	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Tallman, Leonard	Town of Chateaugay
HX	761	568,323	4,966,503	392.7	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Nason, Edward	Town of Bellmont
HY	762	568,301	4,966,505	391.4	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Nason, Edward	Town of Bellmont
IC	766	567,622	4,966,437	395.4	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Miller, Bruce	Town of Bellmont
ID	767	567,462	4,966,413	394.7	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Bilow, Vincent	Town of Bellmont
IE	768	567,427	4,966,416	395	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Bilow, Vincent	Town of Bellmont
II	994	570,206	4,973,989	300	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Porter, Timothy D.	Town of Chateaugay
IJ	995	570,320	4,974,211	290	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Porter, Bruce	Town of Chateaugay
IK	996	570,371	4,974,189	291.9	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Porter, Bruce	Town of Chateaugay
IL	997	570,683	4,974,497	288.3	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Roy, Francis	Town of Chateaugay
IM	998	571,121	4,974,281	295.2	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Visconti, Candise	Town of Chateaugay
IN	999	571,142	4,974,289	295.3	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Visconti, Candise	Town of Chateaugay
IO	1002	571,432	4,973,948	300	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Tracy, Richard	Town of Chateaugay
IP	1003	571,393	4,973,764	305.5	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Tracy, Richard	Town of Chateaugay
KK	1128	568,349	4,966,536	393	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Nason, Carl	Town of Bellmont
KM	1130	568,337	4,966,469	393.8	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Desnoyers, Paul	Town of Bellmont
KN	1131	568,268	4,966,463	391.7	1	1	1.5	90	Green house mode	0:00:00	0:00:00	James, Leonard	Town of Bellmont
KO	1132	568,225	4,966,425	395.2	1	1	1.5	90	Green house mode	0:00:00	0:00:00	James, Leonard	Town of Bellmont
KP	1133	568,200	4,966,448	395.6	1	1	1.5	90	Green house mode	0:00:00	0:00:00	James, Leonard	Town of Bellmont

Summary of WindPro Predicted Expected Shadow Flicker Impacts for Jericho Rise Wind Farm

WP Receptor No.	TtEC ID	UTM-E (m)	UTM-N (m)	Z (m)	Width (m)	Height (m)	Height a.g.l. (m)	Slope of window	Direction mode	WindPro Predicted Expected Shadow Flicker with Some Tree Obstacles Considered (hrs / yr)	WindPro Predicted Expected Shadow Flicker with No Tree Obstacles Considered (hrs / yr)	Landowner Name	Town
KU	1138	567,507	4,966,371	396.2	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Parmeter, John	Town of Bellmont
KV	1139	567,744	4,966,153	404.5	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Secore, Mark	Town of Bellmont
KW	1140	567,866	4,966,255	402.8	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Nason, Richard Sr	Town of Bellmont
KX	1141	567,657	4,966,237	401.3	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Secore, Mark	Town of Bellmont
KY	1142	568,769	4,966,155	410	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Legacy, Ruth	Town of Bellmont
KZ	1143	568,251	4,966,295	398.2	1	1	1.5	90	Green house mode	0:00:00	0:00:00	James, Leonard	Town of Bellmont
LB	1145	569,012	4,966,493	404.1	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Laplante, Paul	Town of Bellmont
LC	1146	569,012	4,966,470	404.9	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Laplante, Paul	Town of Bellmont
LD	1147	569,271	4,966,285	406.8	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Tourville, Ronald	Town of Bellmont
LE	1148	569,279	4,966,249	408.2	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Tourville, Ronald	Town of Bellmont
LF	1149	569,346	4,966,304	405.8	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Potter, Howard	Town of Bellmont
LG	1150	569,447	4,966,231	413.4	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Goldschmidt, Egon	Town of Bellmont
LH	1151	569,736	4,966,277	414.1	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Vincent, Melvin	Town of Bellmont
LI	1152	569,769	4,966,228	416.6	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Vincent, Melvin	Town of Bellmont
LJ	1153	569,785	4,966,221	418.1	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Vincent, Melvin	Town of Bellmont
LK	1154	569,598	4,966,175	420.2	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Goldschmidt, Egon	Town of Bellmont
LL	1155	569,923	4,966,208	427.6	1	1	1.5	90	Green house mode	0:00:00	0:00:00	King, Adam	Town of Bellmont
LM	1156	569,974	4,966,124	431.1	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Ryan, John Jr	Town of Bellmont
LN	1157	569,994	4,966,111	432.2	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Ryan, John Jr	Town of Bellmont
LO	1158	569,980	4,966,068	432.1	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Ryan, John Jr	Town of Bellmont
LP	1159	570,357	4,965,978	446.1	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Haines, John J H.	Town of Bellmont
LQ	1160	570,082	4,965,676	446.8	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Otis, Gerald J.	Town of Bellmont
LR	1161	571,963	4,966,231	432.7	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Cook, Richard	Town of Bellmont
LS	1162	571,945	4,966,248	431	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Cook, Richard	Town of Bellmont
LT	1163	571,944	4,966,330	430	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Cook, Jeremy	Town of Bellmont
LU	1164	571,987	4,966,358	430	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Cook, Jeremy	Town of Bellmont
LV	1165	571,966	4,966,513	430	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Titus, Richard	Town of Bellmont
LW	1166	571,983	4,966,545	430	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Titus, Richard	Town of Bellmont
LY	1168	574,774	4,966,632	425.8	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Mailloux, Jimmy J.	Town of Bellmont
LZ	1169	574,796	4,966,645	424.4	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Mailloux, Jimmy J.	Town of Bellmont
MA	1170	574,836	4,966,651	422.3	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Stout, Kelli L.	Town of Bellmont
MB	1171	574,842	4,966,665	421.7	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Stout, Kelli L.	Town of Bellmont
MC	1172	574,762	4,966,715	424.7	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Fortin, Denis	Town of Bellmont
MN	1183	573,394	4,972,898	348.5	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Otis, Harry	Town of Chateaugay
MO	1184	573,359	4,972,923	346.4	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Otis, Harry	Town of Chateaugay
MP	1185	573,337	4,972,979	344	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Ledger, Steven A. Jr	Town of Chateaugay
MQ	1186	573,279	4,972,952	342	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Trombley, Ambrose R	Town of Chateaugay
MR	1187	573,274	4,973,004	340.4	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Manor, Hank W.	Town of Chateaugay
MS	1188	573,268	4,973,047	340	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Patnode, Francis H.	Town of Chateaugay
MT	1189	573,274	4,973,031	340	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Manor, Hank W.	Town of Chateaugay
MU	1190	571,219	4,974,337	293.9	1	1	1.5	90	Green house mode	0:00:00	0:00:00	Legacy Robert J,	Town of Chateaugay

Appendix H
Phase IA Cultural Resource Investigation

APPENDIX H

PHASE IA
ARCHEOLOGICAL INVESTIGATION
PROPOSED JERICHO RISE WIND FARM
TOWNS OF BELLMONT AND CHATEAUGAY, FRANKLIN COUNTY, NEW YORK

PRIVILEGED INFORMATION--DO NOT RELEASE

For

Jericho Rise Wind Farm, LLC
3 Columbia Place
Albany, New York 12207

October 2007

Prepared by

TETRA TECH EC, INC.
1000 The American Road
Morris Plains, New Jersey 07950

EXECUTIVE SUMMARY

Jericho Rise Wind Farm, LLC (Project Sponsor), proposes to construct a wind-powered electrical generating facility in the towns of Bellmont and Chateaugay, Franklin County, New York. The Project, known as the Jericho Rise Wind Farm, is subject to review under New York's State Environmental Quality Review Act (SEQRA) and to review under Section 106 of the National Historic Preservation Act. The present Phase IA study provides data germane to these reviews by compiling background and field reconnaissance information on a 10.9-square-mile (28.3-kilometer) area encompassing the Project, and by developing an assessment of its archeological sensitivity in study area. This study was prepared by Tetra Tech EC, Inc. (Tetra Tech), of Morris Plains, New Jersey.

The proposed project will consist of up to 53 wind turbines, each with a maximum, or "nameplate," capacity of 1.65 megawatts. The entire project will therefore have a total nameplate capacity of 87.45 megawatts. Other proposed project elements include underground and overhead transmission lines (interconnects), access roads and upgrades of existing roads, two temporary laydown areas, a substation, and a permanent operations facility.

Although future adjustments to project plans may be necessary as a result of later design modifications, the Project Sponsor has developed a proposed project layout that incorporates the latest design considerations for the Jericho Rise Wind Farm. The study area for the Phase IA archeological study covers 6,987 acres (2,828 hectares) in the two towns, encompassing 92 parcels of leased private land (totaling 5,042 acres [2,041 hectares]) on which the Project will be constructed and some adjoining non-participating parcels.

No archeological sites have been recorded inside the boundaries of the archeological study area. There are also no recorded prehistoric Native American archeological sites within 1 mile (1.6 kilometers) of its boundary. Three historic period archeological sites have been recorded within approximately 1 mile of the boundary. All represent loci of nineteenth-century industrial activity, and all are situated on the Chateaugay River. Two were the sites of ironworks. The third was a small-scale complex of waterpowered enterprises that included two gristmills, a sawmill, and a carding mill.

The overall sensitivity of the study area for prehistoric Native American sites appears to be low to moderate. It is anticipated that construction of the proposed project will affect few prehistoric sites, and that any sites discovered during Phase IB subsurface survey will be small, low-density localities. For purposes of the investigation of the possible prehistoric Native American use of the study area, the terrain can be divided into three local habitats in the sense of Funk (1993): channelways, till plains, and stratified drift terrain.

From early Euroamerican settlement to the present, the dominant land use of the study area has been agricultural, and any historic period archeological sites present in the study area will most likely be farmstead-related. A few small-scale waterpowered enterprises, including sawmills, grist-mills, starch factories, ironworks, were also situated in or next to the study area. Sites of such industries may occur at several locations of limited extent along the Chateaugay and Little Trout Rivers and one or two other minor tributaries. Historic period Euroamerican sites are most likely to occur close to (less than approximately 330 feet/100 meters) of existing or abandoned historic roads and a few defined mill seats along the aforementioned streams.

The project layout for the wind turbines takes into account various setbacks, which range from 500 to 1,320 feet. These setbacks tend to remove most project impacts from locations historically occupied by farmsteads and mills, minimizing the potential effects of the project on any historic archeological sites that may be present. The potential effects of other project elements, such as interconnects, access roads, substations, staging areas, and operations areas, on historic archeological resources are on the whole also likely to be none to minimal, but identification of map documented structures (MDSs) and additional field reconnaissance or subsurface survey may be necessary.

The possible occurrence of prehistoric or historic archeological sites cannot be ruled out based on the available information. Therefore, a Phase IB subsurface survey is recommended to address SEQRA and Section 106. The survey should be designed and executed in conformance with SHPO (2005, 2006) guidelines using a stratified judgmental cluster sampling design where surface survey is not be adequate for site discovery. Further (Phase II) investigations should be undertaken to ascertain the significance of any sites identified that cannot be avoided through revisions to the project's design.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PHOTOGRAPHS

1.0 INTRODUCTION

Jericho Rise Wind Farm, LLC ("Project Sponsor"), proposes to construct a wind-powered electrical generating facility in the towns of Bellmont and Chateaugay, Franklin County, New York (Figure 1). The proposed Jericho Rise Wind Farm ("the Project") will involve construction of 53 wind turbines and associated facilities. The Project will be developed on 92 parcels of leased private land comprising a total of 5,042 acres (2,041 hectares). These parcels are encompassed by a project study area of 6,987 acres (2,829 hectares).

The Project is subject to review under New York's State Environmental Quality Review Act (SEQRA) (New York Environmental Conservation Law § 8) and the regulations that implement it (Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Part 617 [6 NYCRR Part 617]). SEQRA and its regulations identify significant archeological resources as among the elements of the physical environment that shall be considered in assessing the potential impacts of a proposed project. The towns of Bellmont and Chateaugay are serving as Co-Lead Agencies to conduct a coordinated environmental review under SEQRA. Under SEQRA, the Co Lead Agencies is required to consult with the New York State Historic Preservation Office (SHPO) to identify and address potential project impacts to resources of archeological, historical, or significance, and this document provides technical data in support of the consultation.

The Project is also subject to review under Section 106 of the National Historic Preservation Act (NHPA). The Project Sponsor anticipates applying for a permit from the U.S. Army Corps of Engineers in compliance with Section 404 of the Clean Water Act for possible construction activities in certain regulated wetlands. Issuance of this permit would constitute a federal undertaking pursuant to Section 106 of the NHPA and would require federal agency consultation with SHPO to assess potential project effects on sites, structures, buildings, and districts that are listed on the National Register of Historic Places or eligible for listing.

The goal of the present Phase IA study is to review background and field reconnaissance information on a 10.9-square-mile study area to develop an assessment of its archeological sensitivity. The background review considers information on the environment, known archeological sites, and historical development. The study is also informed by observations made during a field reconnaissance of the area. The assessment of archeological sensitivity identifies factors that may have affected prehistoric and historic settlement pattern in the project area. The study also considers factors that may have affected the preservation and potential for discovery of sites in the area.

This Phase IA study was prepared by Tetra Tech EC, Inc. (Tetra Tech), of Morris Plains, New Jersey, under contract to Jericho Rise Wind Farm, LLC. The lead author was Christopher L. Borstel, Ph.D. Sydne B. Marshall, Ph.D., is the principal investigator. The study conforms to guidance for archeological investigations from the New York State Historic Preservation Office (SHPO), including its *Phase I Archaeological Report Format Guidelines* (SHPO 2005) and *Guidelines for Wind Farm Development Cultural Resources Survey Work* (SHPO 2006).

1.1 Project Description

The purpose of the proposed Project is to create a wind-powered electrical facility that will provide a significant source of renewable energy to the New York electric power grid. The impetus for the project comes from recently enunciated policies of the State of New York, which call for an increase in renewable energy production in the state from 19 to 25 percent. Reaching the goal of 25 percent will help reduce the state's dependence on fossil fuels and improve environmental quality by reducing emissions from the consumption of these fuels.

As currently proposed, the Project will consist of 53 wind turbines (Figure 1), each with a maximum, or "nameplate," capacity of 1.65 megawatts (MW). Of the 53 turbines, 34 (representing 56.1 MW) are planned for Chateaugay and 19 (31.35 MW) are planned for Bellmont. The entire project will have a total nameplate capacity of 87.45 MW. The Project Sponsor anticipates erecting Vestas V82 wind turbine generators or their equivalent. Each turbine will consist of an 80-meter (262-foot) tubular steel tower constructed on a cast-in-place concrete foundation (pedestal). A nacelle housing the generator, gearbox, and power train will be mounted atop the tower. Attached to the nacelle will be three 40-meter (131-foot) composite blades, giving each tower a maximum height, including the concrete base pedestal, of approximately 121 meters (397 feet) above ground when a blade is in the tip-up position.

The project will also include the following associated facilities and structures (including currently estimated quantities):

- Workspaces around turbines, including permanent gravel pads for mobile maintenance cranes (53);
- Temporary and permanent access roads, principally involving upgrades to existing roads and lanes (≥ ca. 15 miles);
- Buried electrical cables (interconnects) and fiber optic communication and control lines (≥ ca. 21 miles);
- Overhead electrical cables (interconnects), to used where environmental or other constraints restrict installation of cables underground (≤ ca. 1 mile);
- Meteorological towers and surrounding workspaces (2);
- Temporary construction staging areas (2);
- Permanent operations and maintenance building and equipment yard, possibly to be constructed at one of the construction staging areas (1);
- Electrical substation and point of intersection electrical switchyard for collecting electricity from Project feeder circuits and connecting to regional electrical grid (1 combined station); and
- Crane paths, including public roads, access roads, and a few designated temporary routes across open fields, for moving the large erection cranes from tower to tower (undetermined quantity of new build).

The design of the project is still being refine and may be modified due to environmental, engineering, economic, or other factors. Further information will be available by the time the work plan for the Phase IB archeological field survey is prepared.

1.2 Area of Potential Effects

The area of potential effects (APE) with respect to archeological resources will comprise all locations where ground disturbance may occur as a result of project construction. Project construction activities that have the potential to cause significant ground disturbances include:

- Grubbing stumps after vegetation clearance;
- Installation of turbine and meteorological tower foundations;
- Subgrade work for crane pads and roadway construction;
- Drainage work for roadway construction;
- Excavation of furrows or trenches for the installation of underground cables;
- Staging areas for small amounts of possible directional drilling to install underground cables;
- Excavation of holes for utility poles;
- Site preparation, foundation work, grading, drainage work, and landscaping at permanent operations and maintenance facility, collection substation, and point of intersection switchyard;
- Movements of heavy construction equipment over unprotected ground surfaces;
- Skidding or dragging timber, equipment, or supplies over unprotected ground surfaces;
- Preparation of crane paths across open fields using a road roller; and
- Restoration of terrain to original grades and soil compaction.

The facilities and methods of construction for the project will be described in the SEQRA Draft Environmental Impact Statement (DEIS), now in preparation (Jericho Rise Wind Farm, LLC in preparation). Once the DEIS is completed, it will be possible to analyze the Project in greater detail and accurately determine the size of the APE.

1.3 Study Area

For purposes of this Phase IA archeological review, the study area for the Project encompasses the APE, which is defined as including all proposed temporary and permanent facilities with the potential for ground disturbance and adjoining land on the same parcel of property. The archeological study area includes 92 parcels of land for which the Project Sponsor has obtained lease agreements, along with certain adjoining non-participating properties that comprise “in-holdings” in the area of the Project.

The study area for purposes of this Phase IA archeological investigation covers 6,987 acres of land in the two towns of Bellmont and Chateaugay. It is an irregularly rectangular area whose boundaries are approximately the Burke-

Chateaugay town line on the west, the Malone-Chateaugay Road (County Route [CR] 33) on the north, State Highway 374 on the east, and Brainardsville Road (CR 24) on the south (Figure 1).

1.4 Phase IA Background Study

The present Phase IA study is intended to provide the necessary background information to design a Phase IB subsurface survey of selected locations within the Project APE. It reviews published and unpublished information on archeology, history, geology, soils, and other topics for the project area and vicinity. It analyzes the information to reach three goals:

- assess the archeological sensitivity of the environmental zone (Funk 1993:65-81) in which the study area is situated, and its constituent habitats and landscape features;
- identify site types that are likely to occur in the study area; and
- delineate areas where sites may not be preserved as a result of severe historic period ground disturbance.

Background research was conducted at the New York State Historic Preservation Office (NYSHPO), the New York State Museum, New York Public Library, Chateaugay Memorial Library, Wead Library (Malone), Franklin County Soil and Water Conservation District (Malone) and at other repositories. Extensive use was also made of online resources, including the NYSHPO's State Preservation Historical Information Network Exchange (SPHINX) database system. The lead author of this report, Dr. Christopher L. Borstel, conducted a field reconnaissance of the Project area and vicinity between November 28 and December 1, 2006, during a period when the ground was bare of snow.

2.0 ENVIRONMENTAL SETTING

2.1 Location

Centered at lat. 44°53' N long. 74°08' W, the Project includes the southwestern corner of Chateaugay, and the northern end of Bellmont, in northeastern Franklin County, New York (Figure 1). The Project's center is about 9 miles (14 kilometers) east of the county courthouse in Malone and 155 miles (250 kilometers) north of the state capitol in Albany. The southwestern part of Chateaugay, where much of the Project is located, has long been known locally as the Jericho area (Seaver 1918:253); the source of this name is unknown.

The Project is situated in the St. Lawrence Valley, and the southern edge of the project area corresponds closely with the valley's physiographic boundary. The valley straddles the Canadian border from the mouth of Lake Ontario to the Lake Champlain region, and as a physiographic province, it separates the rugged Adirondack Mountains to the south from the Canadian Shield and Laurentian Mountains to the north. The St. Lawrence Valley is underlain by Cambrian and Ordovician sandstone, dolostones, and limestones. On the southern side of the valley, the boundary between the Adirondack and St. Lawrence provinces is the line along which the Precambrian rocks of the former disappear beneath the Paleozoic rocks of the latter (Fenneman 1938:392, 397).

2.2 Geology and Hydrology

Potsdam sandstone underlies the study area. Probably dating to the late Cambrian (ca. 500 million years ago), this rock unit is a durable, finely- to massively-bedded sandstone of reddish-brown, buff, gray, or white color. It includes a lower member comprised of conglomeratic quartz sand with a significant percentage of feldspar (arkose and subarkose) and an upper member of more nearly pure quartz (arenite and orthoquartzite). Potsdam sandstone is almost flat-lying, and because of the near-zero dip and resistance to erosion, it tends to form broad, low tablelands along the edge of the St. Lawrence Valley. Potsdam sandstone lies unconformably on the much older Grenville-age (ca. 1,100 million years ago) gneisses and metasedimentary rocks that comprise the Adirondacks. The Adirondack gneisses vary in composition, but in the vicinity of the project area, they are primarily classified as pyroxene and hornblende granitic gneiss. Brainardsville Road (CR 24) at the southern edge of the project area approximates the boundary between Potsdam sandstone to the north and the Adirondack gneisses to the south. Gneiss underlies only the southeastern corner of the project area, where it forms Kirby Hill and some neighboring hillocks between the Chateaugay River at Brainardsville and Titus Road, about 2.5 miles (4 kilometers) to the west. This corner of the project area is in the Adirondack physiographic province (Fisher et al. 1970; Lavoie 2004; US Geological Survey 2006; Van Diver 1985).

Overall, the project area has a gentle north-northwesterly slope of around 2 percent (Photograph 1). Elevations range from approximately 1,480 feet (451 meters) above sea level (ASL) near the summit of Kirby Hill at the southeastern corner of the Project area to 950 feet (290 meters) ASL at the Project's northern end. Relief is typically low to moderate, and the general character of the landscape is one of gently undulating terrain (Photographs 2-4).

The character of the terrain results in part from a distinctive pattern of relict glacial meltwater channels that lie across it. The channels slope in a westerly direction—that is, obliquely to the more northerly sloping general dip of the landscape. MacClintock and Stewart (1965:64-65) refer to these terrain features as the "Chateaugay Channels" (Photograph 5). The features comprise a score or more of channelways, which in places join and part in a braided pattern. The channels range from 25 to 75 feet (8-23 meters) deep and are 300 to 700 feet (90-210 meters) across. According to MacClintock and Stewart (1965:64), they are "floored with a mosaic of boulders, in many places close enough so that it is possible to cross the bottom of the channel by stepping from boulder to boulder." Small hillocks rise on the fingers of land between the channelways, reaching heights of 20 to 40 feet (6-12 meters) above the channel edges. Similar late glacial drainage features occur elsewhere in the St. Lawrence-Champlain region (Franzi et al. 2002).

Many of the channels are abandoned features from the last episode of deglaciation. Some, however, host modern l underfit, low-order streams (Photograph 6). These streams are either directly tributary to the Chateaugay River, entering it several miles north of the project area, or they flow first into the Trout River and thence into the Chateaugay still further north. From southwest to northeast the major streams draining the project are Collins

Brook, the Little Trout River, Alder Brook, and Allen Brook. The main stem of the Chateaugay River directly drains only a limited portion of the eastern edge of the project area (Photograph 7). The river is deeply entrenched in a narrow valley up to 100 feet (30 meters) deep that appears to cut across the heads of the channelways. Just north of the project area at High Falls in the town of Chateaugay, the river has cut all the way through the blanket of glacial drift covering the region and plunges 120 feet (36 meters) over a tiered falls of Potsdam Sandstone. The confluence of the Chateaugay with the St. Lawrence River is situated 36 miles (60 kilometers) north-northeast of the project area at the town of Châteauguay, Quebec, near Montreal.

Surficial deposits in the project area consist primarily of glacial drift deposited during the late Wisconsinan period (ca. 29,000-10,000 years before present [BP]). The most widespread surficial unit is a blanket of late Wisconsinan till informally designated as Malone till, which occurs in all portions of the project area. Malone till is dense, stony, silty, and gray-brown to red-brown in color. In the project area, it varies from very thin or (rarely) absent to over 100 feet in thickness (Caldwell and Pair 1991; Caldwell et al. 2003; Gibbard and Van Kolfschoten 2004; MacClintock and Stewart 1965:6-7, 38-41, 63-64).

In addition to till, various deposits associated with a strandline of Lake Iroquois occur in the project area. Lake Iroquois was a large glacial lake that occupied much of the Lake Ontario basin and adjacent areas around 13,000 BP. The Lake Iroquois strandline is marked by several types of sand and gravel deposits, but apparently not locally by an erosional scarp. It traces a northeast-southwest line across the project area at an elevation of approximately 1,000 to 1,020 feet (305-311 meters) ASL, running a little south of the villages of Burke and Chateaugay. The strandline also marks the northerly limit of the network of channelways in the project area (MacClintock and Stewart 1965; Pair and Rodrigues 1993; Parent and Ochietti 1999)

Deposits associated with the Lake Iroquois strandline include pebbly sand, beach gravel, and mounds of coarse gravel, sand, cobbles, and boulders (MacClintock and Stewart 1965:plate 1b). Wedges of pebbly sand, perhaps representing deltaic deposits from meltwater streams and covering up to several hundred acres each occur to the north of the Project. Large pebbly sand wedges are found near the villages of Chateaugay and Burke at an elevation of around 1,000 feet (300 meters); a smaller deposit of similar composition also occurs at a somewhat higher elevation (1,160 feet [354 meters]) just west of the Project around the intersection of Selkirk and Mary Cary roads. Beach gravel, comprised of stony material winnowed from the glacial drift and deposited in sheets of indistinct form by waves and currents, is found at the northern edge of the project area along Malone-Chateaugay Road (CR 23) near its intersection with Willis Road (CR 33). Hillocks and low, narrow ridges composed of coarse gravel, sand, cobbles, and boulders occur at several locations in the project area. These deposits apparently represent both glaciolacustrine beach ridges and kames, landforms of distinctly different origin. Whereas beach ridges are low mounds or ridges of beach materials that have been heaped up on the backshore of a beach by storm waves and currents, kames are mounds, knobs, hummocks, or ridges composed of stratified sand, gravel, and cobbles that were deposited on adjacent to glacial ice, commonly when it was stagnant and downwasting. A small group of hillocks and low ridges that apparently include examples of both types of landforms occurs along Cook Road in Burke (Photograph 8). Kames are also found between the Chateaugay River and State Route (SR) 374 just east of the Project.

The final important type of surficial deposit in the project area is the alluvium on the floors of relict and active stream channels (MacClintock and Stewart 1965). These deposits have not been described in detail, but include both Wisconsinan and Holocene deposits. In the relict channelways of the terminal Pleistocene, the deposits are evidently often bouldery in character. Later valley-bottom deposits in active stream channels are believed to be more finely grained than those found in the relict late glacial channelways.

2.3 Soils

Most of the soils in the project area developed on these glacial deposits are spodosols (podzols) (Carlisle 1958; Natural Resources Conservation Service 2006). In general, they are deep, acidic stony sandy loams and loamy sands (Table 1). The soils represent three catenas, which are groups of related soils in a region formed from similar parent materials but in different topographic settings (Figure 2). The catenas represented in archeological study area are:

- Worth-Empeyville-Westbury-Dannemora-Tughill (92.0 percent of the study area);
- Parishville-Moira-Brayton-Massena-Sun (4.3 percent); and

- Constable/Colton-Duane-Walpole-Scarboro (3.7 percent).

Soils of the Worth-Empeyville-Westville-Dannemora-Tughill catena are developed on till derived primarily from Potsdam sandstone. This catena covers approximately 92 percent of the archeological study area. The most widely-occurring members of the catena are soils of the Empeyville, Westville, and Dannemora series. Empeyville soils are moderately well drained stony or very stony very fine sandy loams and comprise approximately 20 percent of the study area. Westville soils have a similar texture range, but are somewhat poorly drained; they cover approximately 15 percent of the study area. The poorly drained Dannemora soils are stony very fine sandy loams that cover approximately 18 percent of the study area.

The *Soil Survey of Franklin County* (Carlisle 1958) identifies three patterns of co-occurring soils on the landscape associated with this catena in the project area. The most extensive of these is the Westbury-Empeyville-Dannemora soil association, which comprises the flats, slopes, and channelways of the undulating till plain in the northern and central portions of the project area. A second association, the very stony phases of Dannemora-Westbury-Tughill soils, has similar terrain characteristics, but consists of extensive areas where the soil is so stony that use of farm machinery is restricted or not possible. This association occurs primarily in the southern third of the project area, along the border of the Adirondacks physiographic province. The third association, Worth-Empeyville, occupies a small area of hilly land at the southern edge of the project.

The remainder of the study area is covered by two minor catenas of roughly equal extent. The Parishville-Moira-Brayton-Massena-Sun catena covers approximately 4.3 percent of the study area along its northern border. The soils of this group contain substantial amounts of dolostone and limestone as a minority constituent. Principal soils of this catena found in the project area are moderately well drained Moira stony loams and poorly drained Brayton and Sun stony loams.

The third catena, Constable/Colton-Duane-Walpole-Scarboro catena, has developed on the sandy and gravelly shoreline and kame deposits. It covers about 3.7 percent of the study area near its northern end. The catena consists primarily of the Adams-Colton association, which is comprised of soils developed on coarse-textured stratified drift (mainly coarse sands, gravels, and cobbles).

2.4 Climate, Vegetation, and Land Use

The present climate of the project area is characterized by cool summers and very cold winters. The mean temperature in January averages 14 degrees Fahrenheit and that in July averages 67 degrees Fahrenheit. Annual precipitation is around 37 inches and is more abundant during the summer months than during the winter months. From June through August, precipitation averages about 13 inches, while from December through February, it averages about 7 inches. Winter precipitation falls mainly in the form of snow and averages around 75 inches per year. The cold snowy winters contribute to a long period of muddy fields in the spring, which limits early spring planting, but does not inhibit dairy farming (Carlisle 1958; Carter 1966; National Climatic Data Center 2002).

The patterns and composition of vegetation in the project area have been considerably altered by two centuries of agriculture. Northern Franklin County, including the project area, is situated within New York's northern hardwood forest zone. Prior to the extensive clearance of woodlands in the nineteenth century, the region's forests were composed principally of maple and beech, with a mix of associated species, primarily yellow birch, hemlock, and white pine. In the project area, better drained portions of the till plain areas would have been dominated by sugar maple, beech, and yellow birch, while stands of white pine would have occupied landforms of very well drained sandy drift. More poorly drained portions of the project area contained red maple, beech, and elm. Very poorly drained areas were occupied by red maple, elm, Atlantic white cedar, tamarack, willow, gray birch, and some spruce and balsam. Hemlock occurred in most areas, preferring moist, shady slopes and ravines with adequate drainage (Carlisle 1958; de Laubenfels 1966).

Based upon observations made during the November-December 2006 field reconnaissance, the primary economic activity in the project area is agriculture, with dairy farming being the most important element (Photographs 1-8). Farms and rural residences tend to be located on the grid of county and local roads that covers the area. Pastures, meadows, cropland, and woodland are common. Considerable amounts of land that were once cleared for agriculture have reverted to woodland, though some former cropland has been converted to pasture. There are a number of small gravel pits in the project area, but none appears to occupy more than 20-40 acres. Manufacturing in the project area is limited. There are scattered stores and businesses, mostly situated along main roads. Two high voltage transmission lines cross the study area.

3.0 HISTORIC AND ARCHEOLOGICAL BACKGROUND

3.1 Prehistoric Context

Little specific information is available concerning prehistoric Native American occupations in the study area and vicinity. Nonetheless, archeological research elsewhere in northern New York and surrounding areas provides a general outline of Native American prehistory in the region (Abel and Fuerst 1999; Cadzow et al. 2006; Ritchie 1969; Ritchie and Funk 1973). Briefly, New York State's prehistory can be divided into three principal periods—Paleoindian (ca. 12,500-10,000 radiocarbon years before present [BP]), Archaic (ca. 10,000 to 3000 BP), and Woodland (ca. 3000 to 400 BP). Each period is characterized by certain broad patterns in technology, subsistence, settlement, and social organization. Each can also be subdivided into successive subperiods and is characterized by local and regional cultural manifestations and phases.

Paleoindians were the first human groups to enter the formerly glaciated region of northern New York, sometime after 12,500 BP. Available evidence suggests that the density of the human population was low and that band-size social groups, comprised on average of 25-40 persons, moved through large territories, moving from campsite to campsite seasonally or more often. The hunting of caribou and other ungulates was probably important, and Paleoindians in the lowlands east from the Great Lakes seem frequently to have established camps on well drained, elevated terrain, such as on beach ridges and outwash plains (Jackson et al. 2000). The Paleoindian stone toolkit included long non-stemmed projectile points or knives with one or more distinctive central flake scars (fluted points), end and side scrapers, flake knives, spokeshaves, choppers, and flake tools, typically made of high-grade stone, such as flint and jasper.

The succeeding Archaic period spans roughly 7,000 years (10,000 to 3000 BP) and is typically divided into early (10,000-7000 BP), middle (7000-5000 BP), and late/terminal (5000-3000 BP). In the Northeast, Archaic peoples apparently practiced a succession of finely-tuned hunter-gatherer subsistence strategies, which developed in response to changing climate, evolving vegetation assemblages, and other environmental, social, and historical factors. Although Early and Middle Archaic sites are comparatively rare, Late Archaic sites are abundant. Archeologists continue to debate the reasons for the sharp increase in sites toward the end of the Archaic period, but the leading explanations are significant increases in Native American populations or environmental changes leading to better preservation and/or improved visibility of sites. By Late Archaic times, forests with compositions approaching those of the early Colonial era occupied the region. The primary social groups (likely still consisting primarily of bands of roughly 25 to 40 persons each) occupied modest territories probably covering, on average, a few hundred to a couple of thousand square miles each. These groups followed a comparatively tightly-defined round of seasonal movements from campsite to campsite. Diagnostic artifacts included a succession of notched, stemmed, and triangular chipped stone projectile point types, a variety of ground stone tools, and in some areas manufacture of soapstone bowls or working of native copper.

The Woodland period spans the remainder of Native American prehistory in northern New York. It started around 3,000 years ago with the introduction of pottery and ends around A.D. 1600 when sustained, recorded contact with Europeans began. It, too, is divided into three subperiods, early (3000-2000 BP), middle (2000-1200 BP), and late (1200-400 BP). Two key innovations characterize this period: the manufacture of low-fired ceramic vessels and the adoption of maize-bean-squash horticulture. Native American peoples began making pottery vessels at the beginning of the Early Woodland period and adopted horticulture as an essential subsistence strategy by the start of the Late Woodland. Both innovations originated outside the region. During the Woodland period, ceramics show an increasing technical sophistication, changes in vessel form, and evolving decorative styles that employed various methods of impressing, stamping, and incising. Projectile points span a wide variety of stemmed, notched, lozenge, and triangular styles.

The Late Woodland period in New York and adjoining areas of Ontario and Quebec saw the development of the Iroquoian cultural tradition. Anthropologists and historians continue to investigate and debate the precise relationship between the complex of archeological traits that emerged during the Late Woodland period and the linguistic, political, and cultural groups of the early historic period. Nonetheless, it is apparent that between ca. A.D. 1000 and 1500, cultural patterns developed that were characteristic of the Iroquois tribes of New York (Mohawk, Oneida, Onondaga, Cayuga, Seneca, Erie, and Wenro) and other northern Iroquoian groups, including the Huron and

Neutral tribes. These patterns included: maize cultivation complemented or supplemented by fishing, hunting, and gathering; swidden or slash-and-burn agriculture; palisaded villages situated in easily defended locations; periodic relocations of villages due to local resource depletion and other factors; matrilocal residence patterns; multifamily longhouses; raiding and other forms of violent conflict; multi-community alliances; globular pottery vessels with incised-decorated collared rims manufactured by paddle-and-anvil techniques; and other elements (Abel 2001; Bamann et al. 1992; Fenton 1978; Snow 1995; Tuck 1978).

During the early period of French exploration and settlement of the St. Lawrence Valley, in the sixteenth and seventeenth centuries, northeastern Franklin County seems to have been on the periphery of Native American settlements. It is unclear which tribal group or groups regarded the area as part of their territory around the time of European contact. Anthropologists map the area as being within the territory of the "St. Lawrence Iroquoians," but this label is a term of convenience probably encompassing more than one otherwise-unknown community or tribe of Iroquoian speakers who were encountered by French explorers in the region in the 1530s and 1540s (Trigger and Pendergast 1978; Tuck 1978). By around 1600, the Mohawks, whose homeland lay far to the south in central New York but who sought regional dominance of the fur trade, had established their influence as far north as the St. Lawrence River. During the next two centuries, Mohawk power and influence declined, and they were gradually displaced from their original homeland as a result of the incessant warfare and the expansion of British settlement in New York. As early as about 1666, some Mohawks had settled permanently in the St. Lawrence Valley near Montreal, and about a decade later occupied a place called Caughnawaga (also the name of a village in the Mohawk Valley). Caughnawaga is just east of the mouth of the Chateaugay River and roughly 38 miles (61 kilometers) northeast of the study area. Around 1750, several families from Caughnawaga moved up the St. Lawrence and established a new settlement near the mouth of the St. Regis River. In the 1790s, this settlement was incorporated into a reservation that was subsequently split into U.S. and Canadian sections by the permanent fixing of the international border. Situated in the northwestern corner of Franklin County, the St. Regis Reservation is about 30 miles (48 kilometers) west of the study area (Fenton and Tooker 1978; Hough 1853).

3.2 Historic Period Context

The towns of Chateaugay and Bellmont are situated in the territory of the New York land grant known as the Old Military Tract. Chateaugay and Burke comprise portions of Township 7 of the Old Military Tract. Bellmont also encompasses a portion of Township 7, and originally also included Townships 8, 9, and 10 of the tract.

The State of New York established the Old Military Tract in 1786 as the area from which soldiers who served during the Revolutionary War could obtain land grants as bounties for service, in fulfillment of a 1781 law intended to encourage recruitment of troops. The Old Military Tract measured approximately 20 by 60 miles (32x96 kilometers) and encompassed roughly 768,000 acres (311,000 hectares). It was divided into 12 sequentially-numbered townships measuring approximately 100 square miles (259 square kilometers) apiece, each comprised of lots of about 1 square mile (2.59 square kilometers) each.

Owing to the remoteness of the lands and other factors, not one acre of the Old Military Tract was ever patented to a veteran. Other available lands proved more attractive, and in 1795 the State of New York sold the land of Township 7, the tract that included the present study area, to speculators (Hough 1853:235-265; Meinig 1966). James Caldwell of Albany received a patent for Township 7 in February 1795. Nine days later Caldwell sold his rights to a Colonel McGregor, who by the end of the year had divided his holdings among a syndicate of New York merchants. Euroamerican settlement of the area began immediately thereafter. The first settlers were Benjamin Roberts of Ferrisburgh, Vermont, and Nathan Beeman of Plattsburgh, New York, with their families and hired men. Both established themselves a little north of the village of Chateaugay in the warm months of 1796. The arrival of Roberts and Beeman and their parties marked not just the beginning of settlement in Chateaugay, but also the first permanent Euroamerican settlement in all of what would become Franklin County (Hough 1853:250-251, 487-488).

In the following three years, some two dozen or more families, mostly from Vermont, moved into the township, and the population grew large enough that local government could be formalized. In 1799, the New York State Legislature established township of Cheateaugay (or "Chateuaga" as it was initially spelled) as encompassing Townships 5 to 8 of the Old Military Tract, two of which (Townships 5 and 6) are now part of Clinton County. Boundary changes by 1802 had expanded Chateaugay to include virtually all of present-day Franklin County, but the establishment of new townships from 1805 onwards reduced it to its present borders by the 1840s. Among subsequent changes pertinent to the present study was the establishment of Bellmont from the southern part of Chateaugay in 1833, with the addition of further territory—including the southern end of the study area—in 1838. Burke, originally a district known as West Chateaugay, was set off as a separate town in 1844. Franklin County was separated from Clinton County in 1808 (Hough 1853:216-219, 481-494; Hurd 1880:375-377, 438-469; Landon 1932; Seaver 1918:172-184, 216-259).

The study area is situated slightly south of an early travel corridor extending more or less east to west across Franklin County. The corridor originated to the southeast at Plattsburgh on Lake Champlain and continued west beyond the village of Chateaugay to Malone, Fort Covington, Ogdensburg, and Potsdam. Van Diver (1985:385) remarks that the geology and relief of the corridor presented American travelers with the "shortest and easiest east-west traverse around the north side of Adirondack barrier" between lakes Champlain and Ontario. Settlers reached the Chateaugay area from Plattsburg via this corridor, and those from northern New England who were continuing west to the Upper St. Lawrence, western New York, or the Ohio country passed through the area along it. From Plattsburgh to Chateaugay the corridor was occupied by a road known even today as the Old Military Turnpike, which was built and improved over an apparently changing alignment in the early decades of the nineteenth century, in part through the efforts of troops of the U.S. Army. This road was the predecessor of modern SR 190 between Plattsburgh and Ellenburg and of U.S. 11 from Ellenburg to Chateaugay. The route split west of the village of Chateaugay, with a southern road connecting Malone and points southwest, and a northern road—originally a "winter road" for sleighs—connecting Fort Covington and the St. Lawrence River. These two routes were the respective predecessors of today's Malone-Chateaugay Road (CR 23) and U.S. 11-SR 122. The segment of U.S. 11 from its intersection with SR 122 near Burke Center to Malone apparently also follows an early route, but its date is uncertain. Local histories indicate that segments of these roads were realigned from time to time, particularly in the early stages of their existence, so it is not clear how closely the current alignments follow the roads' original routings (Beers 1876; Burr 1829; DeWitt 1802; Hough 1853:488-490; Hurd 1880:439-441, 450-452, 458-461; Meinig 1966; Seaver 1918:216-219, 236-238).

The early settlement of Chateaugay took place near the travel corridor. Accounts of early settlement indicate that the earliest farms were mostly established along the corridor and to its north (Hough 1853; Hurd 1880). Nonetheless, these accounts also mention several early farms to the south. Several were southwest of Chateaugay village in the study area. Among these early farmsteads were those of Lewis Ransom, "located two miles southwest of Chateaugay village," Ira Dowd, "two and a half miles south of the village," and the Chase family, "over the line," within the limits of Bellmont (Hurd 1880:458-459). Settlement in the towns does not seem to have occurred on a defined front, but in clumps and patches. There were the early concentrations along the roads and at crossroads in the travel corridor and in the northern parts of Chateaugay and Burke, while elsewhere it would seem that initially farmsteads were widely scattered between expanses of woods. The southern end of the study area, in what is now Bellmont, was certainly the last section to be settled. Earl Howe, who established a farmstead on Brainardsville Road (CR 24) west of Bellmont Center about 1830 (i.e., west of the study area), recalled that when he arrived in the area, "there were only four or five residences, hardly more than huts, between Malone and Chateaugay Lake" (Seaver 1918:176-177). A narrative about another arrival of this period, George Winkley, who settled on Brainardsville Road (CR 24) at Bellmont Center, just south of the study area, says that in 1831 when he began clearing his farm, "the country was wild and unbroken, but few settlers had located in the town [which was still part of Chateaugay], and the territory offered few attractions even to the venturesome pioneer" (Hurd 1880:440 and unnumbered facing page).

Although settlement and growth of Chateaugay and its derivative townships proceeded throughout the first half of the nineteenth century, it received a severe setback during the War of 1812. Located on the Canadian frontier, Chateaugay was part of the northern theater of the war. American troops camped around the village and in areas to the north several times in 1812-14, and two blockhouses were built, one not far from Marble River about 0.75 mile (1.2 kilometers) north of the village, the other in the northeastern part of the town. Chateaugay was the scene of several minor skirmishes and one significant British raid. The latter took place in February 1814 and resulted in substantial property losses to some Chateaugay residents. Military operations reached as far south as the travel corridor, but do not seem to have entered the study area itself (Seaver 1918:219, 239-243).

The instability of the northern frontier drove many settlers away from the border, some of whom are said to have departed the region permanently. Population statistics illustrate the effects of the war. In 1810, the population of Chateaugay stood at 625, but by 1814 it had fallen by about one-third, to 407. It would seem that the effects of the war were of limited duration, for by 1820 the population of the township had more than doubled from its 1814 level, to 828 (Hurd 1880:398).

In the two centuries of Euroamerican settlement, the study area has been predominantly agricultural. It lies in the North County dairy region, a section of New York comprising the area north of the Adirondacks and stretching from Clinton County on the east to Oswego County on the west. The patterns of historical development typical of the region as a whole appear to have characterized the study area as well (Durand 1967; Friedlander and LeeDecker 1994; Landon 1932; Seaver 1918).

During the early period of settlement, farming was primarily on a subsistence level, with scanty surpluses produced for sale in local and more distant markets. Among the latter were Potsdam, Ogdensburg, Plattsburgh, and Montreal; New York and Boston became important later. Early sources of cash income included potash and pearl ash, which were byproducts of land clearing and were used in the manufacture of dye, soap, wool, and glass; livestock for sale in urban markets; maple sugar; and whiskey or other distilled spirits, which converted grains into more compact and transportable products. Protective tariffs and the introduction of sturdy, thick-fleeced Merino stock favored sheep-rearing in the early decades of the nineteenth century, but by mid-century wool production was in decline in the region because of the removal of the protections and competition from sheep raised in the western states.

As individual farms and the whole area developed, surpluses beyond household needs increased, but access to markets remained difficult due to the isolation of the region and the poor condition of most rural roads. This situation changed markedly after the construction of the Ogdensburg and Lake Champlain Railroad in 1850. The line, which later operated as the Ogdensburg Division of the Rutland Railroad until it was abandoned in 1965, was routed across northern Clinton, Franklin, and Jefferson counties. It provided interconnections beyond its territory to cities like New York, Boston, Montreal, Buffalo, and Chicago at Rouses Point and Ogdensburg (Chateaugay Record 1992; Landon 1932:383-385; Seaver 1918:657-661). The railroad built stations in the villages of Burke and Chateaugay, so even the most distant portions of the study area, in the vicinity of Bellmont Center on Brainardsville Road (CR 24) were no more than about 6 miles (10 kilometers) by road from the railroad.

Dairying increased in importance in the region through the nineteenth century. Until around the time of the Civil War, individual farm families made milk into butter and cheese, and virtually no fluid milk left the farm for market. These dairy products provided substantial cash incomes, and starting about 1850 farmers in the region began constructing specialized dairy barns to house and milk their herds. The period 1850 to 1875 saw other developments as well that led to an increasing emphasis on dairying. Experimentation with refrigerated railcars began in 1851, and this innovation would in time permit North Country farmers to supply fluid milk to dairies in New York City. Around the same time local, small-scale commercial production of cheese and butter began, and what was formerly a product of individual farms became a separate artisinal business. Such developments allowed farmers to direct more of their attention to the care and management of their herds by reducing their need to market or process milk themselves. In the vicinity of the study area, as in other parts of northern Franklin County, butter production predominated, and between 1871 and 1918, approximately a dozen and a half different creameries operated for greater or lesser periods of time in Chateaugay and northern Bellmont. None was established in the study area, but two stood short distances to the east on present-day SR 372. Burke also had two cheese factories in operation in the late 1800s. These were situated at the village of Burke and an unidentified place in the eastern part of the town (Beers 1876; Durand 1967; Seaver 1918).

Despite the emphasis on dairying, farms in the Chateaugay area were apparently still diversified in the late nineteenth century. Statistics published in Hurd's (1880:394-397) *History of Clinton and Franklin Counties, New York*, show that in the mid-1870s farmers in Bellmont and Chateaugay also produced potatoes, hops, apples, maple sugar and syrup, eggs and poultry, wool and lambs, and pork. These statistics also indicate that farms in the area ranged from less than 3 acres to several hundred acres (ca. 1-250 hectares) in size at the extremes, but typically covered 75 to 100 acres (30-40 hectares) apiece. This figure indicates an average of 6 to 8 farms per square mile in the study area, a density that seems consistent with that indicated by the spacing of roads and farms on late nineteenth- and early twentieth-century maps (Beers 1876; Taintor, Dawson & Co. 1858; USGS 1915). Figures 3-6 depict the study area as it was recorded in D.G. Beers (1876) landownership atlas for Franklin County.

By the beginning of the twentieth century, consolidation of small urban dairies into larger corporations and the expanding demand for milk in New York and Boston drew farms in the study area into the milksheds of these two cities. Daily milk train runs to Rouses Point on Lake Champlain began on the Rutland's Ogdensburg Division in 1908, and in 1910 the Sheffield Farms Company, one of the "Big Three" dairy companies of New York City, established a milk shipping station in Chateaugay for collecting fluid milk. Around this time, the village of Burke also had a shipping station near the rail line, and there was a milk skimming station in the crossroads hamlet of Sun in the northern part of Burke. Competition from these plants and other economic factors eventually forced the closure of the smaller creameries in the region. Highway improvements from the second decade of the century onwards led to the end of rail transport of fluid milk, which was replaced by long-haul trucking. Despite continuing economic strains, dairy farming remains the leading agricultural business of the region today, and even Chateaugay's old Sheffield Farms Company milk shipping station remains in operation, now manufacturing McCadam-brand cheeses under the management of Agri-Mark, Inc., a regional farmers' cooperative (Cook 2007; Durand 1967; Seaver 1918).

Although Chateaugay and northern Bellmont have been predominantly agricultural through the past two centuries, there has also been some modest industry, predominantly on a small scale (Hough 1853; Hurd 1880). Aside from operations specifically connected with dairying, industries operating in the towns during the nineteenth century included sawmills, planing mills, grist mills, asheries, starch factories, tanneries, harness shops, turning shops, furniture manufactories, barrel shops, wheel or wagon shops, fulling and carding mills, a pulp mill, and various iron-related operations (foundries, forges, and smithies). There were also a few sandstone quarries and perhaps some local brick-making operations. Sawmills were the most common, and Seaver (1918) enumerates over two dozen sawmills that operated in Chateaugay and northern Bellmont from the late eighteenth to the early twentieth century. Many were not successful and operated for only a few years; indeed, lifespans of a few years to a couple of decades was the norm in many sorts of small-scale industrial operations during this period. The two largest enterprises, the Smith-Douglas tannery on Boardman Brook in the village of Chateaugay (ca. 1829-1891), and the Pope, Williams & Co. ironworks at the mouth of Lower Chateaugay Lake in Bellmont (1874-1893), were situated outside the study area. The latter business is said to have been the largest catalan, or bloomery, forge in the world, and it involved a suite of operations characteristic of the Adirondack iron industry, with mining and charcoal making taking place in the mountains south and west of Lower Chateaugay Lake. The owners invested heavily in the forge, which they set up in the waning days of the American charcoal industry. Among other improvements, they built a wood plank road for transporting their product from the forge at Popeville to the railroad at Chateaugay. The road was about 6.5 miles (10.5 kilometers) long and apparently followed the approximate alignment of SR 374, at the eastern edge of the study area (Bouchard and Hartgen 1978; Seaver 1918:190-191; Whalen and Whalen 1997).

Most of the small local industries were powered by hydromechanical systems. These used water impounded behind small dams to turn wheels or turbines, which in turn drove the shafts and belts that supplied power to machinery. The enterprises were established at suitable locations for dams, often called mill seats, on the Marble, Chateaugay, Little Trout, and Trout rivers, as well as on some of their larger tributary brooks. Often several industries grew up next to one another where a combination of stream gradient, flow volume, suitable construction sites, and proximity to roads or population encouraged enterprises to cluster together. In the study area and its immediate vicinity, three mill seats were situated on the Chateaugay River, near Pulpmill Road near the northeastern corner and by both Chase Hollow Road and Brainardsville Road (CR 24) near the southeastern corner. The most extensively developed of these was probably the one near Pulpmill Road, where at least two sawmills (one a gang saw), starch factory, pulp and (possibly) paper mills, worker housing, and possibly an early forge stood at various times. Sawmills were also established at various times at three locations along the Little Trout River in or immediately adjacent to the southwestern quadrant of the study area. These were situated off Willis Road (CR 33) in Bellmont, and near both Selkirk Road and Flynn Road (CR 36) in Burke (Beers 1876; Seaver 1918).

Many factors led to the demise of small-scale waterpowered industries by early in the twentieth century. One of these was the construction of electrical grids in rural areas, which released many industries from the constraints of size and location that waterpower imposed on them. Electrification of the Chateaugay area was rather early, for hydroelectric stations were built on the Chateaugay River at two different locations in the vicinity of the village in 1894 and 1902. Within a few years of their construction, the companies were supplying electricity well out into the country beyond the village (Seaver 1918:252-253). The proposed Jericho Rise Wind Farm represents a new effort to develop generating capacity in an area that over a century ago first tapped another form of renewable energy.

3.3 Recorded Archeological Sites in the Study Area and Vicinity

Tetra Tech conducted background research in the site files of the SHPO in July and November 2006 and August 2007. Sources consulted included paper records in the SHPO files at Cohoes, New York, and online information available through the SHPO's State Preservation and Historic Inventory Network Exchange (SPHINX) system and its Geographic Information System for Archeology and National Register Properties (GIS) (both accessible through the SHPO website at http://www.nysparks.com/shpo/resources/index.htm). Cultural resources data presented by Ecology and Environment, Inc. (2007:2-187 to 2-194, Appendix C; Hanley et al. 2007; Longiaru et al. 2007) for the proposed neighboring Nobel Chateaugay and Nobel Bellmont Windparks was also reviewed.

Review of these sources shows that no archeological sites have been recorded inside the boundaries of the study area as defined herein. There are also no recorded prehistoric Native American archeological sites within 1 mile (1.6 kilometers) of its boundary. Three historic period archeological sites have been recorded within approximately 1 mile (1.6 kilometers) of the study area boundary (see Table 2, Figure 6). All represent loci of nineteenth-century industrial activity, and all are situated on the Chateaugay River. Two, the Pope, Williams & Co. Forge Site (A033-03-0001) in Bellmont and the Chateaugay Forge Site (A033-08-0005) in Chateaugay, are ironworks. The third, the Bailey-Douglass Mill Complex (A033-08-0003), was a small-scale complex of waterpowered enterprises that included two gristmills, a sawmill, and a carding mill. These findings are consistent with those reported by Hanley et al. (2007).

Recent architectural surveys identified three National Register-eligible properties in the archeological study area (Ecology and Environment, Inc. 2007:Appendix C; Longiaru et al. 2007). Those architectural properties determined National Register-eligible situated inside the study boundaries include USN-03308.00024, a circa-1850 house on Hartnett Road, Chateaugay; USN-03308.000025, the 1870s-1880s Bigelow Cemetery on River Road, Chateaugay; and USN-03308.000026, a circa-1870 farm complex on River Road, Chateaugay. Eleven other National Register-eligible architectural properties are situated within approximately 1 mile of the archeological study area boundary. One of these, USN-03303.000031, the Bellmont Center Cemetery is situated southwest of the intersection of Brainardsville Road (CR 24) and Pinnacle Road in Bellmont, immediately south of the boundary of the archeological study area.

4.0 ARCHEOLOGICAL SENSITIVITY AND KNOWN DISTURBANCES

4.1 Environmental Zones

The New York State Historic Preservation Office (SHPO) has recognized that the anticipated development of numerous wind energy projects in the state offers an unprecedented opportunity to improve our knowledge of archeological site patterning and site types in upland regions. The agency has developed guidelines specifically for cultural resources investigations of these projects. The Phase IA study presented here provides the basis for developing a field testing strategy to be applied during the subsequent Phase IB survey. The guidelines direct that the Phase IB subsurface archeological surveys use a stratified, cluster-sample sampling design. In this approach, the investigator divides the project area into environmentally-based geographic units, or sampling strata. Subsurface survey is conducted by sampling each stratum using clusters of closely-spaced shovel tests. Field personnel situate individual clusters of shovel tests within the area of potential effects (APE) based on professional judgments about which localized, small-scale terrain features are most likely to contain archeological resources. The amount of testing (number of shovel tests) conducted in each environmentally-based sampling stratum is proportional to the fraction the stratum comprises of the project's entire archeological APE (SHPO 2006).

Definition of environmental strata is an important step in developing the sampling design for Phase IB subsurface survey of a wind project. The SHPO guidelines advise that investigators follow Funk (1993:65-81) in identifying the environmental strata in their study areas (SHPO 2006:2). Funk's (1993) study examined settlement patterns in a portion of the upper Susquehanna Valley in southern New York. This study was situated in one specific physiographic province of New York (the Appalachian Plateau region) and focused particularly on the main river valley and immediately adjoining regions. Despite its specific setting, Funk's study provides a useful strategy for analyzing regional landscapes from the perspective of settlement pattern archeology in many parts of New York, including the present study area. Funk's approach seeks to provide a basic environmental schema for teasing out some of the factors related to human biophysical and sociocultural needs that acted as determinants in site selection for Native Americans in pre-Colonial times. These factors included access to critical resources, such as water, food, firewood, and industrial raw materials, availability of well-drained, horizontal surfaces for settlements and activity areas, and, for the horticultural and agricultural peoples of recent millennia, the accessibility of good soils for crops (Funk 1993:65).

In Funk's approach, the basic analytical strategy for establishing environmental zones is to consider the physical and non-biological aspects of a study area first, then to delineate biological factors in the milieu. There are, it would seem, an infinite number of habitats relevant to human occupation of a landscape that could be delineated, based upon combinations of topographic, hydrologic, floral, and faunal characteristics. However, after considering these characteristics carefully, Funk (1993:65-71) concluded that for all practical purposes, his analysis of human occupation and exploitation of the landscape in the upper Susquehanna Valley could proceed effectively by recognizing just three basic environmental zones—valley floor, valley walls, and interfluves (uplands).

Broadly speaking, a similar schema of environmental zones also seems applicable to the St. Lawrence drainage, but at least a fourth zone, montane, is needed to account for portions of the rugged Adirondack Mountains that are drained by the river. In this schema, the Jericho Rise Wind Farm study area may be regarded as situated entirely within an upland environmental zone. As discussed in Section 2 above, the study area is elevated above the floor of the St. Lawrence Valley by roughly 1,000 feet (300 meters) and removed from it in direct distance by 20 miles (32 kilometers), or by roughly 36 miles (60 kilometers) if traveling up the Chateaugay. The area contains the headwaters of several small streams that eventually drain into the St. Lawrence via the Chateaugay River, an intermediate order tributary to the larger river. The streams of the study area and the Chateaugay itself are largely situated in narrow ravines that, under the Holocene's predominant regime of climate and drainage, limit the extent of development of terraces and other valley floor features. The drainages are, moreover, not just separated from the St. Lawrence by a considerable difference in altitude, but to reach the main river they also drop over various bedrock thresholds, where falls and steep rapids occur. Though slashed by active and relict channelways, the overall terrain of the study area is gently undulating to moderately rolling, with numerous flats, gentle slopes, and hillocks. The area is covered primarily by till, with some stratified drift. In all of these aspects, the study area most closely resembles the upland zone of Funk's (1993) study.

As with Funk's (1993) upper Susquehanna study region, within the environmental zone occupied by the Jericho Rise Wind Farm, several local habitats can be recognized. Because of differences in terrain and glacial history, the study area's local habitats are not identical to those of Funk (1993:70-71, tables 7 and 10), but there are similarities. Three principal local habitats are apparent: channelways, till plain, and stratified drift landforms (Table 3). Figure 6 depicts the distribution of these habitats in the study area. The map is somewhat schematic because the source for the existing stream drainages was different from the source for the channelways. The latter was a small-scale map and is likely less precise in detail compared to that for the modern drainage system. Such issues are not uncommon in GIS analysis.

The channelways are constricted features below the general trend surface of the St. Lawrence Valley peneplain. They cross the other two principal habitats in the study area. Channelway floors tend to be moist or wet, and many have active perennial or seasonal streams running through them. Based on the soils found in this habitat (Carlisle 1958), they would have been largely covered in the late Holocene by forest containing a mix of, predominantly, red maple (*Acer rubrum*), eastern hemlock (*Tsuga canadensis*), and American elm (*Ulmus americana*). Slippery elm (*Ulmus rubra*), spruce (*Picea* spp.), and balsam fir (*Abies balsamea*) would likely have been minor associates. Very poorly drained soils may have contained stands of northern white-cedar (*Thuja occidentalis*), with some tamarack (*Larix laricina*), willow (*Salix* spp.), and gray birch (*Betula populifolia*), perhaps along with occasional small open glades and marshes. The terrain of the channelways is variable, with the floors of some sections containing small sequences of loamy or gravelly terraces, while other sections are apparently boulder-strewn and lacking developed fluvial features. The sideslopes at the outer edges of the channelways are frequently quite steep, and slopes of 25 to 60 percent or more are typical.

The till plain comprises most of the study area. Its terrain is gently undulating, and slopes are typically slight to moderate (0-8 percent). Scattered knobs and hillocks rise slightly above the general trend of surrounding terrain, particularly along the main axes of interfluves between channelways. The soils of the till plain are predominantly stony sandy loams. Drainage is variable, with somewhat poorly drained soils being most common, followed by moderately well drained and poorly drained soils. Based on soil types (Carlisle 1958), forests in this habitat in the late Holocene would have been composed predominantly of sugar maple (*Acer saccharum*)—and in more poorly drained areas, red maple (*Acer rubrum*)—American beech (*Fagus grandifolia*), and eastern hemlock (*Tsuga canadensis*). Minor associates would have included yellow birch (*Betula alleghaniensis*), American elm (*Ulmus americana*), white pine (*Pinus strobus*), spruce (*Picea* spp.), and balsam fir (*Abies balsamea*).

Sandy stratified drift landforms comprise a third, minor habitat of the study area. This habitat includes both scattered ice-contact landforms (kames), as well as outwash and sandy and gravelly glaciolacustrine beach deposits. Overall, its terrain is similar to the till plain, though the small, scattered knobs and ridges of the kames might have been quite distinctive landscape features, particularly at the beginning of the Holocene, when the region's vegetation was probably more park-like. Its soils tend to be excessively drained to well drained, but small areas of poorly drained soils occur in low-lying areas and depressions. Based on soil types (Carlisle 1958), forests in this habitat in the late Holocene would have been composed predominantly of white pine (*Pinus strobus*), with some hardwoods (especially maple, beech, and birch) as minor associates.

Aside from these broadly-defined habitats, several other environmental factors could have influenced Native American settlement patterns in the study area. Key factors may well have included proximity to water, ground slope, occurrence of locally elevated terrain, and proximity to edge features (Funk 1993:70-71). In a recent Phase I survey of the neighboring Noble Chateaugay and Noble Bellmont Windparks, a team from Panamerican Consultants, Inc., focused on these environmental factors for differentiating landscape features in the upland environment east of the Chateaugay River (Hanley 2007).

Many archeologists have observed that in northeastern North America, prehistoric Native American sites tend to occur in proximity to water sources, such as rivers, streams, lakes, ponds, springs, marshes, bogs, and so on. These features not only provided water for drinking, but could also be important as routes for transportation and travel and as sources of fish, game, and plant resources. Opinions differ as to the optimum or typical distance separating sites and water bodies, but Funk (1993:70) observes that "the great majority of archeological sites are located within 100 meters [330 feet] of water," and he uses this distance to judge whether a locality is "near" or "back from" a water body, a measure adopted here as well.

Slope is another factor relevant to human occupancy of the landscape, particularly by non-industrialized peoples. Level or nearly level surfaces are preferable for any extended occupation, and archeologists have found that nearly all sites occur on slopes of less than 15 percent. Funk (1993:74) classifies slopes in relation to potential for occupation as “most favorable” (0-8 percent), “moderately favorable” (8-15 percent), and “least favorable” (15 percent and over). The New York SHPO considers slopes in excess of 12-15 percent as generally having a low potential or sensitivity for containing archeological sites (SHPO 2004). Given the overall gentle, north-northwesterly slope of the area, the influence of a related factor, the direction of slope, or aspect, on selection of settlement and activity area locations would probably have been quite modest in general and need not be included in an archeological sensitivity model for this area.

Localized areas of elevated terrain might also influence the location of sites. Slight differences in elevation might translate into noticeable differences in drainage, and hence of comfort, in selecting places to establish task stations, campsites, and other functional areas. Where forests are absent or patchy, the moderate elevations of kames, beach ridges, and similar terrain features, combined with their better drainage, may have made such landforms attractive. The common association of Paleoindian sites with beach ridges and kames throughout the Great Lakes region may well derive from the combination of good drainage and the advantageous vistas their elevation provided (Jackson et al. 2000:433-435).

“Edge features” refer to several types of landforms, including beach scarps and heads of ravines. Such features can be important as locations of hunting stands and observation points, among other functions. Examination of topographic maps for the study area indicates that heads of ravines may occur at the upstream ends of some of the late glacial channelways. Beach scarps are probably absent (MacClintock and Stewart 1965). However, since a proglacial lake occupied the St. Lawrence Valley and reached approximately to the altitude of the study area, field teams will need to be aware that scarps may potentially be present when selecting areas for testing.

Certain other natural features often associated with locations that were occupied by prehistoric Native Americans (Funk 1999:70-81) are apparently absent from the study area. These include natural ponds, rockshelters, and quarries. Although roughly a third of the study area is occupied by poorly to very poorly drained soils, including those of the Dannemora, Tughill, Brayton, Scarboro, and Sun series, bodies of open water are limited to the streams draining the area. Prehistorically, beavers may have built dams to create ponds along the streams, but these have left no traces that can be easily identified. Bedrock is apparently exposed only along the Chateaugay River, and these exposures evidently occur mostly north (downstream) of the study area; moreover, the Potsdam sandstone does not readily form overhangs that could serve as shelters. Likewise, bedrock suitable for the manufacture of stone tools is apparently absent from the study area. Cobble deposits dispersed along local stream courses and on occasional naturally-occurring drift exposures would likely yield a comparatively narrow range of lithic materials, consisting mostly of relatively intractable quartzes and quartzites.

The study area also appears to lack soils suited for horticulture of the style practiced by Iroquoian peoples of the Late Woodland and early historic periods in New York and Ontario. From the point of view of modern agriculture, soils in the study area range from suboptimal to unsuitable for production of crops like feed corn, oats, and potatoes. Even the best soils are acidic, require use of lime and fertilizer, and tend to vary significantly from year to year in productivity despite intensive management (Carlisle 1958). It would therefore appear that study area soils would also have been suboptimal or worse for the precontact-style horticulture of the region, which favored well drained, light, loamy soils easily worked with simple wooden, bone, and stone tools (Fenton 1978:297-302; Heidenreich 1978:375, 380-381; Hunt 1992:306).

4.2 Anticipated Prehistoric Native American Site Types and Archeological Sensitivity

As discussed in Section 3 above, there are no known prehistoric Native American archeological sites in the study area, and information about sites and settlement patterns in the surrounding region is extremely limited. Two recent Phase I surveys covering areas 1 to 6 miles (2-10 kilometers) east of the Project in similar topographic and environmental settings yielded no prehistoric sites (Cadzow et al. 2006; Hanley 2007).

Based on what is currently known about prehistoric Native American subsistence and settlement patterns in northern New York and adjoining areas, the location and setting of the Jericho Rise Wind Farm suggest an overall low potential for sites. Any sites present are likely to be small in area and have a low abundance and diversity of artifacts. Artifacts would likely consist primarily of lithic debitage, with rare examples of finished and broken tools. Features, such as hearths or storage pits, are likely to be rare or absent. The sites could contain one to several distinct clusters of artifacts, or loci, but if several clusters are present, they are apt to be separated one from another by substantial zones with few or no artifacts. Any sites present are most likely to represent short-term camps, hunting stands and blinds, processing stations, or locations of the loss of individual artifacts (isolated findspots). Village, cemetery, and quarry sites are not anticipated, nor are major fishing stations likely. Sites of any time period might be present, from the Paleoindian through the Colonial eras. The presence of coarse stratified drift deposits mostly in the northwestern part of the study area somewhat increases the potential for Paleoindian sites, as compared to nearby areas lacking such deposits. (Paleoindian sites are nonetheless rare overall, so the practical implications of this observation for planning and executing a Phase IB survey of the study area are essentially inconsequential.)

4.3 Factors Affecting Historic Period Settlement Pattern

The preceding classification of habitats is principally applicable to the investigation of prehistoric Native American settlement patterns. Terrain, drainage, proximity to water sources and good soils, among other environmental factors, of course also affected the locations where Euroamericans chose to build farmsteads. However, throughout New England and in regions elsewhere settled by New Englanders (including northern Franklin County), the single most important factor in determining the location of farmsteads was proximity to roads (Berger 1994:4-1–4-60) . The pattern was quite deeply ingrained among New Englanders, leading one nineteenth-century writer on farm design to observe, “the Yankee, be he settled where he will, either in the east, north, or west, inexorably huddles himself immediately upon the highway… as if his chief business was upon that, instead of it being simply a convenience to his occupation” (Allen 1852:29). This pattern is evident in both historical maps and the present landscape of the study area. For instance, nearly every farmstead in the study area shown on the maps of Beers’s (1876) atlas is situated adjacent to a public road. Moreover, to the extent that the marks on the maps representing farmsteads accurately depict their locations, they were generally situated no more than 200 to 300 feet (60-90 meters) from the roadways they adjoined (Figures 3 and 4). This settlement pattern is still characteristic of the area today.

The road net, in turn, approximates the original subdivision of the land into 1-square mile (640 acre, or 259 hectare) lots when the townships of eastern Franklin County were laid out in the 1780s and 1790s (Beers 1876; Burr 1829; Hough 1853). Some roads in the study area, including Cook/Toohill/Hartnett, Jerdon, Town Line/Legacy/Ponderosa, Brainardsville (CR 24), Selkirk, and Mahoney Jericho/Titus, follow the original lot boundary lines (Figures 3-5). Other roads, such as Malone-Chateaugay (CR 23), Willis (CR 33), Quarry, River, and Chase Hollow, do not. In some instances, it is apparent that the parts of the road net that are off the grid of square-mile lots deviate because they are following the terrain, such as following a stream course (e.g., River Road) or avoiding wet ground (e.g., Malone-Chateaugay Road [CR 23]), or because they provide access to a natural feature such as a gravel deposit (e.g., Quarry Road) or a mill seat (e.g., Chase Hollow Road). In other instances (e.g., sections of Willis Road [CR 33]), it is not apparent why the road deviates from the square-mile grid. In any event, since the terrain of Chateaugay and northern Bellmont is comparatively subdued, the square-mile grid, which New York’s Surveyor General established on paper in 1786 and which a survey party laid out in the forests of eastern Franklin County in 1795, seems to have been the key geographic factor in the development of the historic settlement pattern of the region.

Aside from farmsteads, other buildings and facilities occupied the historic landscape of the study area. These included small-scale waterpowered industries (e.g, sawmills and starch factories), schoolhouses, cemeteries, hop yards, and probably tenant or employee housing of various sorts. The location of each type was shaped partly by the road net, and partly by factors specific to the function of the facility or enterprise. Thus, waterpowered industries were situated at locations along streams where dams and millponds could be constructed to supply water and power, while schoolhouses were always situated on roads so as to be easy to reach and were probably distributed so as to equalize access within both the town and the particular district it served (Figures 3 and 4).

4.4 Anticipated Historic Period Site Types and Archeological Sensitivity

Historic sites that might occur in the study area can be divided into those attributable to two broad periods: those associated with an early period of Euroamerican exploration and initial settlement and those from the later period of the settled rural landscape. Although there may well have been earlier forays into the area by Euroamerican trappers and explorers, sustained exploration and permanent settlement began in 1795, when a survey party laid out the square-mile lots. Even in a setting as small as the 10.9 square miles (28.3 square kilometers) or so of the present study area, the initial settlement and later development of farmsteads was probably both time-transgressive and patchy. Consequently, assigning a specific date to the boundary between the earlier and the later period can be somewhat misleading. In general, the areas closest to early roads and villages and those with the best agricultural land were likely occupied earliest, and most distant locations and those with poorer soils were occupied later. Most farmsteads probably followed a broadly similar arc of development, from rough, inchoate clearings consisting of a hut and a half-acre of stumpy field, to mature farms comprised of a frame house and barn, and a well-managed system of fields, meadows, pastures, orchard, sugarbush, and woodlot. But the rate and extent of development of individual farms depended on many historical contingencies, some of which were unique, such as the size, vigor, and proclivities of the farm family, and others of which were characteristic of a broader region, such as the weather from season to season and the availability of markets (Berger 1994; Durand 1967; Lord 1989). In the present study area, it is likely that settlement proceeded generally from the north and east, since the Malone-Chateaugay Road (CR 23) near its northern edge and River Road on its eastern edge seem to have been the principal early axes of travel and access. The village of Chateaugay, where these two roads intersect near its northeastern corner, was, moreover, the early node of local settlement. Even admitting the transgressive and patchy nature of the development of the historic period landscape in the study area, however, the period of initial settlement can be said roughly to end sometime between 1825, about a generation after Euroamerican occupation of the area began, and 1845, when both Burke (organized 1844) and Bellmont (organized 1833) had developed sufficiently to separate from the originally larger township of Chateaugay (organized 1799) (Burr 1829; Hough 1853:481-494; Hurd 1880; Seaver 1918). The later period begins circa 1825/45 and extends more or less to the present.

Sites associated with the period of exploration and initial settlement include:

- camps from parties engaged in surveying, hunting, trapping, and related activities; and
- huts, cabins, and sheds from the initial occupations of early farmsteads.

Sites specifically associated with this period and belonging to these types are likely to be comparatively nondescript, low-density, ephemeral, and ambiguous. Moreover, they may well be situated off the modern road net and its historical predecessors, because these sites represent a period when roads were nonexistent and, in addition, some of the resources being exploited, such as fur-bearing animals, were distributed independently of the grid of lots and its corollary roads that were established to create land wealth from the forest. Furthermore, settlers were relatively unfamiliar with the terrain, so they sometimes situated themselves in places that later residents with more familiarity with the region avoided. Among the implications of the foregoing are that such sites are likely poorly preserved and difficult to recognize and that historical maps from the mid- to late nineteenth century are unlikely to provide useful information about archeological sensitivity for sites from this earlier period.

Sites associated with the later period of the settled rural landscape include ruins and other abandoned traces of the following property types:

- farmsteads;
- dwellings for hired farm help and non-farm workers;
- field systems;
- sugarhouses and other autonomous agricultural facilities;
- rural dumps;
- schoolhouses;
- mills and other small-scale industrial enterprises; and
- roads and railroads.

From an archeological perspective, the most prominent members of these property types are those comprising substantial buildings and structures, such as farmsteads, dwellings, schoolhouses, and mills. Along with the transportation network, the historical configuration of these property types is documented in nineteenth- and early twentieth-century maps, including Taintor, Dawson & Co. (1858), Beers (1876), and USGS (1915). The maps are keys to the identification of what archeologists in New York refer to as “map documented structures” (MDSs). According to the New York State Department of Transportation (2004), MDSs are “buildings or structures documented by historic maps during background research and identified through field inspection as no longer standing. MDS locations are indicators of historic archaeological site sensitivity.” The list given above reflects property types depicted on the historic maps of the study area, plus a few others observed during the archeological field reconnaissance in November-December 2006 or likely to exist in the area.

As discussed above, by the mid-nineteenth century, settlement had concentrated on the road net, and roads extant in the period 1858-1876 are the primary initial indicators of archeological sensitivity during the historic period. The fall 2006 field reconnaissance was not sufficiently detailed to document locations of non-extant structures shown on historic maps (MDSs), nor had project plans been sufficiently refined to make such documentation cost-effective. In accordance with SHPO guidance for wind projects (SHPO 2006), however, MDS locations will be considered in relation to the specific project layout design investigated during the Phase IB survey.

4.5 Known Disturbances

Examination of soils, geological, and topographic maps, and observations made during the archeological field reconnaissance, indicate that severe ground disturbances in the study area are localized and of limited area compared to the total extent of the proposed project. The most common areas of disturbance are associated with extant buildings and structures and their appurtenant facilities, typically covering no more than a few acres each, along with the network of improved public roads that covers the area. Small gravel pits and quarries are also scattered across the study area. The largest single area of severe ground disturbance appears to be the now-closed Bellmont Town Dump, a landfill in a former gravel pit or quarry. As the SHPO's (2005) guidelines for archeological survey in New York note, plowing is not considered ground disturbance for the purpose of eliminating portions of a project from archeological survey.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusions

Compilation of background information on the environment, archeology, and history of the study area, field reconnaissance, and analysis of these data leads to several conclusions about the study area of the proposed Jericho Rise Wind Farm:

1. As of early December 2006, there are no recorded archeological sites in the study area, nor are there any extant buildings, structures, complexes, or districts that have been determined to be eligible for, or have been listed in, the State or National Registers of Historic Places.

2. The only recorded archeological sites situated no more than approximately 1 mile (1.6 kilometers) of the study area's boundary are several nineteenth-century sites that were occupied by waterpowered industries, including those connected with ironworking, grain milling, and lumber manufacture.

3. For purposes of the investigation of the possible prehistoric Native American use of the study area, the terrain can be divided into three local habitats in the sense of Funk (1993): channelways, till plains, and stratified drift terrain.

4. The overall sensitivity of the study area for prehistoric Native American sites appears to be low to moderate. It is anticipated that construction of the proposed project will affect few prehistoric sites, and that any sites discovered during Phase IB subsurface survey will be small, low-density localities.

5. From early Euroamerican settlement to the present, the dominant land use of the study area has been agricultural, and any historic period archeological sites present in the study area are will most likely be farmstead-related. A few small-scale waterpowered enterprises, including sawmills, grist-mills, starch factories, ironworks, were also situated in or next to the study area. Sites of such industries may occur at several locations of limited extent along the Chateaugay and Little Trout Rivers and one or two other minor tributaries.

6. Historic period Euroamerican sites are most likely to occur close to (less than approximately 330 feet/100 meters) of existing or abandoned historic roads and a few defined mill seats along the aforementioned streams.

7. Since the proposed locations for wind turbines are typically situated at a considerable distance from existing roads or streams, few impacts to farmstead or mill seats sites are anticipated from these project elements. The potential effects of other project elements, such as interconnects, access roads, substations, staging areas, and operations areas, on historic archeological resources are on the whole also likely to be none to minimal, but identification of map documented structures (MDSs) and additional field reconnaissance or subsurface survey may be necessary.

5.2 Recommendations

Since the possible occurrence of prehistoric or historic archeological sites cannot be ruled out based on the available information, a Phase IB subsurface survey is recommended to address the requirements of SEQRA and Section 106 of the National Historic Preservation Act. The survey should be designed and executed in conformance with SHPO (2005, 2006) guidelines. Specifically, a stratified judgmental cluster sampling design should be employed to conduct subsurface survey in areas where surface survey is not adequate for site discovery. In the event archeological sites are identified during he Phase IB survey, the Project Sponsor should modify the project design to the extent possible to avoid affecting any site that could be eligible for the National Register. Further (Phase II) investigations may be necessary to ascertain the National Register-eligibility of any sites identified that cannot be avoided through modifications to the project design.

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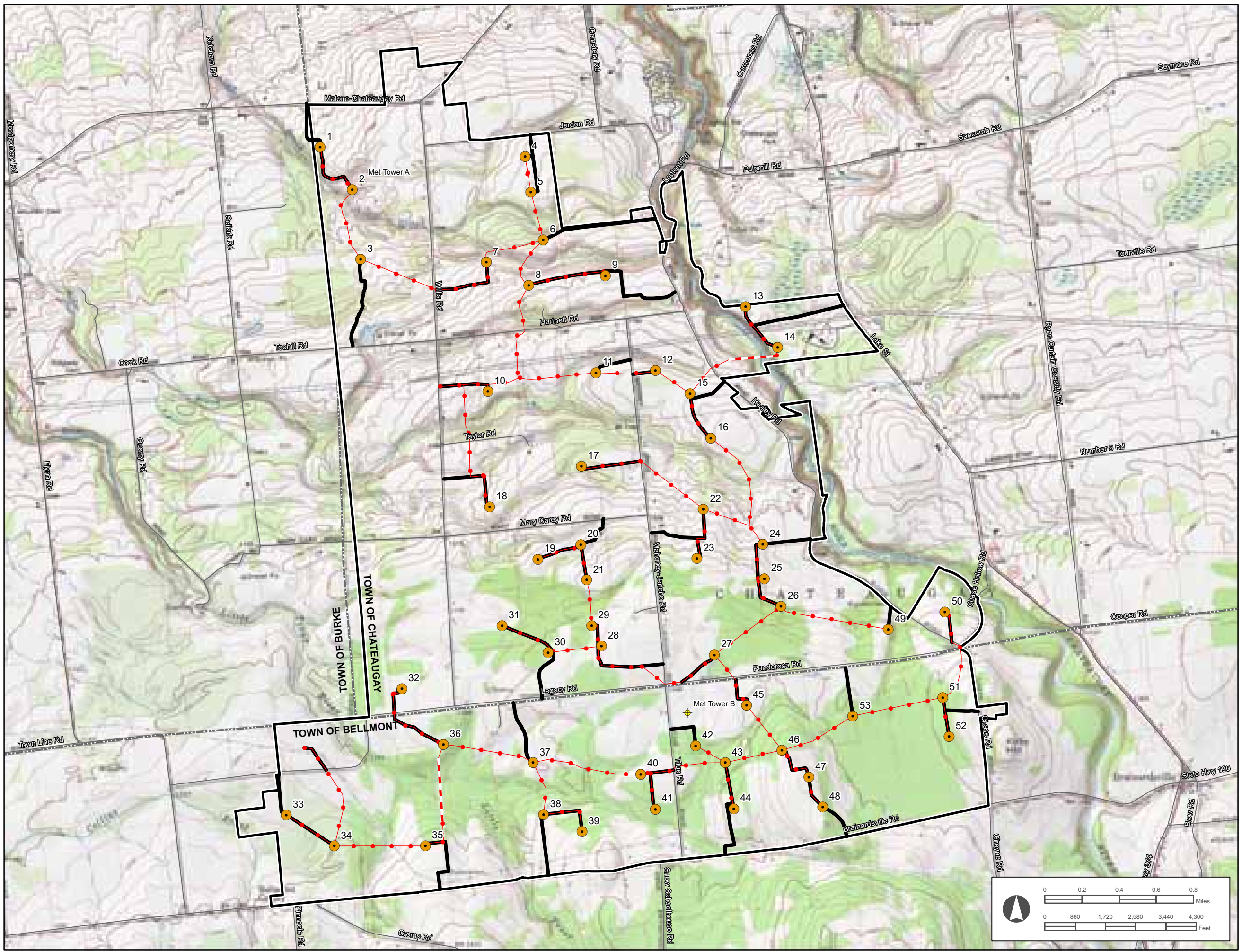
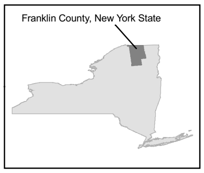
FIGURES





▭ Project Area Boundary

⬚ Town Boundary

⌖ Met Tower

● Turbine

●—● Underground Collection System

- - - Overhead Collection System

▬ Access Road

SOURCE:
USGS 7.5 MINUTE QUADRANGLES
BRAINARDSVILLE, 1964; BURKE, 1993;
CHATEAUGAY, 1993; CHASM FALLS, 1980

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE 1.
PROPOSED PROJECT LAYOUT

JERICHO RISE WIND FARM LLC
OCTOBER 2007

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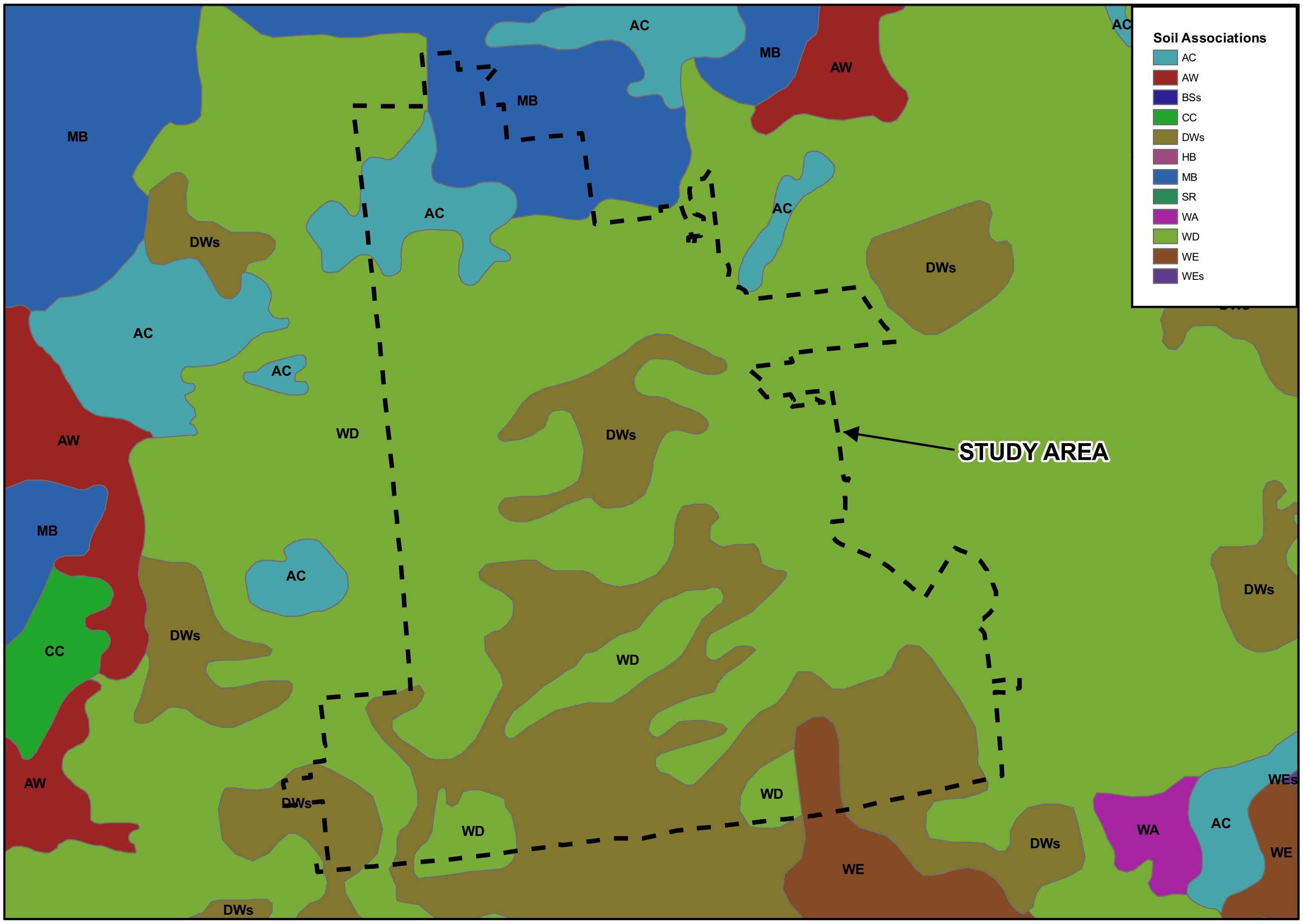

Figure 2.
Soil Associations in the Study Area

Jericho Rise Wind Farm LLC
Franklin County, New York
October 2007

Source: Carlisle (1958)

Soil Associations in Study Area

AC -- Adams-Colton
DWs -- Dannemora-Westbury-Tughill
very stony phases
MB -- Moira-Brayton-Sun
WD -- Westbury-Empeyville-Dannemora
WE -- Worth-Empeyville

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

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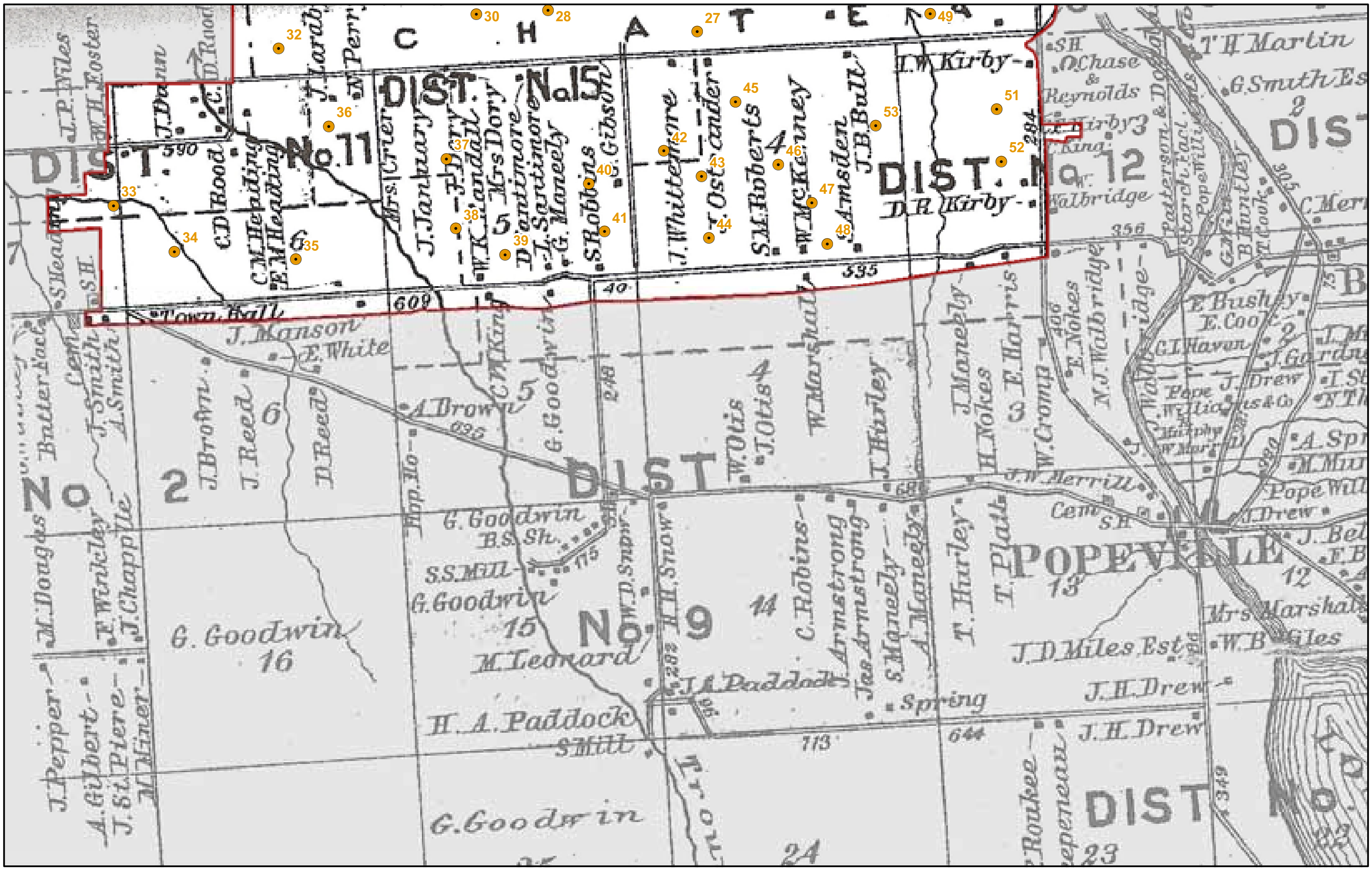

Figure 3.
Study Area and Vicinity in Bellmont Circa 1876

Jericho Rise Wind Farm LLC
Franklin County, New York
October 2007

Source: Beers (1876:18-19)

0 0.75 1.5
Kilometers
0 0.5 1
Miles

Legend

● Turbine (Approximate Location)

▭ Study Area

JERICHO RISE WIND FARM

TETRA TECH EC, INC.

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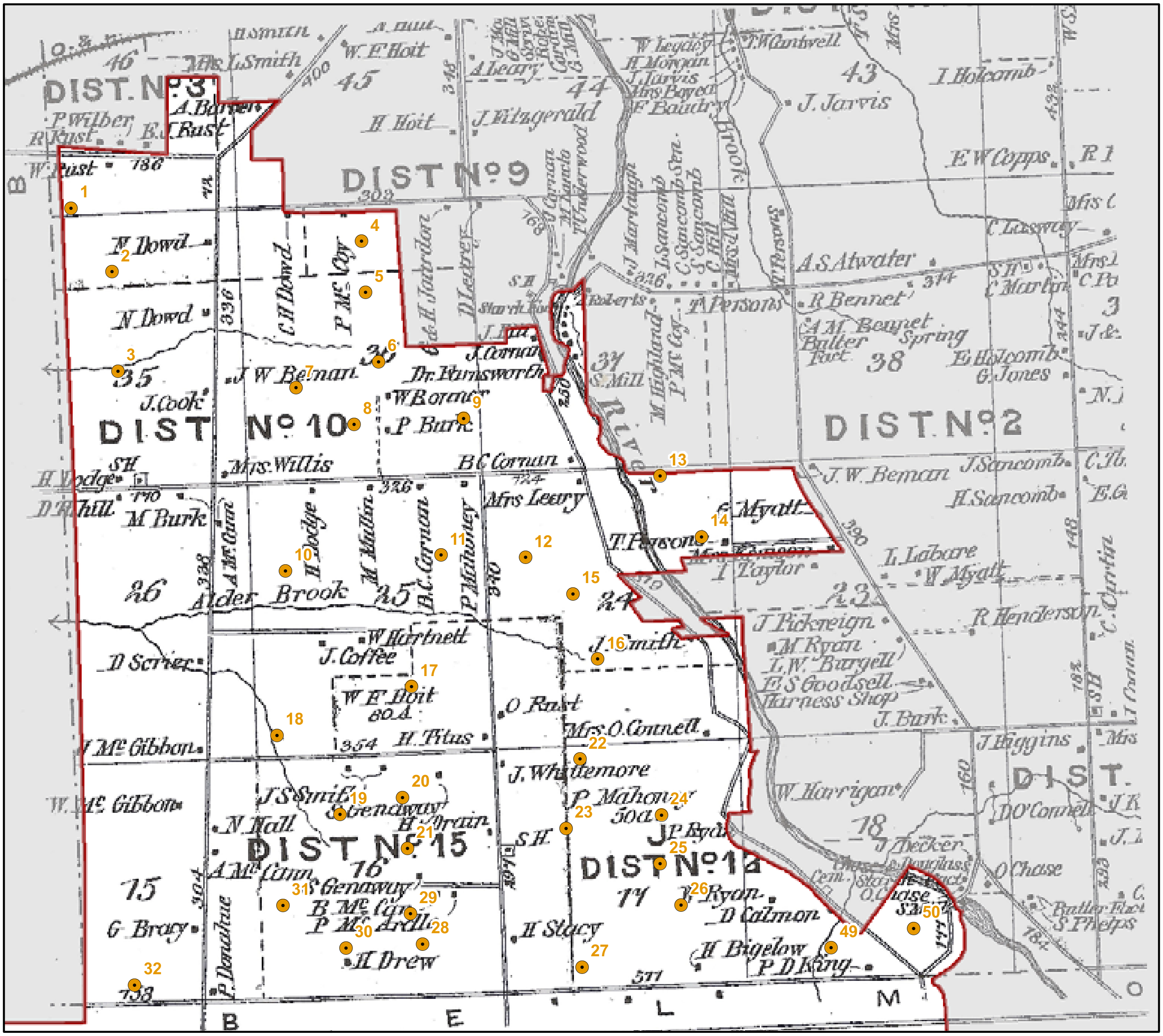

Figure 4.
Study Area and Vicinity in Chateaugay Circa 1876

Jericho Rise Wind Farm LLC
Franklin County, New York
October 2007

Source: Beers (1876:29)

Legend

● Turbine (Approximate Location)

▭ Study Area

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

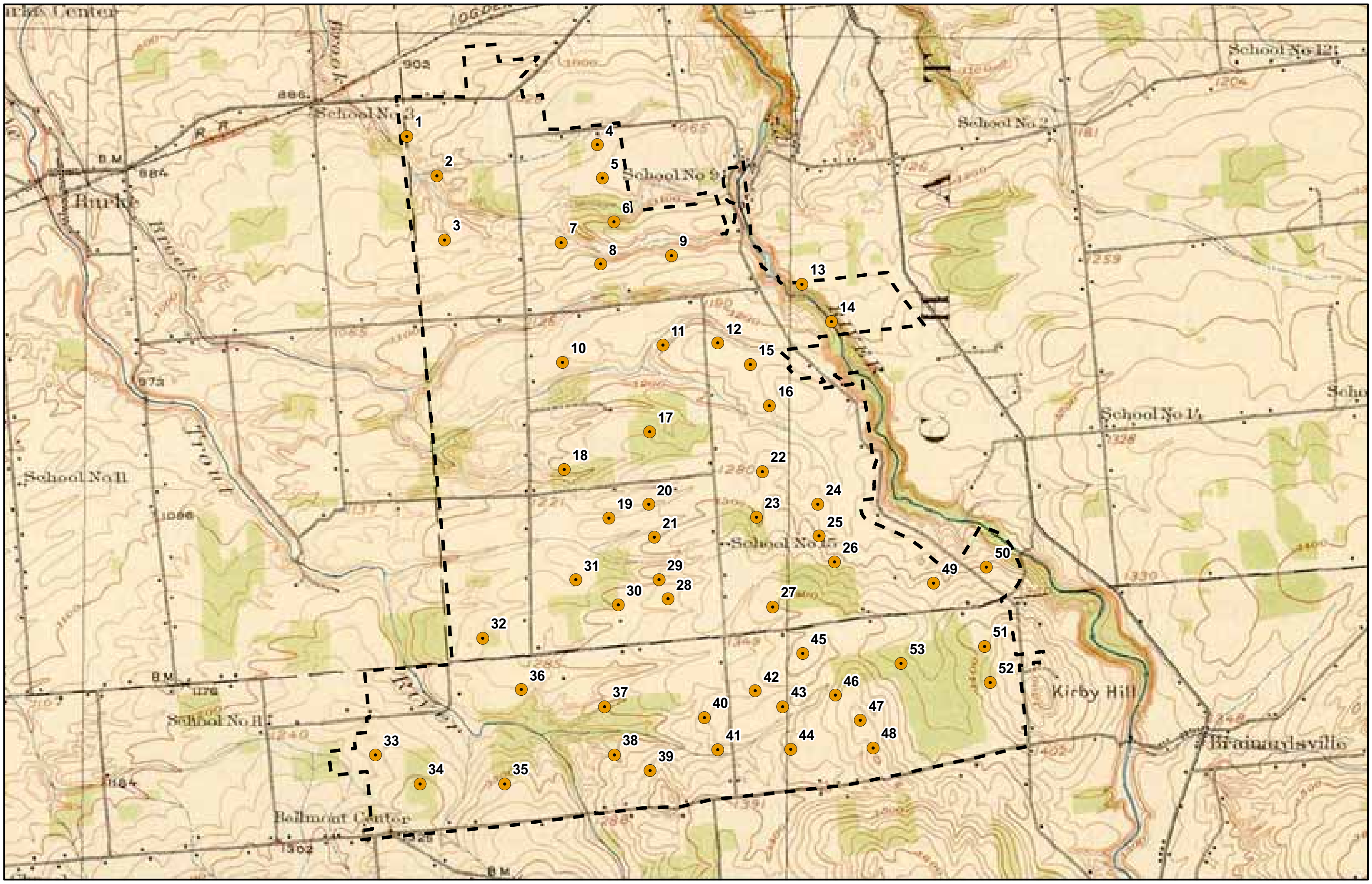

Figure 5.
Study Area and Vicinity Circa 1915

Jericho Rise Wind Farm LLC
Franklin County, New York
October 2007

Source: USGS (1915)

Legend

● Turbines (Approximate Locations)

Study Area

JERICHO RISE WIND FARM

TETRA TECH EC, INC

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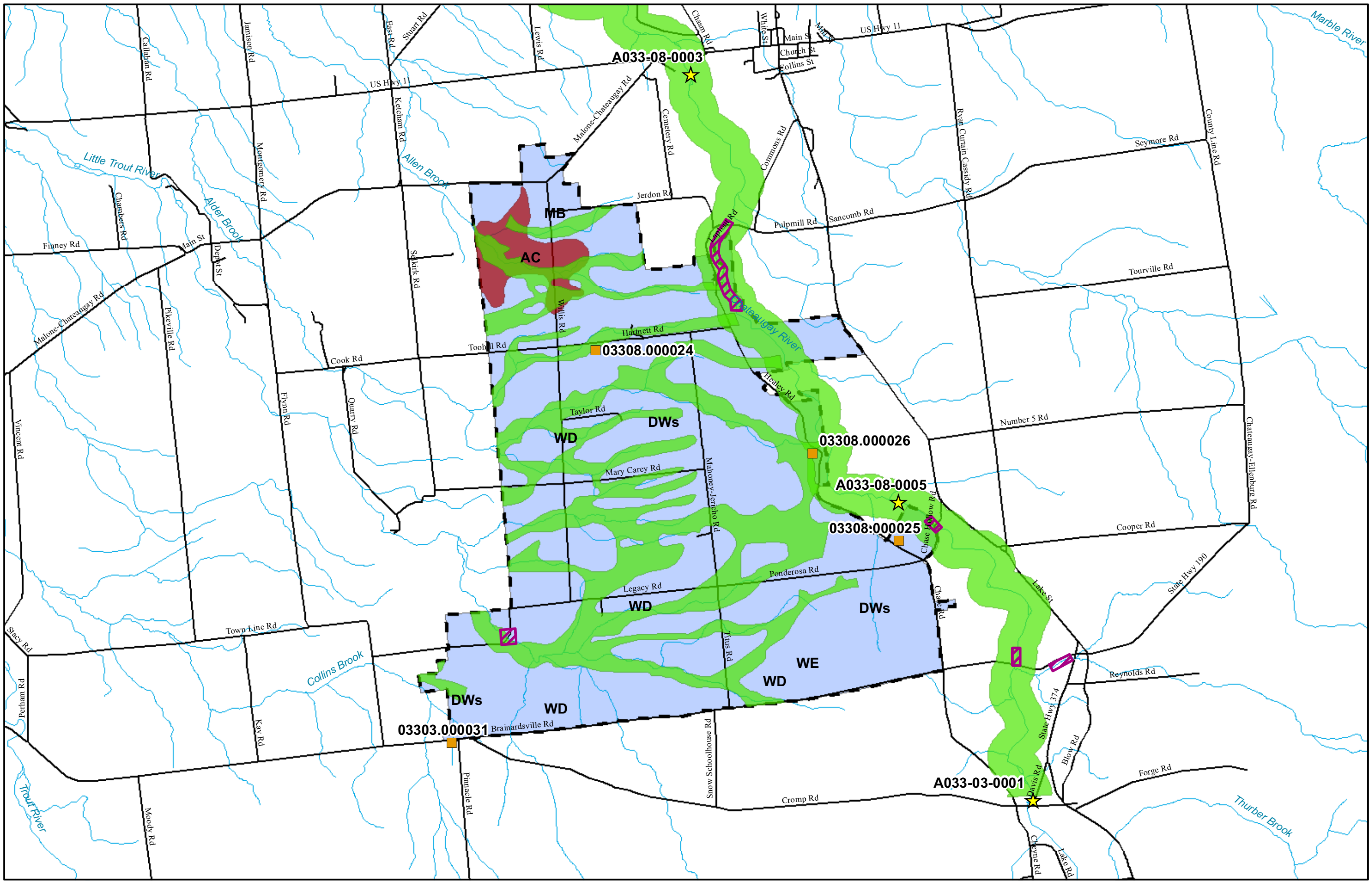

Figure 6.
Habitats and Recorded Cultural Resources in the Jericho Rise Wind Farm Study Area and Vicinity
Jericho Rise Wind Farm LLC
Franklin County, New York
October 2007

Source: Carlisle (1958), MacClintock&Stewart (1965)

Legend

- **Study Area**
- **NYSDEC Stream**
- Road
- ☆ Archeological Site
- ■ NR-Elegible Property
- ▨ **Historic Mill Seat**
- 🟩 Channelways
- 🟥 **Stratified Drift Terrain**
- ▭ **Till Plain**

JERICHO RISE WIND FARM

TETRA TECH EC, INC

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TABLES

TABLE 1
SOIL CATENAS AND SOIL ASSOCIATIONS IN THE JERICHO RISE WIND FARM AREA

Parent Material	Catena	Soil Association	Pct. of Project Area*	Typical Characteristics		
				Reaction	Texture	Drainage
Glacial till derived mainly from Potsdam sandstone	Worth-Empeyville-Westbury-Dannemora-Tughill	Westbury-Empeyville-Dannemora	60.2%	Extremely acid to strongly acid	Fine to very fine sandy loam; stony	Moderately well to poorly drained
		Dannemora-Westbury-Tughill, very stony phases	30.6%	Very strongly acid to moderately acid	Very fine sandy loam; very stony	Moderately well to poorly drained
		Worth-Empeyville	1.2%	Extremely acid to very strongly acid	Fine to very fine sandy loam; stony	Well drained to moderately well drained
Glacial till derived mainly from Potsdam sandstone, mixed with some dolostone or limestone	Parishville-Moira-Brayton-Massena-Sun	Moira-Brayton-Sun	4.3%	Extremely acid to moderately acid	Loam; stony	Moderately well drained to poorly drained
Stratified glacial drift	Predominantly Constable/Colton-Duane-Walpole-Scarboro	Adams-Colton	3.7%	Extremely acid to moderately acid	Cobbly and gravelly loamy sands	Well drained to somewhat excessively drained

Source: Carlisle (1958). Total surface area of the archeological study area is 6,987 acres (2,829 hectares).

TABLE 2
RECORDED ARCHEOLOGICAL SITES IN THE JERICHO RISE WIND FARM STUDY AREA
AND WITHIN APPROXIMATELY 1 MILE (1.6 KILOMETERS) OF ITS BOUNDARY

OPRHP Site Number	Additional Site Number	Distance and Direction From Study Area Boundary	Time Period	Site Type
A033-03-0001	–	5,900 ft (1,800 m) S	1874-1893	Ironworks
A033-08-0003	HAA 13-1	5,500 ft (1,680 m) NE	ca. 1800-1900	Small-scale mill complex
A033-08-0005	–	0 ft (0 m) — on E boundary	ca. 1803-1830(?)	Ironworks

Source: New York State Office of Parks, Recreation and Historic Preservation (SHPO) files.

TABLE 3
PRELIMINARY ENVIRONMENTAL ZONE AND LOCAL HABITAT TAXONOMY, IN THE STYLE OF FUNK (1993), FOR THE JERICHO RISE WIND FARM AREA

ST. LAWRENCE LOWLAND PHYSIOGRAPHIC PROVINCE: UPLAND ENVIRONMENTAL ZONE

Local habitats

1. Channelways
    a. Floors of perennial or intermittent streams
    b. Floors of relict terminal Pleistocene features
    c. Side slopes (gradients typically >15%)

Other environmental factors to consider in assessing local archeological sensitivity include slope and drainage, proximity of permanent pools and rapids in streams, availability of open surfaces (whether floor is bouldery or not).

2. Till Plains
    a. General undulating terrain (no associated drainage features, knolls, or edge features)
    b. Near (≤330 feet/100 meters from) streams, relict channels, springs, bogs, marshes, or swamps
    c. On local summit knolls near (≤330 feet/100 meters from) streams and other drainage features
    d. On local summit knolls back from (>330 feet/100 meters from) streams and other drainage features
    e. Near (≤330 feet/100 meters from) edge features (heads of draws, beach scarps)

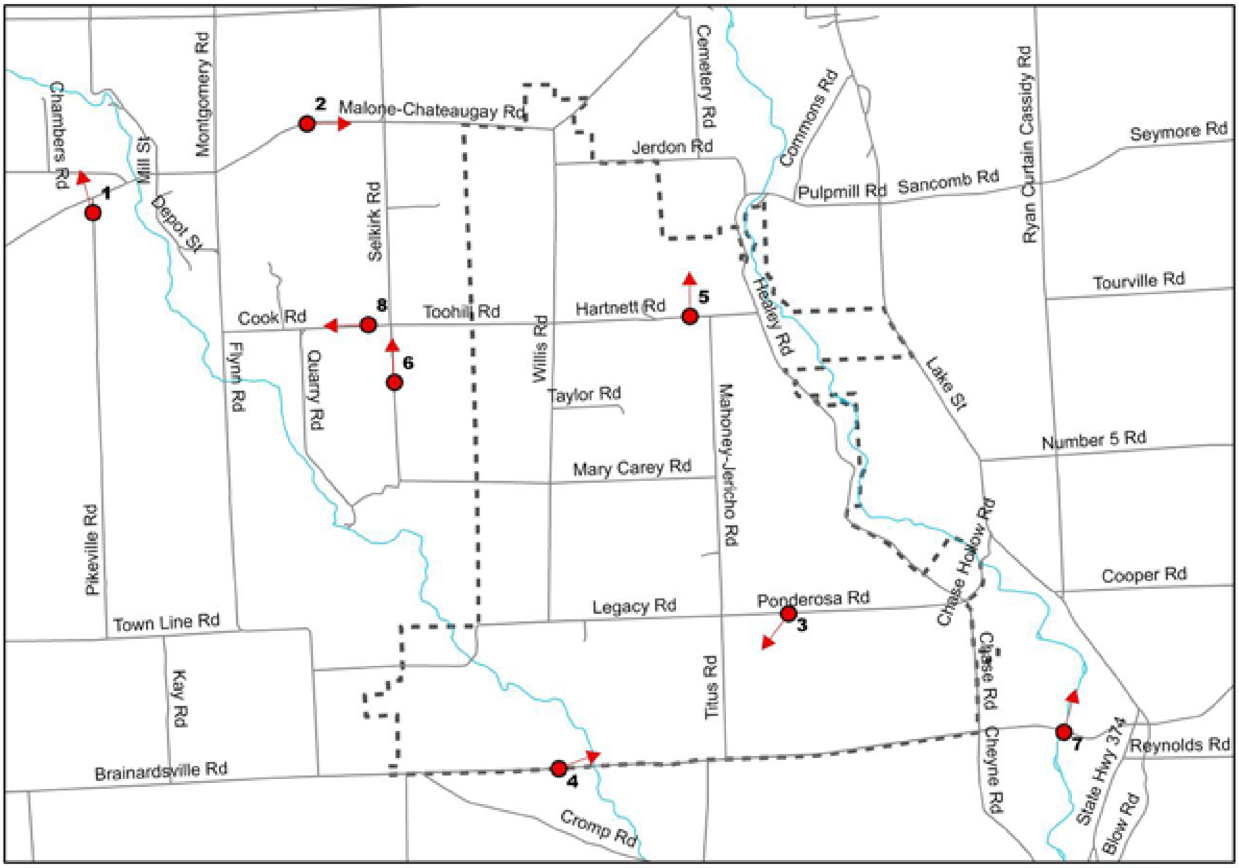
Other environmental factors to consider in assessing local archeological sensitivity include slope and drainage.

3. Stratified Drift Terrain
    a. General, gently sloping terrain (no associated drainage features, knolls, or edge features)
    b. Near (≤330 feet/100 meters from) streams, relict channels, springs, bogs, marshes, or swamps
    c. On knolls, including kames and beach ridges, near (≤330 feet/100 meters from) streams and other drainage features
    d. On knolls, including kames and beach ridges, back from (>330 feet/100 meters from) streams and other drainage features
    e. Near (≤330 feet/100 meters from) edge features (heads of draws, beach scarps)

Other environmental factors to consider in assessing local archeological sensitivity include slope and drainage.

Note: This schema reflects environmental features that can be delineated using data from available topographic (1:24,000 to 1:62,500), soils (1:20,000 to 1:150,000), and surficial geologic (1:125,000 to 1:250,000) mapping. Although it is consistent with observations made during a field reconnaissance in November-December 2006, it is subject to modification through more intensive field investigations.

PHOTOGRAPHS



Index Map for Photographs 1-8

Jericho Rise Wind Farm LLC
Franklin County, New York
October 2007

Legend

● Photo Number, Location & Direction of View
▨ Study Area
— NYSDEC Stream

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Photograph 1: Gently Sloping Terrain Typical of the St. Lawrence Valley. View to Northwest from West of the Study Area. *(Photo by C.L. Borstel, TtEC, 11/30/2006)*

Photograph 2: Terrain near Northern Edge of Study Area. View to West Along County Route 23 (Malone-Chateaugay Road). *(Photo by C.L. Borstel, TtEC, 11/29/2006)*

Photograph 3: Southeastern Portion of Study Area, Chateaugay. View to Southwest. The Pinnacle, a hill outside the study area on the edge of the Adirondack region, is visible in the distance at upper right. *(Photo by C.L. Borstel, TtEC, 11/30/2006)*

Photograph 4: Southern Edge of Study Area on Brainardsville Road (County Route 24), Bellmont. View to Northeast. *Photo by C.L. Borstel, TtEC, 11/30/2006)*

Photograph 5: Small Channelway Incised into Till Plain (Wooded Valley at Center Left) in the North-Central Part of the Project Area. View to Northwest.

(Photo by C.L. Borstel, TtEC, 11/29/2006)

Photograph 6: Rolling Terrain Typical of Modern Stream Valleys in the Project Area and Vicinity. View to North. *(Photo by C.L. Borstel, TtEC, 12/1/2006)*

Photograph 7: Chateaugay River Looking Downstream, Bellmont. View to North.
(Photo by C.L. Borstel, TtEC, 11/30/2006)

Photograph 8: Till Plain Characteristic of Northwestern Portion of Study Area. Farmstead at left occupies a kame. View to West. *(Photo by C.L. Borstel, TtEC, 11290/2006)*

Appendix I
Environmental Sound Survey and Noise Impact Assessment

Jericho Rise Wind Farm
Environmental Noise Assessment
Franklin County, New York

JERICHO RISE
WIND FARM

Date of Issue: January 31, 2008

Prepared by

TETRA TECH EC, INC.

**133 Federal Street
Boston, MA 02110
617-457-8200**

CONTENTS

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

Jericho Rise Wind Farm LLC (the Applicant) is proposing to construct a 53-unit wind farm, the Jericho Rise Wind Farm Project (the Project), on private land in Franklin County, New York. Total rated capacity of the Project is estimated at 87.45 megawatts (MW) with each individual turbine rated at 1.65 MW with a rotor diameter of 82 meters and an effective hub height of 80 meters above grade. The Applicant intends to use Vestas V-82; however, if this model is not available, the Applicant has identified the GE 1.5 sle 60 Hz as the probable alternative Wind Turbine Generator (WTG) system resulting in a revised capacity of 79.5 MW, with an individual WTG rating of 1.5 MW. The objective of this environmental noise assessment was to document the existing ambient acoustic environment and determine the feasibility of the Project to operate in compliance with existing state and local noise regulations considering both turbine options.

The following report provides an introduction to the basic acoustic engineering terminology used in this environmental assessment. Applicable noise impact criteria are identified and discussed in Section 3. Baseline sound measurement procedures used to document the existing acoustic environment and the measurement results are presented in Section 4. Reference sound source data, acoustic modeling methodology and a description of the modeling scenarios considered are discussed in Section 5. Calculated offsite sound levels at both the critical operating conditions and under maximum WTG rotational speed, regulatory compliance determination, and overall report conclusions and are provided in Sections 6 and 7.

1.1 Project Study Area and Receptor Locations

The proposed Project consists of an area of approximately 5,040 acres of leased private land, within the towns of Chateaugay and Bellmont, located in Franklin County, New York. The Project site is approximately 5 miles south of the Canadian border, 1 mile southwest of the Village of Chateaugay, and 2 miles east of the Village of Burke (as measured to the nearest WTG location). The Project Area is roughly bounded by the Burke/Chateaugay town line to the west, State Highway 374 to the east, Malone Chateaugay Road to the north, and Brainardsville Road to the south. This acoustic study area is characterized by topography with elevations ranging from approximately 235 to 460 meters above mean sea level (amsl). Land use within the acoustic study area is predominantly agricultural use, with farms and single-family rural residences generally occurring along roadway frontage. A total of 264 residential dwellings were identified as potential noise-sensitive areas. There is also an active quarry in the southeast quadrant of the site.

2.0 NOISE TERMINOLOGY AND MEASUREMENT METRICS

2.1 Noise Descriptors

Sound is defined as a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure, resulting in a sound wave. Noise is typically defined as unwanted sound. When a sound becomes noise is a highly subjective determination, largely dependent on the following factors (not in order of any importance):

- Magnitude or intensity of noise with a frequency weighting to human hearing response.
- Duration of the intruding noise.
- Time of year (windows open or closed – exposure time outdoors).
- Time of day noise occurs (higher sensitivities generally occur at night).
- Existing sound levels in the community, i.e. masking noise.
- History of prior exposure to the same of similar noise sources.
- Existence of a pure tone, tonal or impulsive character in the sound.
- Level of community outreach and notification of schedule of potential noisy periods, i.e. construction activities.
- Predetermined attitudes towards a proposed project or activity.
- Project benefits including economic incentives.

The standard unit of sound measurement is the decibel (dB). The decibel scale compresses the full range of acoustic energy by comparing logarithms of the level in interest with respect to 20 micropascals, the approximate threshold of human perception to sound at the frequency of 1000 Hz (0 dB). The acoustic energy range varies from 20 micropascals (0 dB) to over 20 million micropascals (120 dB), the threshold for pain. The decibel scale is logarithmic to accommodate the wide range of sound intensities to which the human ear is subjected. The loudness of a sound is defined by the source sound power level (L_W), the total acoustic power radiated by an object or opening measured in decibels referenced to 10^{12} watts. The sound power source level is independent of the environmental conditions while the received sound pressure level (L_P) incorporates both propagation path and site specific environmental elements. An inherent property of the logarithmic decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is a 3-decibel increase (or 53 dB), not an arithmetic doubling to 100 dB.

Sound is typically composed of acoustic energy across a wide range of frequencies, referred to as the frequency spectra. However, the human ear does not interpret the sound level from each frequency as equally loud. To compensate for the physical response of the human ear, the A-weighting filter is commonly used for describing environmental sound levels. A-weighting filters the frequency spectrum of sound levels to correspond to the human ear frequency response (attenuating low and high frequency energy similar to the way people hear sound). Sound levels that are A-weighted to reflect human response are presented as dBA in this report. The A-weighted sound level is the most widely accepted descriptor for community noise assessments. Equipment manufacturers often provide sound specification data as unweighted sound levels and are referred to as linear, or dBL.

The human ear does not hear changes in the sound pressure level as equal changes in perceived loudness. Scientific research demonstrates the following general relationships between sound level and human perception for two broadband sound levels with the same or very similar frequency characteristics:

- **1 dBA** is the practically achievable limit of the accuracy of noise measurement systems and corresponds to approximately 10% variation in sound pressure. A 1 dBA increase or decrease is a non-perceptible change in an environmental sound level.

- **3 dBA** increase or decrease is a doubling (or halving) of acoustic energy, and it corresponds to the threshold of perceptibility of change in a laboratory environment. In practice, the average person may or may not be able to distinguish a 3 dBA differential in environmental sound levels outdoors.

- **5 dBA** increase or decrease is described as a perceptible change in an environmental sound level and is a clearly discernable change in an outdoor environment.

- **10 dBA** increase is a tenfold increase in acoustic energy but is perceived as only a doubling in loudness (i.e., the average person will judge a 10 dBA change in sound level to be twice or half as loud).

Table 2.1 presents sound levels from common interior and outdoor sound sources and acoustic environments.

Table 2.1 Various Indoor and Outdoor Sound Pressure Levels

Outdoor Sound Levels	Sound Pressure (μPa)		Sound Level (dBA)	Indoor Sound Levels
	6,324,555	-	110	Rock Band at 5 m
Jet Over-Flight at 300 m		-	105	
	2,000,000	-	100	Inside New York Subway Train
Gas Lawn Mower at 1 m		-	95	
	632,456	-	90	Food Blender at 1 m
Diesel Truck at 15 m		-	85	
Noisy Urban Area—Daytime	200,000	-	80	Garbage Disposal at 1 m
		-	75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	-	70	Vacuum Cleaner at 3 m
Suburban Commercial Area		-	65	Normal Speech at 1 m
Air Conditioning Unit at 20 feet	20,000	-	60	
Light Auto Traffic at 100 feet		-	55	Quiet Conversation at 1m
Quiet Urban Area—Nighttime	6,325	-	50	
Suburban Area—Daytime		-	45	
Suburban Area—Nighttime	2,000	-	40	Empty Theater or Library
		-	35	
Rural Area—Nighttime	632	-	30	Quiet Bedroom at Night
		-	25	Empty Concert Hall
Rustling Leaves	200	-	20	Average Whisper
		-	15	Broadcast and Recording Studios
	63	-	10	
		-	5	Human Breathing
Reference Pressure Level	20	-	0	Threshold of Hearing

Notes:
μPa - Micropascals describe sound pressure levels (force/area).
dBA - A-weighted decibels describe sound pressure on a logarithmic scale with respect to 20 μPa.
Data compiled in part by TtEC from multiple technical resources and from direct acoustic field measurement experience and should be used for general informational purposes only.

2.2 Acoustic Metrics

Sound levels can be measured and presented in various formats. The most common sound metrics used in community sound surveys and impact assessments are the equivalent sound level (L_{eq}), the maximum sound level (L_{max}), and percentile distributions of sound levels ($L_{\%}$). Sound levels change from moment to moment; some are sharp impulses lasting one second or less, while others may rise and fall over much longer periods of time. The sound metrics that were employed in the Project environmental noise assessment have the following definitions:

L_{max} is the maximum A-weighted sound level as determined during a specified measurement period. It can also be described as the maximum instantaneous sound pressure level generated by a piece of equipment.

L_{10} is often referred to as the intrusive noise level and is the A-weighted sound level that is exceeded for 10 percent of the time during a specified measurement period. During a 100-minute period, the L_{10} would be the sound level that was exceeded by other sound levels for 10 minutes of the 100-minute measurement period.

L_{90} is the A-weighted sound level that is exceeded for 90 percent of the time during the time period. The L_{90} can be thought of as the quietest 10 percent of any time period. During a 100-minute period, the L_{90} would be the sound level which was exceeded by other sound levels for 90 minutes of the 100-minute period. It is often referred to as the residual sound level. The residual sound level does not include sound from transient events (such as during periodic wind events) unless they occurred for over 90% of the duration of the monitoring period.

The equivalent or **L_{eq}** is the energy averaged A-weighted sound level that includes both steady background sounds and transient short term sounds. The L_{eq} equals the level of a steady sound, which when averaged over the measurement period is equivalent in energy to the time varying (fluctuating) sound level which actually occurred during the same time period. It can be thought of as the average noise level, but it is an energy average computed using logarithmic equations rather than the usual arithmetic method used to determine an average of a group of values. The L_{eq} has been shown to provide both an effective and uniform method for comparing time varying sound levels that typical occur and have been used routinely in assessment of noise impacts from Wind Energy Conversion (WEC) projects by regulating agencies, including New York.

3.0 NOISE REGULATIONS AND APPLICABLE CRITERIA

There are currently no Federal noise regulations that are directly applicable to this proposed WEC Project. The Towns of Chateaugay and Bellmont have established local noise ordinances for WEC projects that limits maximum received decibel levels within residential areas. The New York State Department of Environmental Conservation (NYSDEC) has issued noise guidance criteria under the State Environmental Quality Review Act (SEQR) that is defined as an incremental increase criteria relative to existing conditions. This guideline was implemented by the Project to assist in the assessment of the potential for adverse impacts within the acoustic study area may occur. The NYSDEC criteria is only a guideline and is not considered a regulatory requirement. The Town of Chateaugay and Bellmont's noise ordinances are considered controlling law for this Project.

3.1 Chateaugay and Bellmont Noise Bylaws

The Towns of Chateaugay (Local Law No. 7 of 2006) and Bellmont (Local Law No. 2 of 2006) regulate noise generated by wind projects to a maximum absolute limit of 50 dBA at the nearest residence located off the Project site (i.e., at any non-participating residence). Numerical noise limits are specified in §15 A) of each Town's respective local laws, as follows:

> "The statistical sound pressure level generated by a WECS shall not exceed L_{10} - 50 dBA measured at the nearest Residence located off the Site. Sites can include more than one piece of property and the requirement shall apply to the combined properties. If the ambient sound pressure level exceeds 50 dBA, the standard shall be ambient dBA plus 5 dBA. Independent certification shall be provided before and after construction demonstrating compliance with this requirement."

The use of the L_{10} statistical level in the Town local laws is somewhat unexpected as it consists of the highest recorded sound levels during a measurement period resulting from such events as dogs barking, aircraft flyovers, etc. Typically, the L_{10} is higher than the ambient L_{eq} and L_{90}, which captures the near minimum level during the measurement period. For evaluation purposes in the assessment, the L_{max} noise metric was used, which represents the worst-case noise statistic as it assumes modeled equipment are operating at maximum noise levels.

The 50 dBA limit is only effective if the existing sound level, measured in terms of the L_{10} sound pressure level is equal to or less than 50 dBA. If the existing sound pressure level without the WTGs operating is determined to be higher than 50 dBA limit, then Project noise may further exceed the existing level by up to an additional 5 dBA. Both of Town laws also address tonal noise. A tonal or "pure tone" condition are defined to occur when any 1/3 octave band linear sound pressure level exceeds the arithmetic average of the two immediately adjacent 1/3 octave band sound pressure levels by the following frequency dependent values (Table 3.1).

Table 3.1 Tonal Noise Provision for the Towns of Chateaugay and Bellmont

Frequency Band Range (Hz)	Exceedance (dBL)
31.5 – 125	15
160 - 400	8
500 - 8000	5

3.2 NYSDEC Noise Guidelines

In 2001, NYSDEC published a Program Policy titled *Assessing and Mitigating Noise Impacts*, which intended to describe a methodology for the evaluation of the potential community impacts from any new noise source. The NYSDEC method is based on the perceptibility of environmental noise. In comparison to the Chateaugay and Bellmont Regulations which are absolute limits, the NYSDEC criteria set a limit above the existing L_{eq} sound level at the nearest residences, or other potentially sensitive receptors (i.e., schools, churches, etc.). In areas that are not sensitive to noise or undeveloped areas, the application of the NYSDEC criteria is clearly not appropriate. The NYSDEC guidelines have been applied as a basis of assessment for several recent wind energy development projects in the state of New York in localities with no noise ordinances or bylaws. The NYSDEC program policy states (Section V B(7)c)::

> “Increases ranging from 0-3 dB should have no appreciable effect on receptors. Increases from 3-6 dB may have potential for adverse noise impact only in cases where the most sensitive receptors are present. Sound pressure increases of more than 6 dB may require closer analysis of impact potential depending on existing SPLs and the character of surrounding land use and receptors.”

Based on the NYSDEC guidance, an incremental increase of 6 dBA over the existing L_{eq} when considered cumulatively is considered the minimum threshold when adverse noise impacts may begin to occur. Receptors below the 6 dBA L_{eq} cumulative increase limit are considered as having a low probability of disturbance. If exceedances of the 6 dBA criteria level are identified, the program policy outlines an approach referred to as the *Second Level Noise Impact Evaluation*, towards further evaluating the potential exceedance condition.

The DEC Policy Document further states that a typical ambient in rural environments can be assumed as 45 dBA. Assuming a Project generated noise level of 50 dBA (identical to the

Chateaugay and Bellmont noise limits); the total cumulative of 51 dBA or 6 dBA above the NYSDEC estimated ambient would signal the onset of potential impacts. i.e., the 50 dBA local limits are consistent with the NYSDEC Policy limits in these regards. Due to the fact that actual ambient L_{eq} sound levels can vary significantly, the Project has chosen to take the proactive step in documenting ambient and statistical sound levels in the acoustic study area to ensure future compliance with the stringent NYSDEC Policy limit. The requirement for long term "non-vegetative" monitoring has also been recently reiterated in a Supreme Court rulings (see 2007 WL 4294718 [N.Y. Sup.]) to provide an accurate NYSDEC Policy compliance determination.

4.0 EXISTING ACOUSTIC CONDITIONS

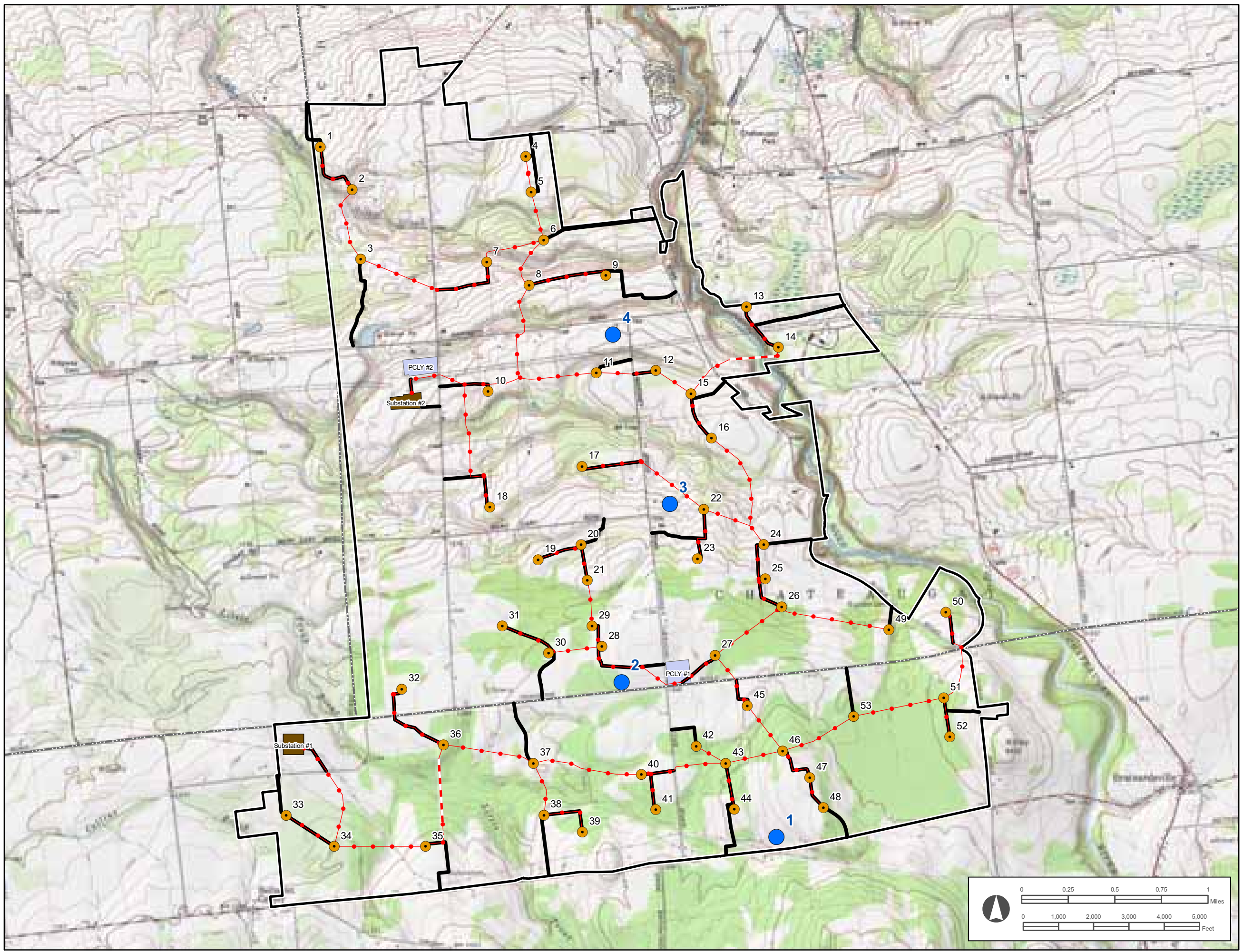
To determine existing sound levels within the acoustic study area, sound monitoring was completed over a targeted 3 week period. Monitoring was completed during a defoliate season as sound levels during these periods have been shown to be lower than periods with leaves on trees during elevated wind conditions. The relevance of this to potential environmental noise impacts from a wind energy development project is that elevated levels of background noise generated by leaf rustle are normally present in summertime, a time period also coincident with when people spend a greater percentage of time outdoors. In colder climates, during wintertime periods people generally spend more time indoors. At the given setback distances, wind turbine noise will be essentially inaudible indoors with windows closed. Therefore, the purpose of these baseline measurements were (1) document existing conditions under worst case defoliate seasonality (2) for direct comparison of existing to future operational sound levels, and (3) for use is assessing compliance with the NYSDEC noise guideline.

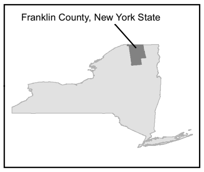
4.1 Measurement Locations

To objectively characterize the noise environment across the entire acoustic study area, sound pressure levels were measured and data logged at four discrete residential receptor locations as shown in Figure 4.1. Four long-term sound level monitoring stations were deployed from November 13, 2007 through to December 4, 2007 in order to characterize the ambient background sound levels. The monitoring stations were deployed within 20 to 30 meters of existing residential structures, but away from any vertical reflecting surfaces as specified under (ANSI Standard S12.18-1994). The monitoring stations were positioned in locations in the general direction of the proposed WTG towers relative to the home site.

4.2 Instrumentation

All measurements were taken with four Larson Davis 831 real-time sound level analyzers equipped with PCB model 377B02 1/2" precision condenser microphones which have an operating range of 5 dB to 140 dB, and an overall frequency range of 16 to 20,000 Hz. These analyzers meet or exceed all requirements set forth in the American National Standards Institute (ANSI) Standards for Type 1 for quality and accuracy (precision). Prior to, midway, and immediately following both measurement sessions, this sound analyzer was calibrated (no level adjustment was required) with an ANSI Type 1 calibrator which has an accuracy traceable to the National Institute of Standards and Technology (NIST).





● Noise Monitor Locations

● Turbine

•—• Underground Collection System

- - Overhead Collection System

━ Access Road

☐ Project Area Boundary

▭ Construction Laydown Yard

■ Substation

⬚ Town Boundary

SOURCE:
USGS 7.5 MINUTE QUADRANGLES
BRAINARDSVILLE, 1964; BURKE, 1993;
CHATEAUGAY, 1993; CHASM FALLS, 1980

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE 4.1
BASELINE NOISE MONITORING
LOCATIONS

JERICHO RISE WIND FARM LLC
DECEMBER 2007

P:\Burke Wind Farm\GIS\Spatial\MXD\Revision_A01_101107\DEIS Figures\NoiseAppendix\JRWF_Figure1_11x17.mxd

For all measurement sessions, the microphones were fitted with ACO oversized 7-inch environmental windscreens to negate the effect of air movement and effects of wind-generated self noise across the microphone diaphragms. These windscreens have been specifically designed by the US government for the measurement of noise levels under high winds and even blast conditions. The microphones and windscreens were tripod mounted at an approximate height of 1.5 to 1.7 meters above grade. The sound analyzers were programmed to measure and data log broadband A-weighted sound pressure levels in ten-minute intervals. Data collected also 1/1 and 1/3 octave band data spanning 16 Hz to 20 kHz. All data were immediately downloaded to a computer following the measurement session for the purposes of storage and further analysis.

All instrumentation was laboratory calibrated within the previous 12 month period, with documentation provided in Appendix D.

4.3 Sound Survey Results

The proposed site for the Jericho Rise Wind Farm is rural and largely an agriculturally based land use. The principal source of manmade noise at locations 1 through 4 were intermittent traffic on the nearby roadways, aircraft flyovers, use of off road ATVs and snowmobiles, and human activity. Periodic barking dogs, wind and the interaction of wind with terrain during elevated wind conditions were the dominant source of natural noise. Meteorological weather conditions during the noise-monitoring period were obtained from the National Climate Data Centre. Data points known to contain extraneous events, data collected during and immediately following periods of precipitation, and data below the typical WTG cut-in speed were systematically removed to avoid biasing the data set. The monitoring data collected contained sound intervals with both bare and snow covered ground.

Overall, the study area was determined to be relatively homogenous acoustically, with residences exposed to both similar noise sources and L_{eq} sound levels. Variation in sound levels were determined to be primarily dependent on distance to area roadways and areas of human activity.

Sound data were collected for a sufficient period of time to encompass the entire range of future WTG operational wind speeds, from cut-in to the maximum rotational speed of WTGs. Average wind speeds as measured at the onsite meteorological tower ranged from calm to 15.9 m/s over the entire measurement survey. The resultant wind speed data were scaled from the met station height to the reference 80 meter hub height wind speed, using a site specific roughness length coefficient and plotted against the corresponding baseline L_{eq} sound measurement data at the concurrent time periods. The use of the L_{eq} level is the metric for establishing baseline, as required under the NYSDEC guideline. This plot was used to determine the relationship of the ambient sound level (dBA) correlated to wind speed (m/s) at the reference hub height (Figure 4.1). Figure 4.1 presents the data points from all four sites, the results of the regression analysis, and the best fit correlation coefficient using a second order polynomial equation. It is important to note that the sound pressure levels parallel the wind speed, rising when the wind speed increases. This relationship shows that L_{eq} sound levels in the project study area are largely driven by natural, wind induced sounds. The scattering and R^2 coefficient is expected and likely caused by noise associated with sporadic anthropogenic activities.

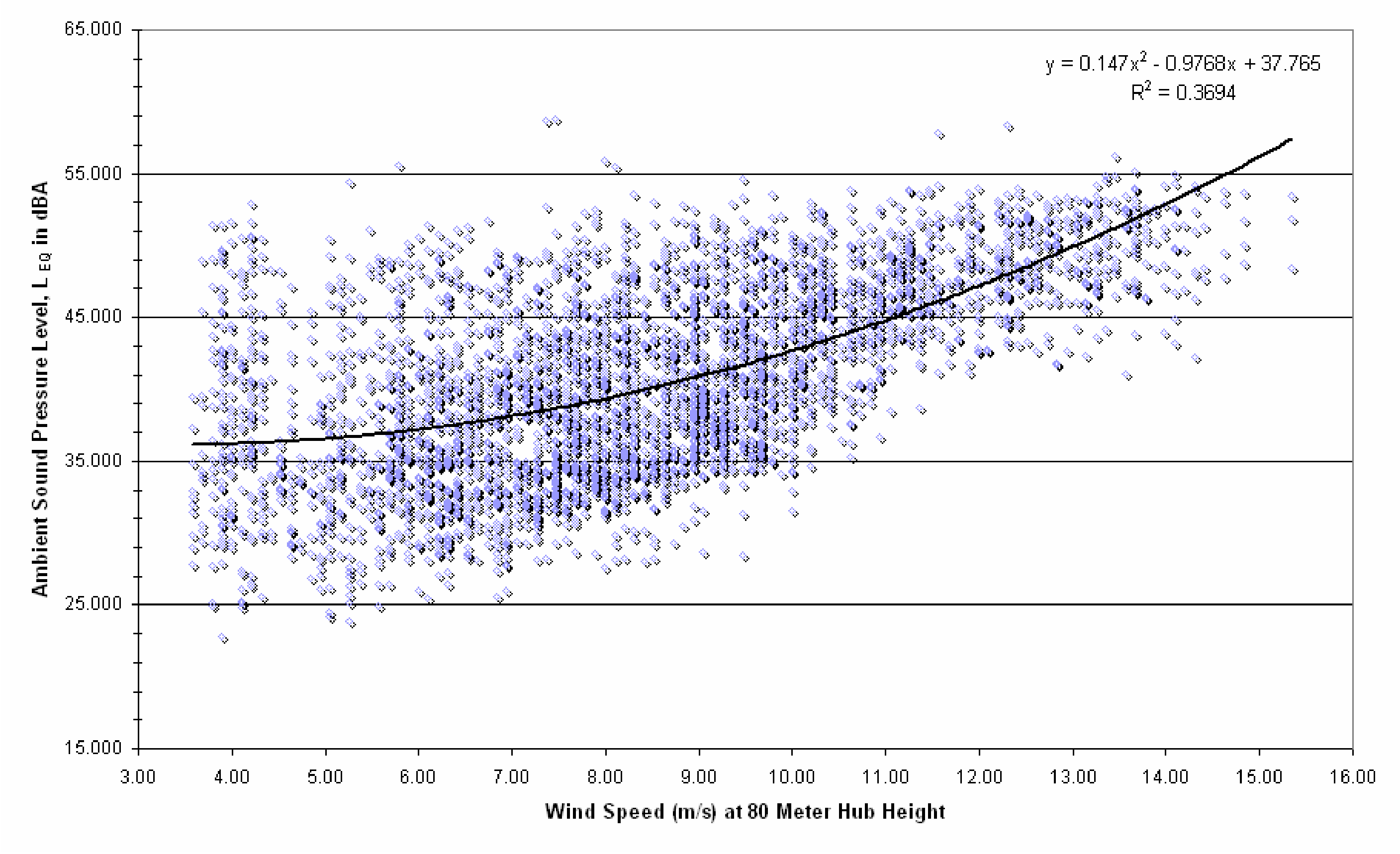
The results of the regression analysis reveal that during Project operation, L_{eq} sound levels will range from a minimum of 36.1 dBA at 3.5 m/s representative of the approximate WTG cut-in wind speed and increase to 42.7 dBA at 10 m/s representative of WTG full rotational speed. At wind speeds higher than 10 m/s, background sound levels continue to increase, but the WTG sound emissions will remain relatively constant (or decrease slightly) until the WTG reaches cut-out wind speeds. A summary of ambient sound levels at reference wind speeds is shown in Table 4.1. Due to the large amount of measurement data collected, it can be stated with reasonable assurance that the sound level at any location within the acoustic study area would have a value similar to that at the discrete measurement points.

Table 4.1 Measured L_{eq} Power Averaged Sound Levels at Reference Wind Speed

Monitoring Location	L_{eq} Baseline Level at WTG Load Level							
80 m Wind Speed	3.5 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s
Measured (L_{eq}) dBA	36.1	36.2	36.6	37.2	38.1	39.4	40.9	42.7

These measured L_{eq} data will provide the basis for determining the net increase in ambient sound levels during WTG operation over the entire range of the WTG rotation speeds. The purpose of this type of analysis is to avoid invalid comparisons of turbine noise with ambient noise. For example, it would be incorrect to compare the maximum turbine noise level which occurs at elevated wind speeds with the minimum background noise level during calm wind conditions when the WTG is not operational and not creating any noise.

Figure 4.2 Regression Analyses of Measured L_{eq} Sound Pressure Levels versus Wind Speed Data



5.0 PROJECT NOISE MODELING AND IMPACT ASSESSMENT

This report section discusses the modeling procedures used in the environmental noise analysis to determine the potential for adverse impacts and compliance with regulatory criteria and guidelines described in the previous section.

5.1 Wind Turbine Source Data

A somewhat unique acoustic characteristic of wind farm projects is that the noise generated by each individual wind turbine will increase as the wind speed across the site increases. In order to assist Project developers and acousticians, commercial wind turbine manufacturers report wind turbine sound power data at each integer wind speed referenced to a height of 10 meters above grade, ranging from cut-in to full rated power. The wind turbine sound source data used in the analysis are the guaranteed maximum generated sound levels per the International Electromechanical Commission (IEC) 614100-11 acoustic measurement standards. This internationally accepted standard was specifically developed to ensure consistent and comparable sound emission data of utility-scale wind turbines between manufacturers and models. The Project has reviewed several wind turbine model options and has selected the Vestas-82 and GE1.5 sle, which are considered to be among the quietest wind turbines currently commercially available. Manufacturer sound power octave band data for both turbines is given in Table 5.1.

Table 5.1 Maximum Octave Band Sound Power Levels (dBL)

Equipment	**Center Frequency Octave Band Sound Power**								
	31	63	**125**	**250**	**500**	**1,000**	**2,000**	**4,000**	**8,000**
Vestas -82	110.4	108.9	106.8	105.4	100.1	96.9	93.7	92.6	80.9
GE 1.5 sle Turbine	113.3	111.7	110.1	105.8	101.8	97.9	93.3	86.6	79.2

The manufacturers' sound power source data were scaled to the proposed 80 meter hub height accounting for site-specific roughness. A summary of sound power data correlated by wind speed at 80 meters are presented in Table 5.2.

Table 5.2 Turbine Manufacturer Sound Power Levels (dBA) Correlated with Wind Speed

Monitoring Location	WTG L_{max} Sound Power Level (L_W) at Reference Wind Speed							
80 m Wind Speed	3.5 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s
Vestas-82	101.1	101.4	101.7	102.5	103.2	103.3	103.3	103.3
GE 1.5 sle 60 Hz	96	96.9	100.6	103.5	104	104	104	104

5.2 Defining WTG Worst Case Operational Acoustic Condition

The WTG operational condition that will result in the worst case incremental increase in measured ambient sound levels was determined by comparing the net change in L_{eq} sound levels by reference wind speed for each turbine model. Although not initially intuitive, the worst case operational noise condition in terms of incremental increase does not actually occur at full rated power when the WTG is at its maximum noise emission level. The worst case operation conditions for both the Vestas-82 and GE 1.5 sle 60 Hz WTGs occur at a reference wind speed of 6 m/s. Acoustical modeling will be conducted for Project under worst case operation conditions, where the sound power octave band data will be corrected to the 6 m/s reference wind speed. The results from modeling these scenarios will be used to determine the maximum number of receptors that would receive sound levels above NYSDEC incremental increase guidance.

Table 5.3 Vestas V82 Worst Case WTG Operational Condition

Comparison of WTG L_{max} Sound Power Data to L_{eq} SPLs								
80 m Wind Speed	3.5 m/s	4 m/s	5 m/s	**6 m/s**	7 m/s	8 m/s	9 m/s	10 m/s
Vestas 82 L_W	101.1	101.4	101.7	**102.5**	103.2	103.3	103.3	103.3
L_P at 100 meters	47.5	47.8	48.1	**48.9**	49.6	49.7	49.7	49.7
Ambient L_{eq}	36.2	36.2	36.6	**37.2**	38.1	39.4	40.9	42.7
Net Change (dB)	11.3	11.6	11.5	**11.7**	11.5	10.3	8.8	7.0

* **Bold** type indicates worst case design wind speed

Table 5.4 GE 1.5 sle Worst Case WTG Operational Condition

Comparison of WTG L_{max} Sound Power Data to L_{eq} SPLs								
80 m Wind Speed	3 m/s	4 m/s	5 m/s	**6 m/s**	7 m/s	8 m/s	9 m/s	10 m/s
GE 1.5 sle L_W	96	96.9	100.6	**103.5**	104	104	104	104
LP at 100 meters	42.4	43.3	47	**49.9**	50.4	50.4	50.4	50.4

Ambient L_{eq}	36.2	36.2	36.6	**37.2**	38.1	39.4	40.9	42.7
Net Change	6.2	7.1	10.4	**12.7**	12.3	11	9.5	7.7

* **Bold** type indicates worst case design wind speed

5.3 Acoustic Modeling Software

The operational noise impact assessment was performed using the most recent Project design layout and wind turbine coordinates as of December 1, 2007, employing the up–to-date version of Datakustic GmbH's CadnaA, the computer aided noise abatement program (v 3.7). CadnaA is a comprehensive 3-dimensional acoustic software model that conforms to the International Standard Organization's (ISO) standard ISO9613.2 "Attenuation of Sound During Propagation Outdoors" that has been developed to ensure the highly accurate calculation of environmental noise attenuation over long distances in an outdoor environment. The engineering methods specified in this standard consist of 1/1 octave band algorithms that incorporate the following:

Geometrical wave divergence
Atmospheric absorption
Terrain and ground effects
Height of sources and receptors
Reflection from surfaces;
Screening by topography and obstacles;
Source directivity factors;
Seasonal foliage effects; and
Meteorological conditions including the effects of wind and atmospheric inversions

The CadnaA acoustic modeling software has been shown to be a highly accurate and effective acoustic modeling tool for WEC projects sited in both E.U. and the USA when appropriate WTG modeling techniques and site specific conditions are properly incorporated. For the Project environmental noise assessment, adjustments were made to account for actual site ground conditions and topography using the official USGS digital elevation data set. Ground attenuation rates for the turbine lay down areas were separately defined as hard reflective ground (G=0), even though following construction natural vegetation will likely fill in right up to the turbine foundations. Ground surface area beyond the turbine lay down area was defined as 95 percent soft ground (G=1.0), which is defined in ISO 9613-2 as ground covered by grass, trees or other vegetation, and all other ground surfaces suitable for the growth of vegetation such as farming land. Sound attenuation through foliage and diffraction around and over existing structures were conservatively ignored under all modeling scenarios.

Source emission heights were modeled at the design hub height of 80 meters above grade. Received sound level calculations were completed at a height of 1.52 meters above grade, the approximate height of the ears of a standing person. This receiver height was selected because receptors are typically most noise-sensitive when outdoors, as opposed to when they are indoors where structural walls and closed windows would attenuate Project-related noise. Even assuming a “windows open” conditon, the outdoor-to-indoor reduction of a typical residential structure is approximately 10 dB. The acoustic model assumes all WTGs operating continuously and concurrently at their highest manufacturer rated sound level at both maximum rotational and worst case design wind speed. Sound power octave band data were input into CadnaA for the purposes of modeling maximum rotational and worst case design speed scenarios. The ISO9613.2 standard calculates received sound pressure levels for meteorological conditions favorable to propagation, i.e. downwind sound propagation or what might occur typically during a moderate atmospheric ground level inversion. Though a physical impracticality, the model assumes that wind is blowing in all directions simultaneously resulting in the maximum possible sound level at all receptor locations. For receptors located between discrete WTG locations, the model will actually over-predict received sound levels.

6.0 MODELING RESULTS AND REGULATORY COMPLIANCE DETERMINATION

6.1 Acoustic Modeling Results

Results from the acoustic modeling are presented as contour dBA isopleths projected on digital topographical maps of the Project study area at a given operating condition in Appendix A. Results are also provided in tabular format by receptor location in Appendix B. Acoustic modeling was completed for three different scenarios to accurately quantify worst case sound levels on both an absolute and incremental increase basis to provide a compliance determination with all applicable regulatory criteria.

Scenario 1. Operational sound levels at maximum rotational speed were plotted for each turbine in Figures A-1 and A-2. The sound power levels of the Vestas-82 and GE 1.5 sle are 103.3 and 104 dBA at maximum rotational speed, respectively. These results are used to assess compliance with the 50 dBA noise absolute limit of the Towns of Chateaugay and Bellmont. The levels presented are L_{max}, which by definition are higher than the L_{10} metric used by these Towns. This scenario serves as a worst case scenario evaluation with respect to compliance with the Town noise limits.

Scenario 2. Operational sound levels for the two turbine models at their worst case operation design wind speeds. Contour plots for the Vestas-82 and GE 1.5 sle are displayed in Figures A-3 and A-4. The plots are independent of the existing acoustic environment, i.e. are project generated sound levels only. The results of this scenario were used to determine worst case incremental increases in received sound levels discussed further in Scenario 3.

Scenario 3. Net change in existing ambient conditions during operation of the WTGs relative to the existing L_{eq} sound level for the given wind speed are presented Figures A-5 and A-6 using the model output results from scenario 2. According to the NYSDEC environmental noise guidelines, operations resulting in incremental increases of 6 dBA and greater require further consideration under the NYSDEC *Second Level Noise Impact Evaluation*.

6.2 Regulatory Compliance Determination

Figures A-1 and A-2 demonstrate that both candidate WTG models will fully comply with the Chateaugay/Bellmont broadband noise limit of 50 dBA at all modeled residential receptors, including Project participants. With regard to the tonal provision, modern wind turbines have been designed to not produce tonal or impulsive sound as per IEC definitions. Furthermore, the generation of low frequency sound emissions commonly referred to as infrasound, a problem characteristic of early wind turbine designs when turbine blades were downwind of the main tower, will not be an issue with this modern upwind GE and Vestas blade/tower design and compliance with the Chateaugay and Bellmont tonal provisions are expected.

Evaluation of the Project's performance with regard to the 6 dBA NYSDEC incremental increase guideline showed exceedances were only identified for the GE 1.5 sle. The GE 1.5 sle WTG model showed exceedances of the NYSDEC incremental noise criteria at 3 residential receptors. A summary of results of the maximum project related incremental increases in ambient sound levels are presented in Table 6.1. In reference, increases ranging from 3 to 6 dBA, the NYSDEC guidelines presented in Table 6.1 show that there is a "potential for adverse noise impact only in cases where the most sensitive receptors are present." Increases greater than 6 dBA are identified as potential noise impacts requiring further analysis.

Table 6.1. Comparison Acoustic Modeling Results to NYSDEC Guideline Criteria by WTG

Incremental Increase in L_{eq} Ambient* (dBA)	Vestas-82 WTG No. of Receptors	GE 1.5 sle WTG No. of Receptors	Expected Effect on Receptors
0 – 3	170	141	No appreciable effect
3 - 6	73	119	Potential for adverse noise impact limited to cases where only the most sensitive receptors are present.
> 6	**0**	**3**	Potential noise impact. Requires a closer analysis of impact potential depending on existing SPLs and the character of sound emissions, land use and receptors.

6.3 Secondary Assessment of the Potential for Adverse Impacts

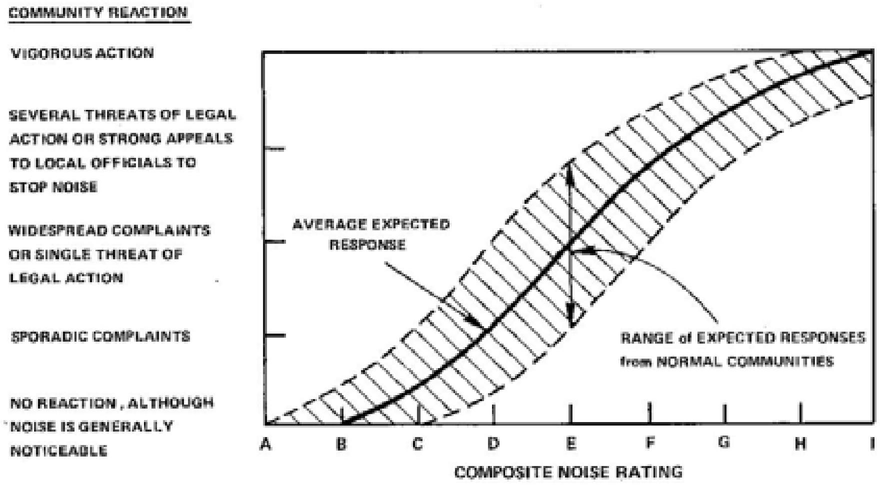
The modified Composite Noise Rating Method (CNR) was used to assess potential noise impacts of worst case operational condition at the noise sensitive locations where exceedances of the SEQR broadband criteria were identified. This methodology incorporates many factors including the expected sound levels from wind farm projects, the existing ambient sound levels, character of the noise (e.g., tonal, impulsive), duration, and subjective factors such as community attitude or history of previous exposure. This method, which is based on case histories of reaction to new sources, dates back to 1955 and with minor modifications has been used by a number of federal agencies including the NYS DEC and US EPA. The procedure involves the following four steps:

1. Obtain a baseline rating classification, letter grade, from the predicted sound pressure level spectrum of the new noise source.
2. Determine a background (masking noise) correction based on the average measured ambient sound level spectrum.
3. Apply a number of other correction factors related to when the source is in operation, the character of the noise and the general attitude of the receiver.
4. Determine a final rating classification after application of all corrections and adjustments.

A description and graph of final rating classifications and expected responses are provided in Table 6.2. The goal for the Project is to achieve a mCNR rating of “C” at all sensitive receptor locations corresponding to “no reaction although noise is noticeable.”

Table 6.2 Final Modified CNR Noise Level Rankings Anticipated Subjective Responses

Final mCNR Ranking	Anticipated Subjective Responses
A	No Complaints
B	
C	No Reaction though Noise is Generally Audible
D	
E	Widespread Complaints or Single Threat of Legal Action
F	
G	Several Threats of Legal Action and Appeals to Local Officials to Stop Noise
H	
I	Vigorous Action



The first step in the modified CNR method first plots the octave band sound pressure level spectrum of the Project on a family of curves to determine the initial Noise Level Rank, a lower-case letter. The initial Noise Level Rank is the lower case letter designating the highest zone into which the spectrum protrudes. The plots for the GE 1.5 sle (the only WTG that had NYSDEC exceedances) are provided in Figures 6.1 with results summarized in Table 6.3.

Table 6.3 Summary of Initial modified CNR Noise Level Rank by WTG Design Alternative

WTG Operational Sound Level (dBA)	GE 1.5 sle WTG
33	a
34	a
35	b
36	b
37	b
38	b
39	b
40	c
41	c
42	c
43	c
44	c
45	d
46	d
47	d
48	d
49	d
50	e

The next step in the mCNR procedure, the Noise Level Rank is adjusted for existing baseline sound levels. Adjustment for the existing baseline sound levels is done by plotting the (L_{eq}) octave band sound pressure level spectra at the critical operational WTG design wind speeds on a set of mCNR curves for the operational WTG wind speed to select the Background Correction Number as shown in Figure 6.2. This correction factor determines the effectiveness of the existing acoustic environment to “mask” the intruding noise source at the critical 6 m/s wind speed. For the wind speeds at and below 4 m/s an adjustment factor of 0 would be applied indicating low masking and for a wind speeds of 10 m/s, an adjustment factor of -2 would be used due to higher masking ambient SPLs. For a wind speed of 6 m/s, an adjustment factor of -1 was used in accordance with the mCNR methodology. Finally, adjustments accounting for the operating schedule of the noise source, the character of the new noise, and the receptor attitude toward the Project. Receptors known or thought to be opposed to the project on principal are assigned an adjustment factor of +1 and project participants or receptors known to be favorable towards the project are assigned an adjustment factor of -1. In absence of specific information of these perception of the project, a correction factor of 0 or neutral standing has been assumed for the three receptors identified in the secondary mCNR analysis.

The complete summary of the relevant correction factors is provided in Appendix C of this report. The method is completed by adding all correction factors, and using the sum to adjust the Noise Level Rank to the final Composite Noise Rating, an upper-case letter. The results of the mCNR analysis are summarized below in Table 6.4, and demonstrate that although exceedances of the broadband criteria may occur under certain conditions, the actual number of receptors expected that will have a Final Composite Noise Rating lower than "C" is none.

Table 6.4 Number of Receptors with Exceedances of the NYSDEC Guideline Criteria with a Final mCNR Rating of C or Lower

Final Composite Noise Rating	GE 1.5 sle WTG No. of Receptors
A	0
B	3
C	0
D	0
E	0
F	0

Figure 6.1 **Plot Of Sound Pressure Frequency Spectra of the GE sle 1.5 MW WTG at the Worst Case Operational 6 M/S Design Wind Speed at Multiple Received Broadband dBA Levels**

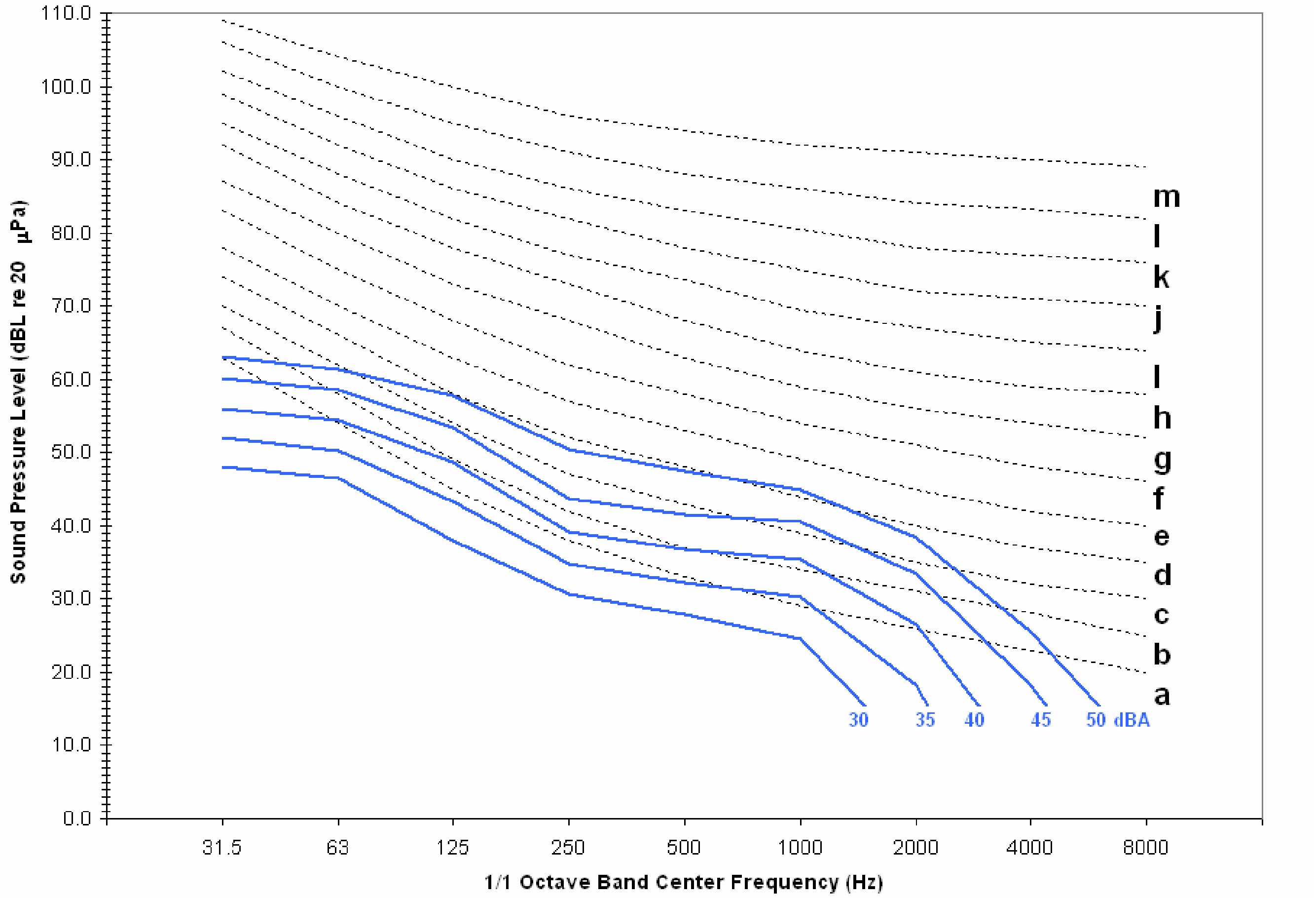
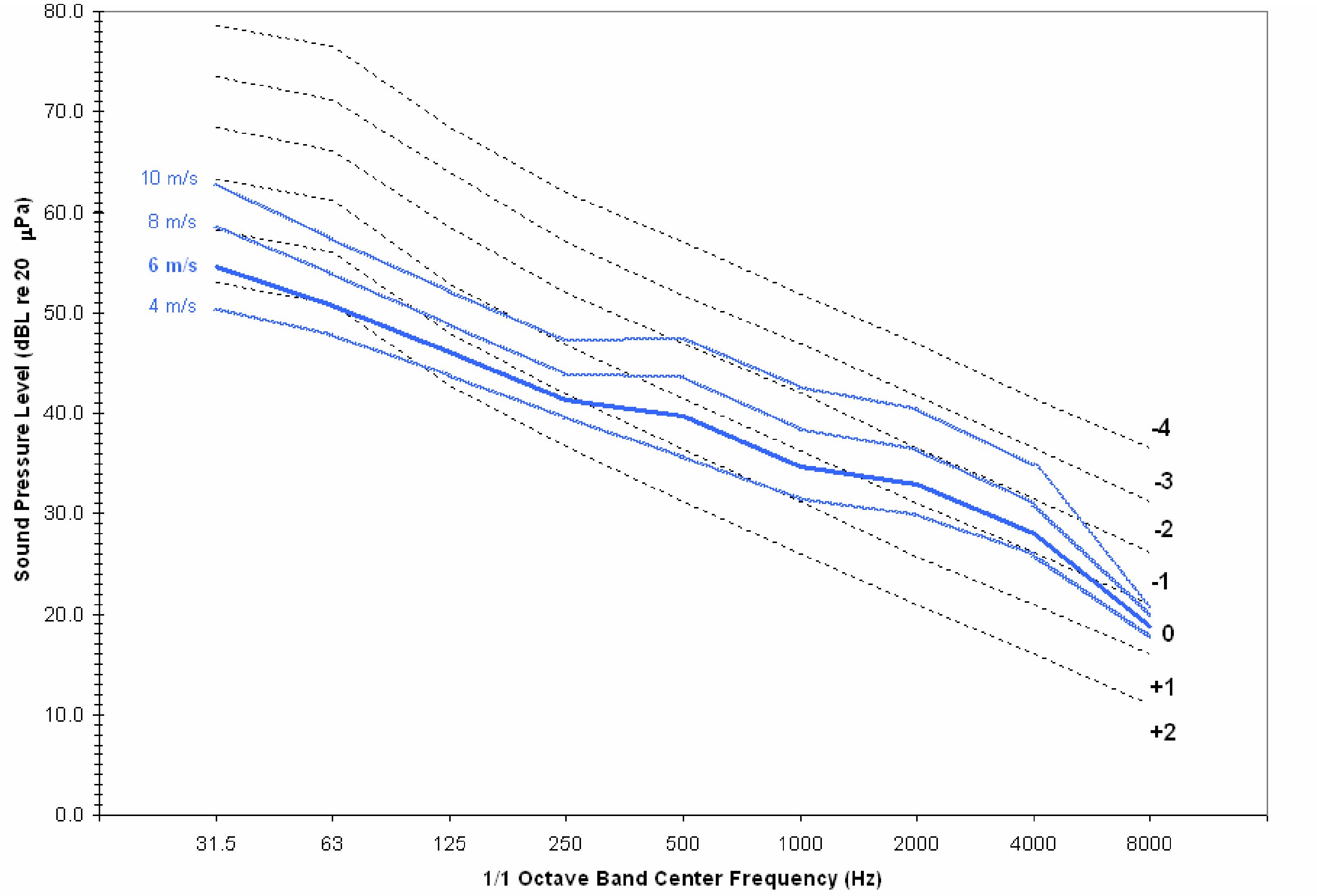


Figure 6.2 **Plot of the Ambient Sound Pressure Frequency Spectra Across the Full Range of WTG Operational Wind Speeds To Determine Applicable mCNR Correction Factors for the GE sle 1.5 MW WTG**



7.0 DISCUSSION

The acoustic modeling contour plots and tabular modeling results provided in Appendices A and B clearly demonstrate that the Jericho Rise Wind Farm Project will comply with the 50 dBA noise limit imposed by the Towns of Chateaugay and Bellmont at all receptor locations, including exempt project participants. In addition, exceedances of the NYSDEC incremental noise guidelines were only shown if the alternate WTG model was selected, which is the GE 1.5 sle. Exceedances of the 6 dBA NYSDEC criterion were shown to occur at 3 residential receptors if the GE 1.5 sle WTG model was selected. This scenario was further reviewed using the mCNR analysis which showed no receptors with a Final Composite Noise Rating lower than a "C".

In conclusion, this Project has been purposely designed to minimize environmental noise by siting wind turbines as far away from existing residential receptor locations as feasible while keeping the project economically viable. The setback distances required by the Towns of Chateaugay and Bellmont are 1,000 ft. from residences in Bellmont, 1,200 ft from on-site residences in Chateaugay, and 1,320 ft from off-site residences in Chateaugay. The Town turbine to residence setback distances have been met at all residences. Operation of the Project will result in periodically audible sound within the adjacent communities under certain operational and meteorological conditions. Specifically, the Project will be audible at the closest residential areas in relation to the Project footprint when residences are directly downwind and background sound levels are low with wind speeds high enough for turbine operation. Residents outside their houses and with a direct line of sight to an operating wind turbine may hear the "swooshing" sound characteristic of wind turbines. If sound is audible, it does not necessarily mean it is considered annoying; however, the higher the sound level relative to background conditions, the greater the possibility for future Project-related noise complaints. Under higher sustained wind conditions when the wind turbines generate their maximum sound energy, ambient sound levels will also be higher due to sound generated by wind moving over objects and terrain and leaf rustle (foliate periods only). These higher background sound levels will tend to mask sound from the Project, though louder than at lower wind turbine rotor rotational speeds, thereby reducing audibility to such a point that the change in ambient noise levels will become no longer perceptible.

Response to sound levels is largely subjective and will vary from person to person depending on several factors, including predetermined perceptions of the project and economic incentives. Project participants are less likely to be affected by noise than non-participants. Non-participants that consider the development of renewable energy sources, and wind farms specifically, as beneficial will also be more likely to consider noise impacts as acceptable. However, non-participants with a negative attitude to the development may be more likely to find any amount of audible noise sufficiently annoying to result in the issuances of noise complaints.

While audible, sound from the Project will likely not be deemed excessive, uncharacteristic, or unusually loud and will be consistent with sound generated at similar wind energy projects successfully sited throughout the United States employing similar criteria limits. At ground level receptor locations, the Project will operate in full compliance with the noise limits given by the Towns of Chateaugay and Bellmont. It is not expected that the Project will result in any adverse noise impact as defined in the NYSDEC noise guidelines.

8.0 OTHER NOISE SOURCES

A collection system substation is required on-site to transform the electrical power generated by the wind turbines. Two alternate locations for the substation are currently being considered. The first location is in the southwest corner of the Project Area north of Town Line Road, in the Town of Bellmont. The second potential location is directly south of and adjacent to the existing Willis Substation on Willis Road in the Town of Chateaugay.

The collection system substation required for the Jericho Rise Wind Farm has a step-up transformer, which increases the voltage from 34.5 kV to 115 kV while decreasing the current. The transformer will be liquid-type (mineral oil) with cooling fins and fans and has an electrical capacity of 100 MVA. The substation also has ancillary facilities including the control houses and the associated protection and control systems. The exact footprint and location of the electrical substation has not been finalized.

The overall sound power level of the substation and ancillary equipment under full load is estimated to be less than 102 dBA. At either of the proposed locations, the electrical substation will be greater than 1,200 feet from the nearest residences. The predicted noise level from the substation at a distance of 1,200 feet is estimated at 35 dBA. Maximum loading and noise generation from the substation will occur during periods of strong winds and associated background noise. Significant noise impacts related to the collection system substation noise at residential receptors are not anticipated. Noise associated with fans or ventilation equipment on buildings will be minimal.

A significant 100Hz tone has been associated with some wind farm electrical substations, due to the specific equipment installed at those substations to service the wind farms; namely, Static VAR Compensation (SVC) reactors. Transformer noise emissions are subject to NEMA standards. Jericho Rise LLC will review transformer noise NEMA specifications and the potential for noise impacts will be further addressed as a design detail closer to construction. Transformer noise will meet all applicable state and local noise limits.

9.0 CUMULATIVE IMPACTS ASSESSMENT

Cumulative noise impacts were assessed for Project construction and operation. In assessing cumulative effects of noise for the Project, the Project noise study area was extended to include other wind energy development projects, which could potentially impact the residences of concern. These wind energy developments include the Noble Chateaugay/Bellmont Windpark, the Noble Altona Windpark, the Noble Clinton Windpark, the Noble Ellenburg Windpark, the Marble River Wind Farm, and the Wind Horse Beekmantown Wind Farm. The Noble Chateaugay/Bellmont was the only wind energy development considered in the cumulative impact assessment due to its proximity (1.1 mi) to the Project. The other wind energy development projects were determined to be at a sufficient distance from the Project and were not expected to contribute to cumulative noise impacts on potentially sensitive receptors within the project study area.

Construction of the Project is not expected to overlap with construction activities at the Noble Chateaugay/Bellmont Windpark. Therefore, no cumulative impacts due to construction noise are anticipated.

Cumulative impacts were assessed for two worst case representative receptors, which were modeled with respect to Project operations and operational noise associated with the Noble Chateaugay/Bellmont Windpark (Hessler Associates Inc.). Cumulative impacts were modeled using both the GE 1.5 sle and Vestas V-82 WTG options. Predicted cumulative noise levels showed full compliance with the 50 dBA regulatory noise limit prescribed by the Towns of Chateaugay and Bellmont at both receptor locations. Cumulative noise impacts resulting from Project operations in conjunction with the Noble Chateaugay/Bellmont Windpark were also modeled by Conestoga-Rovers & Associates (CRA) using WindFarm (v. 4.0.2.3) and CadnaA (v. 3.6.1). The analysis conducted by CRA predicted that none of the modeled residences would exceed the Town noise limits.

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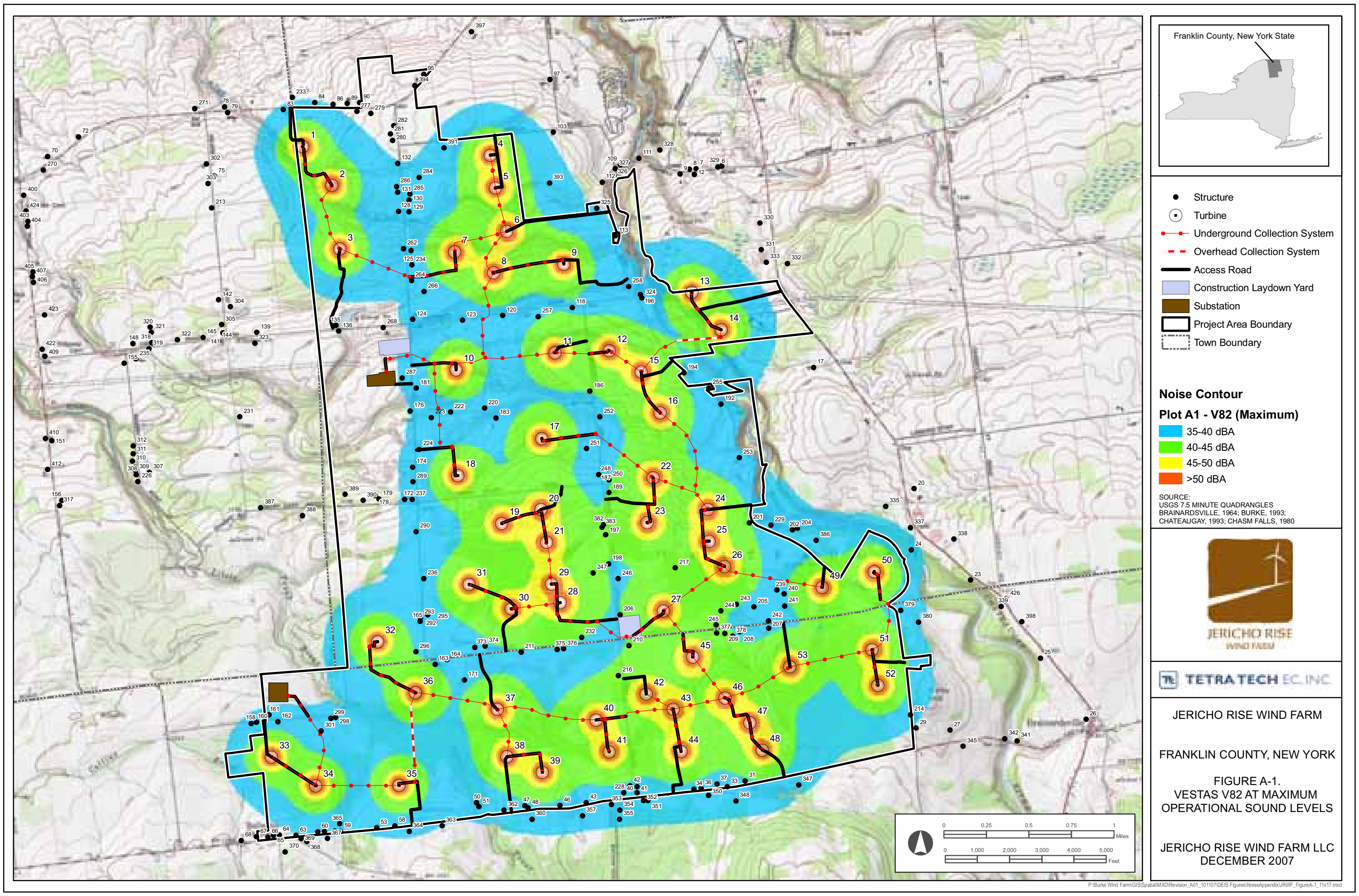
13. Supreme Court, Onandaga County, New York. N the matter of the Application for a Judgement Persuant to Article 78 of the Civil Practice Law and Rules of Sue Brander, et al. V Town of Warren Town Board, Town of Stark Town Board, Jordanville Wind, LLC and Community Energy, Inc. - 2007 WL 4294718 (N.Y. Sup.)

APPENDIX A

NOISE CONTOUR FIGURES



SOURCE:
USGS 7.5 MINUTE QUADRANGLES
BRAINARDSVILLE, 1964; BURKE, 1993;
CHATEAUGAY, 1993; CHASM FALLS, 1980

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE A-1.
VESTAS V82 AT MAXIMUM
OPERATIONAL SOUND LEVELS

JERICHO RISE WIND FARM LLC
DECEMBER 2007

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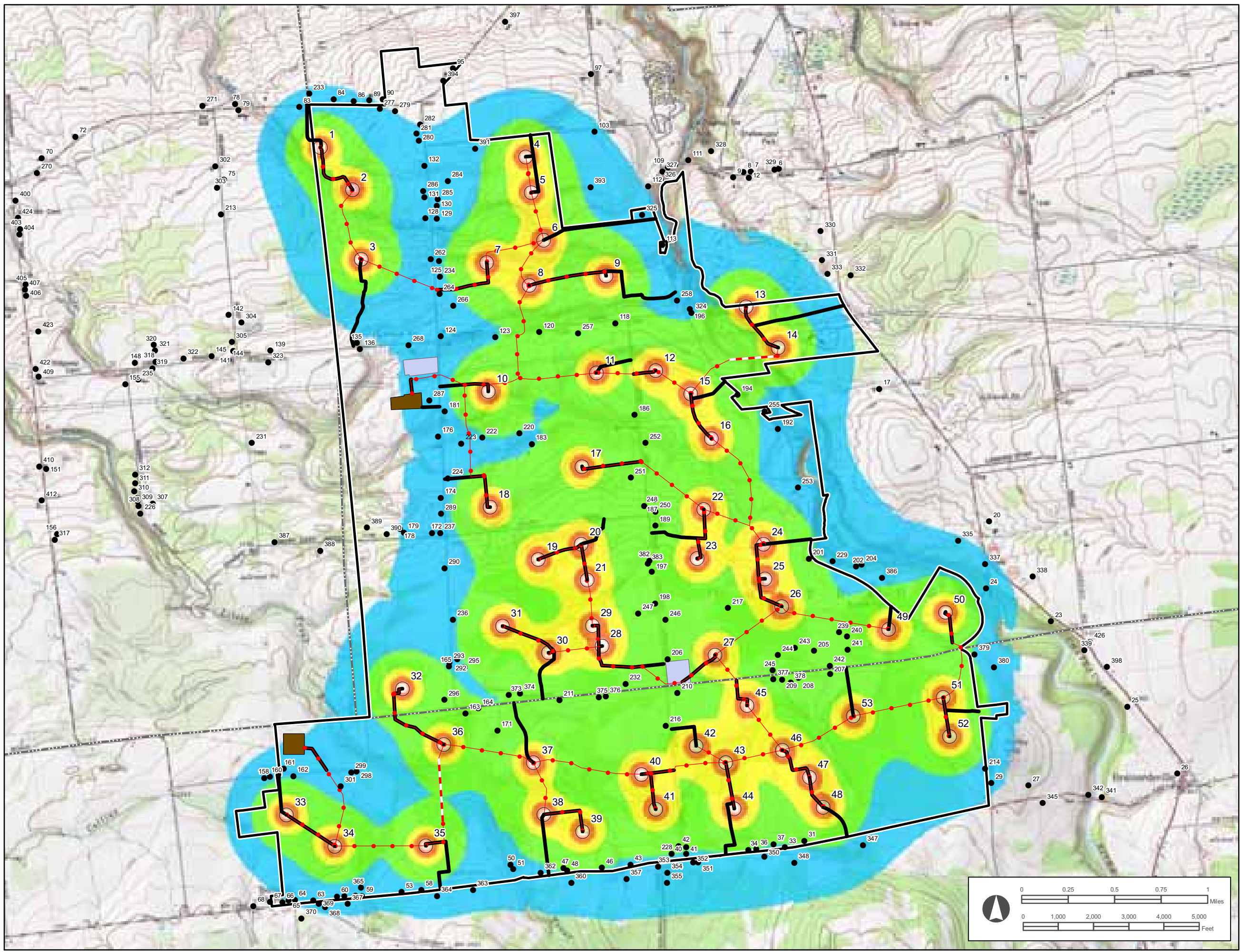

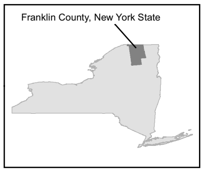

- ● Structure
- ⊙ Turbine
- Underground Collection System
- Overhead Collection System
- Access Road
- ▭ Construction Laydown Yard
- ■ Substation
- ▭ Project Area Boundary
- ⬚ Town Boundary

Noise Contour

Plot A2 - GE1-5 (Maximum)

🟦	35-40 dBA
🟩	40-45 dBA
🟨	45-50 dBA
🟧	>50 dBA

SOURCE:
USGS 7.5 MINUTE QUADRANGLES
BRAINARDSVILLE, 1964; BURKE, 1993;
CHATEAUGAY, 1993; CHASM FALLS, 1980

JERICHO RISE
WIND FARM

TETRA TECH EC, INC

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE A-2.
GE 1.5 AT MAXIMUM
OPERATIONAL SOUND LEVELS

JERICHO RISE WIND FARM LLC
DECEMBER 2007

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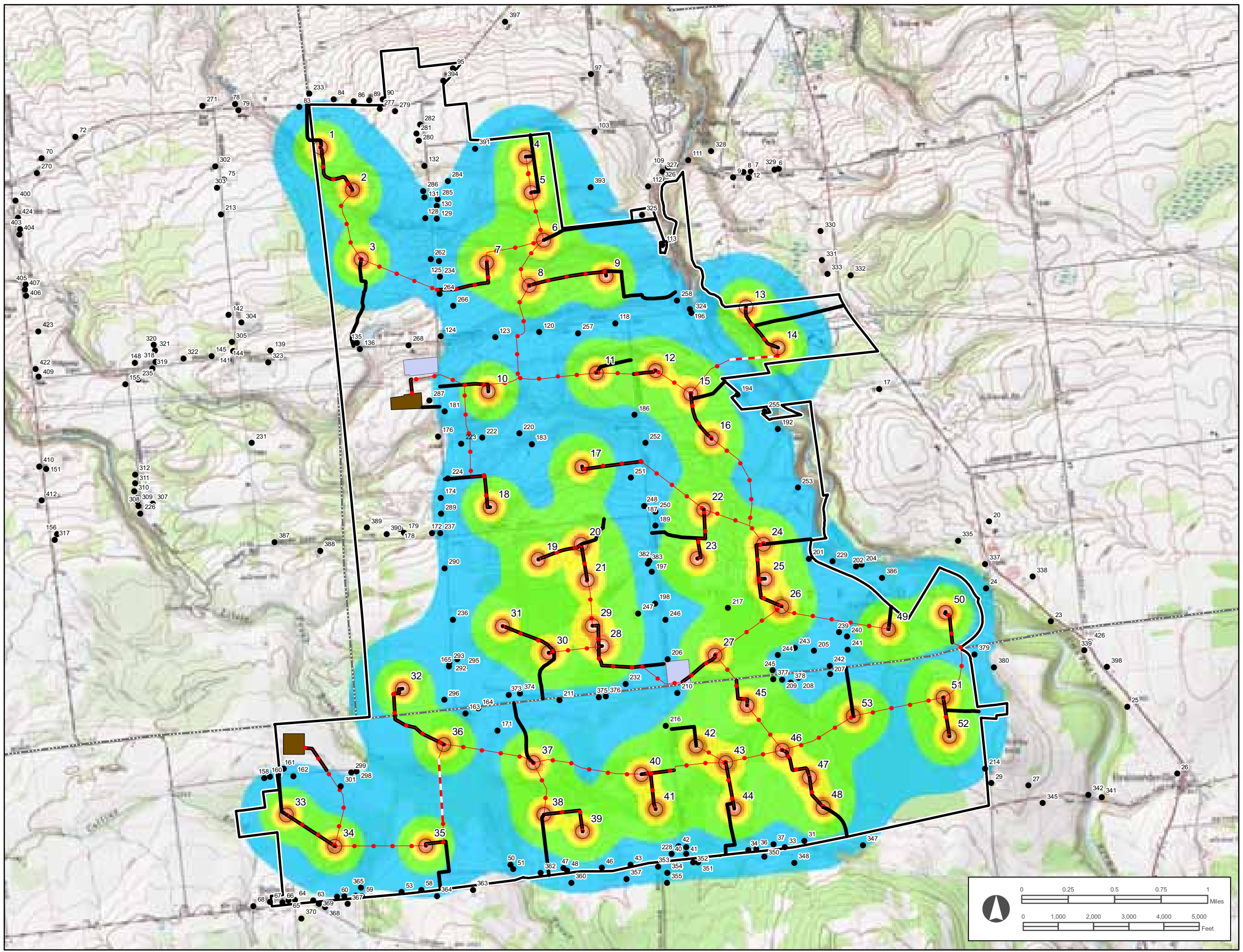

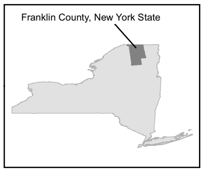

- ● Structure
- ⊙ Turbine
- Underground Collection System
- Overhead Collection System
- Access Road
- ▭ Construction Laydown Yard
- ■ Substation
- ▭ Project Area Boundary
- ⬚ Town Boundary

Noise Contour

Plot A3 - V82

(Worst Case Design Speed)

- 🟦 35-40 dBA
- 🟩 40-45 dBA
- 🟨 45-50 dBA
- 🟧 >50 dBA

SOURCE:
USGS 7.5 MINUTE QUADRANGLES
BRAINARDSVILLE, 1964; BURKE, 1993;
CHATEAUGAY, 1993; CHASM FALLS, 1980

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE A-3.
VESTAS V82 AT DESIGN
WIND SPEED OF 6 m/s

JERICHO RISE WIND FARM LLC
DECEMBER 2007

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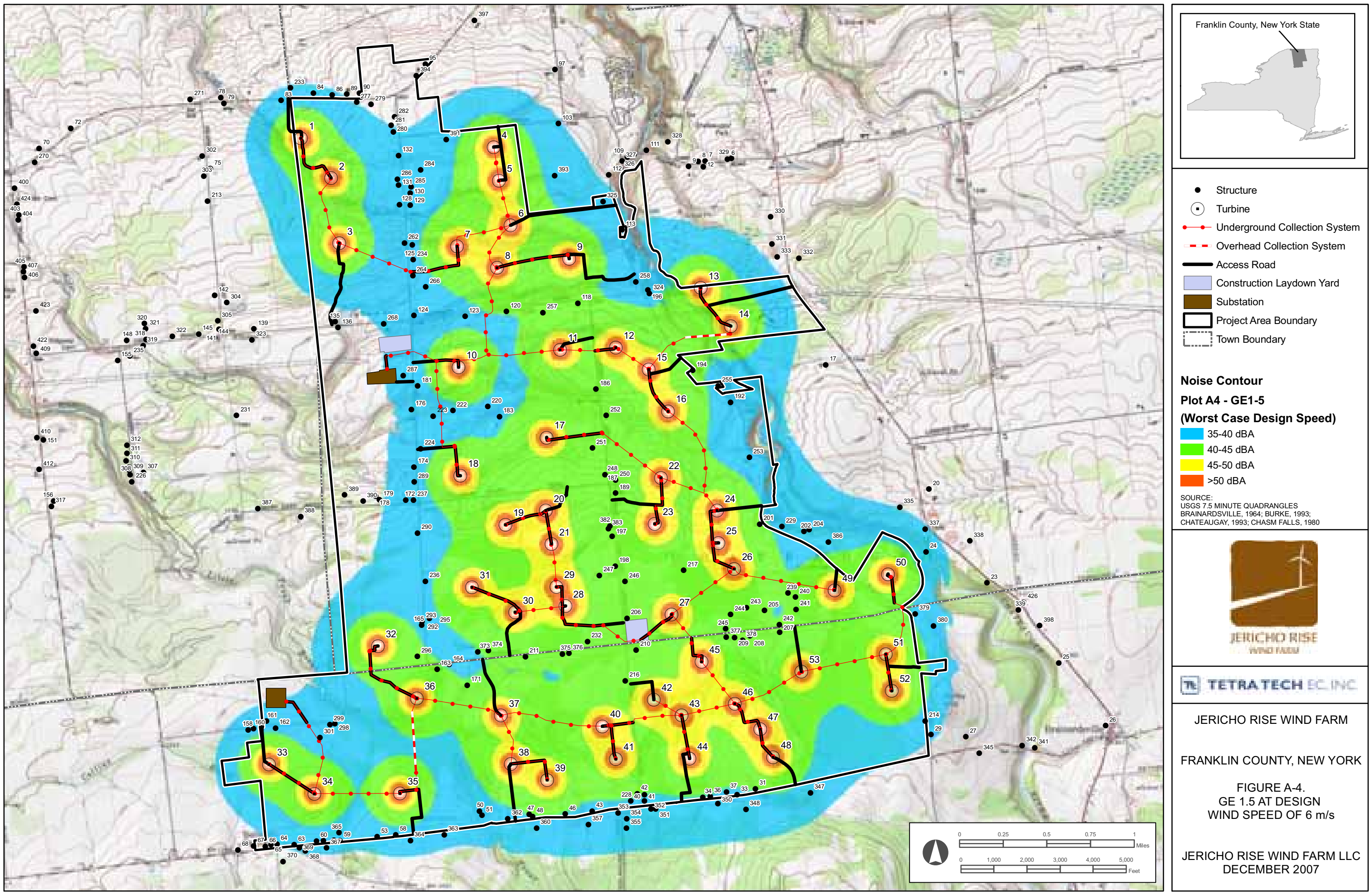

SOURCE:
USGS 7.5 MINUTE QUADRANGLES
BRAINARDSVILLE, 1964; BURKE, 1993;
CHATEAUGAY, 1993; CHASM FALLS, 1980

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE A-4.
GE 1.5 AT DESIGN
WIND SPEED OF 6 m/s

JERICHO RISE WIND FARM LLC
DECEMBER 2007

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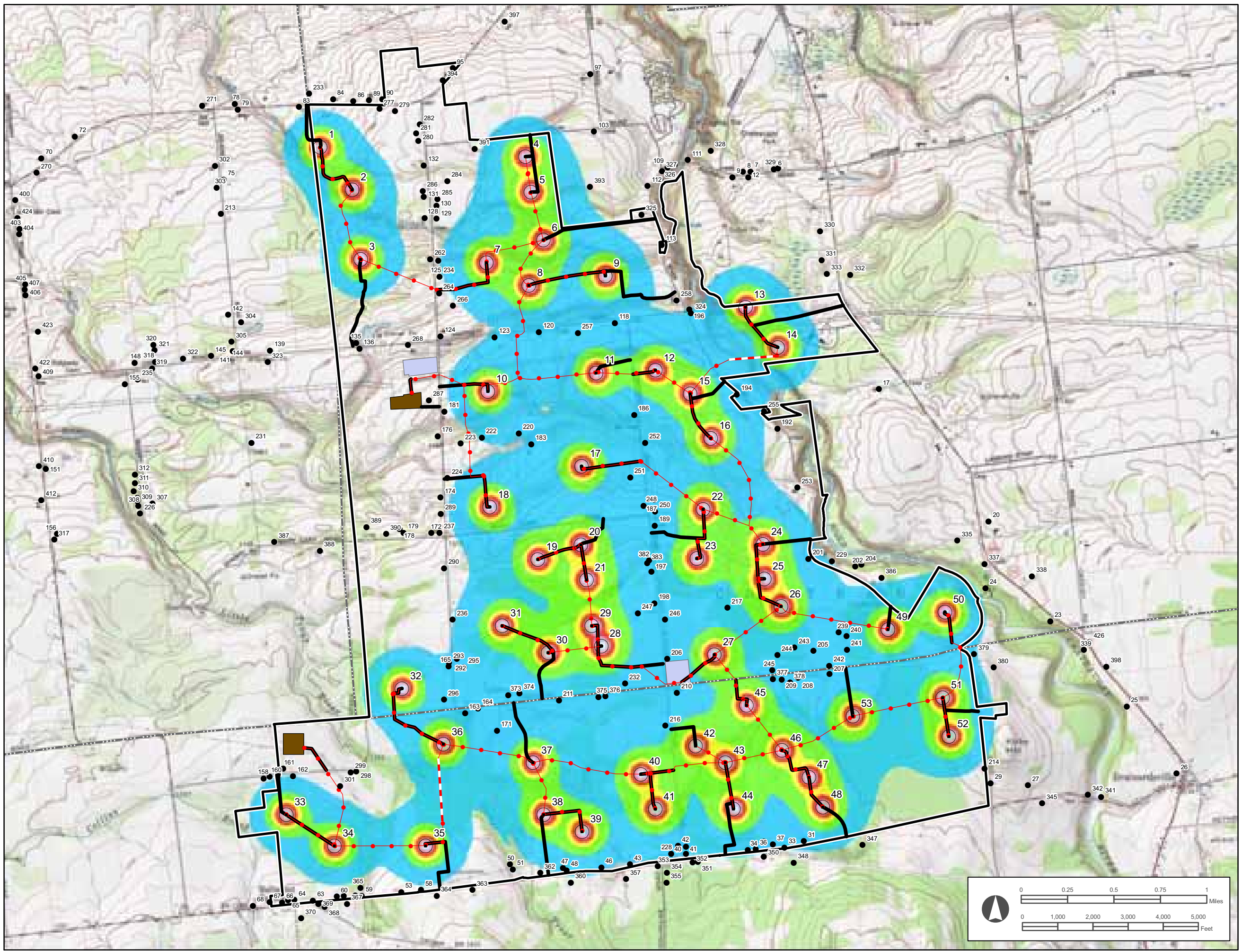

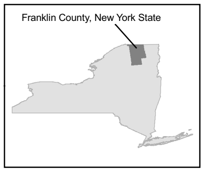

● Structure

⊙ Turbine

Underground Collection System

Overhead Collection System

Access Road

Construction Laydown Yard

Substation

Project Area Boundary

Town Boundary

Noise Contour

Plot A5 - V82 (Delta)

🟦 3-6

🟩 6-9

🟨 9-12

🟥 12-15

🟪 15-18

SOURCE:
USGS 7.5 MINUTE QUADRANGLES
BRAINARDSVILLE, 1964; BURKE, 1993;
CHATEAUGAY, 1993; CHASM FALLS, 1980

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE A-5.
VESTAS V82 WORST
CASE INCREMENTAL INCREASE

JERICHO RISE WIND FARM LLC
DECEMBER 2007

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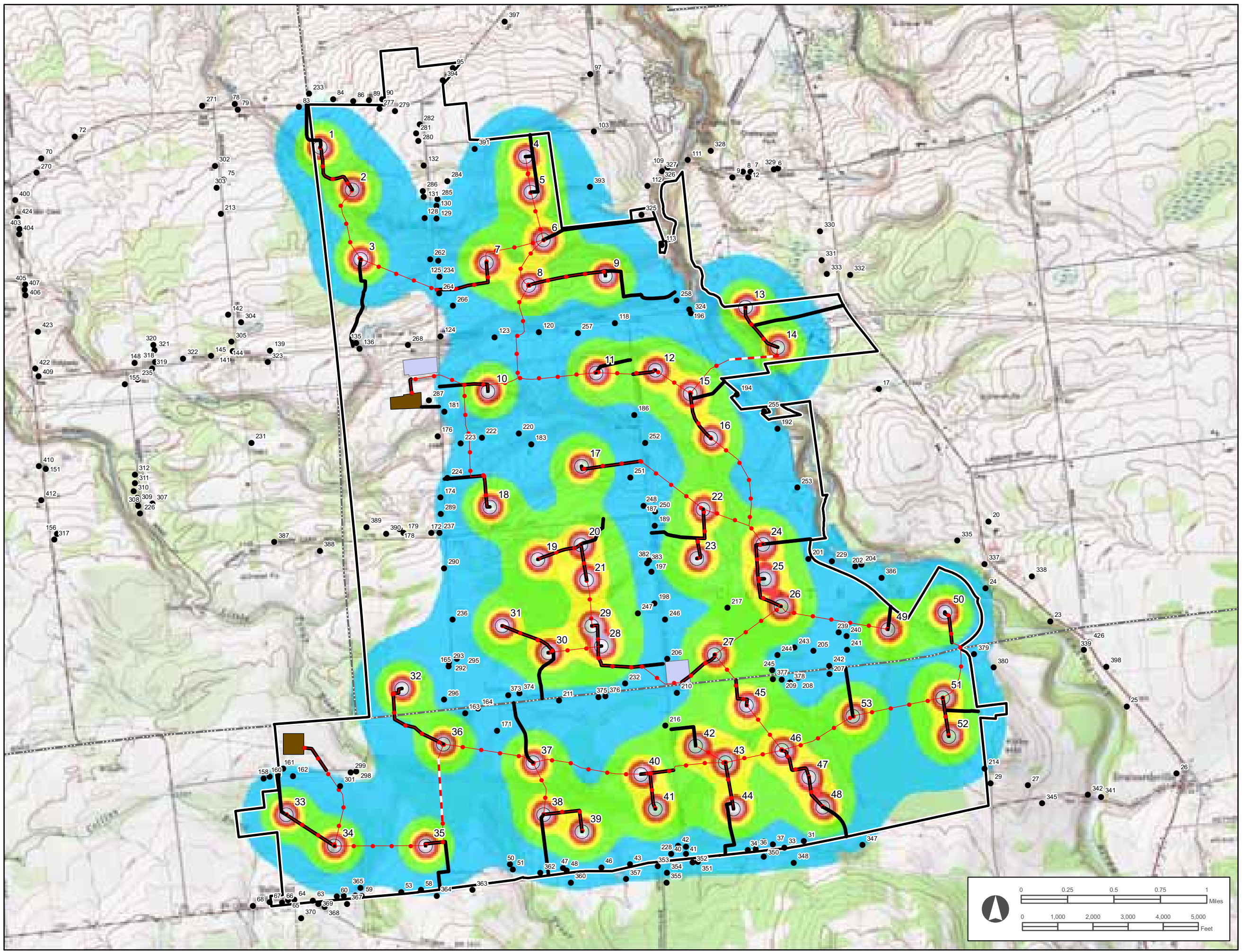

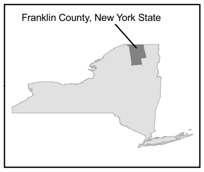

- ● Structure
- ⊙ Turbine
- Underground Collection System
- Overhead Collection System
- Access Road
- Construction Laydown Yard
- Substation
- Project Area Boundary
- Town Boundary

Noise Contour

Plot A6 - GE1-5 (Delta)

🟦	3-6
🟩	6-9
🟨	9-12
🟥	12-15
🟪	15-18

SOURCE:
USGS 7.5 MINUTE QUADRANGLES
BRAINARDSVILLE, 1964; BURKE, 1993;
CHATEAUGAY, 1993; CHASM FALLS, 1980

JERICHO RISE
WIND FARM

TETRA TECH EC, INC.

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE A-6.
GE 1.5 WORST
CASE INCREMENTAL INCREASE

JERICHO RISE WIND FARM LLC
DECEMBER 2007

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APPENDIX B

SUMMARY OF NOISE MODELING RESULTS BY RECEPTOR LOCATION

APPENDIX B: JRWF ENVIRONMENTAL NOISE ASSESSMENT
SUMMARY OF ACOUSTIC MODEL OUTPUT
Date: 12.16.2007

WTG : Vestas V82
Critical WS : 6ms
Critical LW 102.5 dBA
Baseline: 37.2

WTG GE 1.5 sle
Critical ws 6 ms
103.5 dBA
Baseline: 37.2

	UTM NAD 27 Z18N					Vestas V82				GE 1.5 sle			
R Identifier	Northing m	Easting m	EL (Grade + H) m	Owner	Status	**WTG @ Critical WS**	**WTG +BASELINE**	**INCREMENTAL INCREASE**	**WTG @ MAXIMUM**	**WTG**	**WTG +BASELINE**	**INCREMENTAL INCREASE**	**WTG @ MAXIMUM**
1	566668.58	4974219.36	233.22	Beachy, Nathanael D.		18.1	37.3	0.1	18.9	22.7	37.4	0.2	23.2
2	566909.58	4974210.85	238.31	Toohill, John D.		18.9	37.3	0.1	19.7	22.8	37.4	0.2	23.3
6	572787.75	4972693.44	341.52	Palmer, Judy G.		28.5	37.7	0.5	29.3	30.9	38.1	0.9	31.4
7	572583.91	4972674.19	333.18	Harrigan, Jill		28.7	37.8	0.6	29.5	30.8	38.1	0.9	31.3
8	572519.95	4972670.8	330.13	Vermette, George		28.9	37.8	0.6	29.7	31.1	38.2	1.0	31.6
9	572429.26	4972623.25	328.79	Godding, Lynn		29.4	37.9	0.7	30.2	31.5	38.2	1.0	32.0
12	572566.24	4972621.1	334.3	Rose, Robert T.		28.8	37.8	0.6	29.6	30.9	38.1	0.9	31.4
17	573708.24	4970799.26	380.15	Hanover, Lawrence H. J		30.9	38.1	0.9	31.7	33	38.6	1.4	33.5
20	574666.08	4969658.43	386.74	King Richie,		30.5	38.0	0.8	31.3	32.6	38.5	1.3	33.1
23	575207.29	4968795.96	403.52	Meagher, James W.		30.2	38.0	0.8	31.0	32.3	38.4	1.2	32.8
24	574643.64	4969081.43	369.67	Goggins, Mark		35.5	39.4	2.2	36.3	37.3	40.3	3.1	37.8
25	575873.67	4968063.24	415.14	McDonald, Robert		26	37.5	0.3	26.8	28.5	37.7	0.5	29.0
26	576308.15	4967484.05	414.29	St John, Joyce		23.2	37.4	0.2	24.0	26.1	37.5	0.3	26.6
27	575021.08	4967374.15	431.17	Perry, Emma		29.9	37.9	0.7	30.7	31.8	38.3	1.1	32.3
29	574699.03	4967392.16	441.05	Hoy, Jacqueline L.		33.7	38.8	1.6	34.5	35.6	39.5	2.3	36.1
31	573082.49	4966881.33	439.62	King, Richard L.	Participant	38.7	41.0	3.8	39.5	40.5	42.2	5.0	41.0
33	572914.37	4966824.81	432.21	King, Richard L.	Participant	37.3	40.3	3.1	38.1	39.2	41.3	4.1	39.7
34	572598.58	4966800.87	427.52	Labombard, Steven		38	40.6	3.4	38.8	39.8	41.7	4.5	40.3
35	572740.12	4966871.72	429.08	Titus, Donald	Participant	38.3	40.8	3.6	39.1	40.1	41.9	4.7	40.6
36	572667.02	4966808.79	427.52	Labombard, Donald		37.8	40.5	3.3	38.6	39.6	41.6	4.4	40.1
37	572815.73	4966850.69	429.86	King, Richard	Participant	37.7	40.5	3.3	38.5	39.6	41.6	4.4	40.1
40	572061.05	4966824.05	421.99	Monaghan, Jack L.		38.2	40.7	3.5	39.0	40.1	41.9	4.7	40.6
41	572061.42	4966763.07	424.22	Monaghan, Jack L.		37.4	40.3	3.1	38.2	39.3	41.4	4.2	39.8
42	571993.01	4966831.63	423.02	King, William	Participant	38.6	41.0	3.8	39.4	40.5	42.2	5.0	41.0
43	571578.1	4966668.12	427.75	King, Jeffery W.		37.1	40.2	3.0	37.9	39	41.2	4.0	39.5
46	571330.32	4966640.6	431.22	Titus, Francis		37.9	40.6	3.4	38.7	39.7	41.6	4.4	40.2
47	570997.43	4966633.55	415.75	Robbins, Edward		38.3	40.8	3.6	39.1	40.1	41.9	4.7	40.6
48	571030.54	4966614.76	416.82	Robbins, Edward	Participant	38.1	40.7	3.5	38.9	39.9	41.8	4.6	40.4
50	570538.35	4966661.72	391.85	Titus, William		35.7	39.5	2.3	36.5	37.6	40.4	3.2	38.1
51	570563.59	4966621.88	393.57	Opalka, Jorn		35.6	39.5	2.3	36.4	37.5	40.4	3.2	38.0
53	569598.03	4966418.99	412.81	Thompson, Alice May	Participant	35.4	39.4	2.2	36.2	37.3	40.3	3.1	37.8
58	569768.88	4966438.03	416.25	Otis, Allen		36.3	39.8	2.6	37.1	38.2	40.7	3.5	38.7
59	569254.33	4966381.88	398.97	Soucia, Peggy J.		34.7	39.1	1.9	35.5	36.6	39.9	2.7	37.1
60	569039.42	4966374.56	404.48	Cromp, Harold W.		35.1	39.3	2.1	35.9	37	40.1	2.9	37.5
63	568833.67	4966340.3	404.54	Roulston, John	Participant	33.9	38.9	1.7	34.7	35.9	39.6	2.4	36.4
64	568673.69	4966343.31	403.05	Otis, Gerald J.		33	38.6	1.4	33.8	35	39.2	2.0	35.5
65	568618.71	4966340.97	401.64	Paige, Candace		32.6	38.5	1.3	33.4	34.7	39.1	1.9	35.2
66	568565.85	4966320.65	400.79	Allen, Candy M.		32	38.3	1.1	32.8	34.1	38.9	1.7	34.6
67	568458.86	4966322.99	397.5	Larose, Theodore		31.4	38.2	1.0	32.2	33.5	38.7	1.5	34.0
68	568313.1	4966288.11	397.24	Nason, Carl		29.8	37.9	0.7	30.6	31.8	38.3	1.1	32.3
70	566440.81	4972752.55	269.85	Southworth, Robert		19.7	37.3	0.1	20.5	24.2	37.4	0.2	24.7
72	566731.6	4972940.29	273.2	Gagne, Daniel		20.8	37.3	0.1	21.6	25	37.5	0.3	25.5
75	568021.58	4972576.33	294.15	Wood, Hamilton	Participant	29.1	37.8	0.6	29.9	31.4	38.2	1.0	31.9
78	568113.01	4973233.24	271.01	Wood, Hamilton	Participant	28.4	37.7	0.5	29.2	30.6	38.1	0.9	31.1
79	568141.32	4973181.42	273.6	Wood, Hamilton	Participant	29	37.8	0.6	29.8	31.1	38.2	1.0	31.6
83	568669.05	4973208.67	285	Wood, Hamilton F.	Participant	35.3	39.4	2.2	36.1	37.1	40.2	3.0	37.6
84	568965.55	4973279.48	291.16	Bligh, Robert M.		34.7	39.1	1.9	35.5	36.6	39.9	2.7	37.1
86	569140.62	4973262.56	296.52	Smythe, Stephanie J.		34	38.9	1.7	34.8	35.9	39.6	2.4	36.4
89	569275.53	4973272.39	300.79	Matthews, Gary		32.9	38.6	1.4	33.7	34.9	39.2	2.0	35.4
90	569391.44	4973283.1	305.25	Earl, Dale		32.1	38.4	1.2	32.9	34.1	38.9	1.7	34.6
95	569999.65	4973553.79	312.52	Green, Kenneth J.	Participant	29.8	37.9	0.7	30.6	32.1	38.4	1.2	32.6
97	571192.68	4973510.65	309.91	Tracy, Richard		29.6	37.9	0.7	30.4	31.7	38.3	1.1	32.2
103	571227.25	4973011.48	329.61	Tracy, Richard		33.4	38.7	1.5	34.2	35.4	39.4	2.2	35.9
108	571926.86	4972727.86	307.27	Mailhot, Herman		30.1	38.0	0.8	30.9	32.2	38.4	1.2	32.7
109	571865	4972707.48	313	Rodrigue, Jean		30.7	38.1	0.9	31.5	32.8	38.5	1.3	33.3
111	572040.57	4972770.55	310.7	Sibbert, Jorge		29.7	37.9	0.7	30.5	31.8	38.3	1.1	32.3
112	571694.04	4972543.47	321.83	Watson, M I.		32.3	38.4	1.2	33.1	34.3	39.0	1.8	34.8
113	571821.15	4972034.37	347.95	Healey, Kenneth		34.8	39.2	2.0	35.6	36.7	40.0	2.8	37.2
118	571417.42	4971355.45	363.9	Labare, Larry J.		39	41.2	4.0	39.8	40.8	42.4	5.2	41.3
120	570760.05	4971273.42	358.31	Cowan, Erwin		38.4	40.9	3.7	39.2	40.2	42.0	4.8	40.7
123	570378.41	4971227.08	352.92	Buxton, Kathleen G.		37.5	40.4	3.2	38.3	39.4	41.4	4.2	39.9
124	569908.48	4971232.18	345.16	Peterson, David		34.9	39.2	2.0	35.7	36.9	40.1	2.9	37.4

APPENDIX B: JRWF ENVIRONMENTAL NOISE ASSESSMENT
SUMMARY OF ACOUSTIC MODEL OUTPUT
Date: 12.16.2007

125	569886.47	4971883.89	322.29	Nelson, Theodore		37.1	40.2	3.0	37.9	39	41.2	4.0	39.5
128	569766.2	4972255.06	318.29	Richard, Donald		35.7	39.5	2.3	36.5	37.6	40.4	3.2	38.1
129	569868.2	4972251.69	318.52	Mailloux, Brian		35.9	39.6	2.4	36.7	37.8	40.5	3.3	38.3
130	569865.53	4972361.64	318.54	Petrashune, Donna (Woo		35.5	39.4	2.2	36.3	37.4	40.3	3.1	37.9
131	569757.08	4972436.96	317.52	Bisonette, Garth		35.2	39.3	2.1	36.0	37.2	40.2	3.0	37.7
132	569755.41	4972708.88	315.52	Wilcox, Robert		34.3	39.0	1.8	35.1	36.3	39.8	2.6	36.8
135	569179.01	4971169.7	334.01	Thibault, Romeo	Participant	32.1	38.4	1.2	32.9	34.1	38.9	1.7	34.6
136	569207.32	4971117.89	333.31	Toohill, William		31.8	38.3	1.1	32.6	33.9	38.9	1.7	34.4
139	568431.6	4971099.11	328.98	Roulston, Bernard E.		28.5	37.7	0.5	29.3	30.8	38.1	0.9	31.3
141	568109.7	4971093.13	323.9	Lancto, Bryan		26.7	37.6	0.4	27.5	29	37.8	0.6	29.5
142	568067.79	4971404.8	315.54	Cook, Shannon M.		27.4	37.6	0.4	28.2	29.8	37.9	0.7	30.3
144	568070.16	4971018.9	324.49	Cook, Alden	Participant	26.1	37.5	0.3	26.9	28.4	37.7	0.5	28.9
145	567922.01	4971047.98	319.53	Barrett, Howard		25.7	37.5	0.3	26.5	28.1	37.7	0.5	28.6
148	567258.53	4970985.91	312.74	Gillette, Clarence J.		23.7	37.4	0.2	24.5	26.9	37.6	0.4	27.4
151	566496.38	4970062.24	318.52	Cook, Alton		21.1	37.3	0.1	21.9	25.1	37.5	0.3	25.6
153	567289.72	4969817.18	328.28	Blair, Robert E.		23.9	37.4	0.2	24.7	26.9	37.6	0.4	27.4
155	567177.69	4970800.26	314.87	Carey, Donald	Participant	23.4	37.4	0.2	24.2	26.6	37.6	0.4	27.1
156	566595.82	4969499.99	333.52	Cook, Alton		21.4	37.3	0.1	22.2	25.4	37.5	0.3	25.9
158	568400.41	4967395.41	385.98	Guerin, Linda L.		36	39.7	2.5	36.8	37.9	40.6	3.4	38.4
160	568452.31	4967409.72	385.92	Guerin, Linda Underwoo		36.4	39.8	2.6	37.2	38.2	40.7	3.5	38.7
161	568569.06	4967478.83	385.67	Smith, Bruce		35.7	39.5	2.3	36.5	37.6	40.4	3.2	38.1
162	568653.43	4967417.36	385.52	Nason, Albert	Participant	37.1	40.2	3.0	37.9	39	41.2	4.0	39.5
163	570141.73	4967968.39	391.54	Legacy, Bruce		39.1	41.3	4.1	39.9	40.9	42.4	5.2	41.4
164	570251.45	4968011.06	390.92	Legacy, Bruce H.		38	40.6	3.4	38.8	39.8	41.7	4.5	40.3
165	569997.26	4968375.41	386.94	Sweet, Theodore R.		37.5	40.4	3.2	38.3	39.4	41.4	4.2	39.9
171	570418.59	4967820.13	392.62	Legacy, Jerry R.	Participant	38.5	40.9	3.7	39.3	40.4	42.1	4.9	40.9
172	569840.18	4969529.36	367.12	Carley, John		34.8	39.2	2.0	35.6	36.7	40.0	2.8	37.2
174	569916.28	4969835.76	359.26	Torrisi, Adrianna		35.9	39.6	2.4	36.7	37.8	40.5	3.3	38.3
176	569889.02	4970365.47	348.1	Downs Doug & Jodi,		34.4	39.0	1.8	35.2	36.3	39.8	2.6	36.8
178	569564.05	4969560.26	360.43	Merrill, Louann		32.5	38.5	1.3	33.3	34.5	39.1	1.9	35.0
179	569598.23	4969528.47	362.34	Mossow, Ricky		32.7	38.5	1.3	33.5	34.7	39.1	1.9	35.2
181	569945.69	4970580.36	355.52	Plante, Karen	Participant	36.1	39.7	2.5	36.9	38	40.6	3.4	38.5
183	570701.24	4970303.08	370.79	Diliberto, Judith Dale		37.6	40.4	3.2	38.4	39.4	41.4	4.2	39.9
186	571589.47	4970561.29	367.33	Meekin, Peter T.		39.3	41.4	4.2	40.1	41.1	42.6	5.4	41.6
187	571771.96	4969826.59	386.09	Cook, Lyle	Participant	38.8	41.1	3.9	39.6	40.6	42.2	5.0	41.1
189	571775.34	4969602.67	394.62	Bower, Charles A.		39.3	41.4	4.2	40.1	41.2	42.7	5.5	41.7
192	572831.92	4970448.98	374.8	Healey, Herbert J.	Participant	36	39.7	2.5	36.8	37.8	40.5	3.3	38.3
194	572480.18	4970742.74	372.78	Woodward, Rex A.		39.2	41.3	4.1	40	41	42.5	5.3	41.5
196	572063.73	4971478.8	355.7	Bracy, Bruce		37.2	40.2	3.0	38	39.1	41.3	4.1	39.6
197	571747.79	4969205.39	406.34	Cook, Harold	Participant	39.5	41.5	4.3	40.3	41.4	42.8	5.6	41.9
198	571777.47	4968931.64	417.76	Cook, James		39.2	41.3	4.1	40	41	42.5	5.3	41.5
201	573106.78	4969325.73	382.3	Merrill, Gilbert R.	Participant	39.4	41.4	4.2	40.2	41.2	42.7	5.5	41.7
202	573515.11	4969260.26	371.32	Hodge, Elwood N. II		35.9	39.6	2.4	36.7	37.7	40.5	3.3	38.2
204	573565	4969276.57	368.57	Hodge, Elwood N. II		35.6	39.5	2.3	36.4	37.5	40.4	3.2	38
205	573155.68	4968528.22	421.67	Whalen Walter,	Participant	38.4	40.9	3.7	39.2	40.3	42.0	4.8	40.8
206	571888.43	4968448.44	416.98	Merrill, Gilbert	Participant	39.2	41.3	4.1	40	41	42.5	5.3	41.5
207	573296.88	4968329.14	425.98	Hoit, Edward G.		38.7	41.0	3.8	39.5	40.5	42.2	5.0	41
208	573025.16	4968293.47	428.52	Healey Darrell,		38.9	41.1	3.9	39.7	40.7	42.3	5.1	41.2
209	572881.29	4968276.59	428.36	Wilson James L,		39.8	41.7	4.5	40.6	41.6	42.9	5.7	42.1
210	571976.2	4968158.05	414.52	Titus, Marvin	Participant	39.4	41.4	4.2	40.2	41.3	42.7	5.5	41.8
211	570954.59	4968086.32	401.68	Legacy, Keith		39	41.2	4.0	39.8	40.8	42.4	5.2	41.3
213	567998.31	4972278.76	299.2	LaBarge, Leonard		28.6	37.8	0.6	29.4	30.9	38.1	0.9	31.4
214	574644.47	4967520.48	444.33	Rogers, George L.		35.9	39.6	2.4	36.7	37.7	40.5	3.3	38.2
216	571877.86	4967872.37	413.1	Titus, Richard		40.7	42.3	5.1	41.5	42.5	43.6	**6.4**	43
220	570592.03	4970394.55	368.52	Cook Jay D & Carrie A,		37.5	40.4	3.2	38.3	39.4	41.4	4.2	39.9
222	570271.24	4970357.19	362.55	Unidentified	Participant	37.4	40.3	3.1	38.2	39.2	41.3	4.1	39.7
223	570090.34	4970304.26	358.08	Beach Scott,		36	39.7	2.5	36.8	37.9	40.6	3.4	38.4
224	569976.23	4970003.53	357.89	Hall, Richard L.	Participant	36	39.7	2.5	36.8	37.9	40.6	3.4	38.4
226	567315.04	4969680.43	330.52	Unidentified		24	37.4	0.2	24.8	27	37.6	0.4	27.5
228	571934.8	4966763.95	426.98	King, William	Participant	37.8	40.5	3.3	38.6	39.7	41.6	4.4	40.2
229	573312.69	4969305.02	377.1	Gibbs, Howard		36.9	40.1	2.9	37.7	38.8	41.1	3.9	39.3
231	568276.12	4970298.73	333.96	Conners, Bruce J.		27	37.6	0.4	27.8	29.4	37.9	0.7	29.9
232	571526.07	4968233.64	412.53	Legacy, Kevin	Participant	39.4	41.4	4.2	40.2	41.2	42.7	5.5	41.7
233	568755.21	4973325.8	284.82	Fredenburgh, Warren J.		33.6	38.8	1.6	34.4	35.6	39.5	2.3	36.1
234	569896.26	4971746.59	325.96	Covey, Donald	Participant	36.9	40.1	2.9	37.7	38.8	41.1	3.9	39.3
235	567287.6	4970841.38	314.96	Carey, Donald	Participant	23.6	37.4	0.2	24.4	26.6	37.6	0.4	27.1
236	570028.13	4968780.15	385.52	Rust, Buddy Lee	Participant	37.1	40.2	3.0	37.9	39	41.2	4.0	39.5
237	569911.51	4969529.96	369.51	Carley, John		35.6	39.5	2.3	36.4	37.5	40.4	3.2	38
238	569101.88	4966380.83	404.52	Cromp, Harold W.		35.1	39.3	2.1	35.9	37	40.1	2.9	37.5
239	573371.87	4968689.32	407.78	Whalen Walter,	Participant	38.3	40.8	3.6	39.1	40.2	42.0	4.8	40.7

APPENDIX B: JRWF ENVIRONMENTAL NOISE ASSESSMENT
SUMMARY OF ACOUSTIC MODEL OUTPUT

Date: 12.16.2007

240	573440.94	4968654.77	407.29	Whalen Walter,	Participant	38.8	41.1	3.9	39.6	40.6	42.2	5.0	41.1
241	573447.11	4968540.05	414.58	Whalen Walter,	Participant	38.6	41.0	3.8	39.4	40.5	42.2	5.0	41
242	573293.87	4968399.22	424.41	Whalen Walter,	Participant	38.3	40.8	3.6	39.1	40.2	42.0	4.8	40.7
243	572991.26	4968554.73	424.04	Whalen Walter,	Participant	39.4	41.4	4.2	40.2	41.2	42.7	5.5	41.7
244	572844.1	4968490.44	427.46	Whalen Walter,	Participant	39.6	41.6	4.4	40.4	41.5	42.9	5.7	42
245	572800.1	4968357.92	427.91	Whalen Walter,	Participant	40	41.8	4.6	40.8	41.8	43.1	5.9	42.3
246	571869.52	4968789.37	421.52	Merrill, Gilbert R.	Participant	39	41.2	4.0	39.8	40.9	42.4	5.2	41.4
247	571632.01	4968843.64	416.88	Dunn, David H.		40.3	42.0	4.8	41.1	42.1	43.3	**6.1**	42.6
248	571676.68	4969774.41	388.92	Betcher, Patricia J.		38.5	40.9	3.7	39.3	40.4	42.1	4.9	40.9
250	571776.9	4969725.07	390.46	Cook, Rodney J.		39.1	41.3	4.1	39.9	40.9	42.4	5.2	41.4
251	571559.54	4970017.91	378.52	Rondo, Randy		38.5	40.9	3.7	39.3	40.3	42.0	4.8	40.8
252	571685.34	4970321.19	371.98	Cook, Robin L.		38.3	40.8	3.6	39.1	40.1	41.9	4.7	40.6
253	573008.37	4969940.58	379.52	Healey, Herbert J.	Participant	36	39.7	2.5	36.8	37.9	40.6	3.4	38.4
255	572716.63	4970600.33	373.63	Covey, Donald	Participant	37.1	40.2	3.0	37.9	39	41.2	4.0	39.5
257	571097.35	4971266.59	363.72	Labare, Larry L.	Participant	39	41.2	4.0	39.8	40.8	42.4	5.2	41.3
258	571952.28	4971554.47	355.99	Bracy, Robert	Participant	36.6	39.9	2.7	37.4	38.5	40.9	3.7	39
262	569815.14	4971900.56	322.52	Oconnor, Patrick	Participant	36.5	39.9	2.7	37.3	38.4	40.9	3.7	38.9
264	569894.19	4971602.33	333.13	Silver, Joseph		36.1	39.7	2.5	36.9	38	40.6	3.4	38.5
266	570014.33	4971497.37	336.06	Silver Ernest & Barbar		36.5	39.9	2.7	37.3	38.3	40.8	3.6	38.8
268	569628.56	4971153.07	338.79	Jock, Ricky	Participant	33.3	38.7	1.5	34.1	35.3	39.4	2.2	35.8
270	566399.74	4972625.56	272.74	Southworth, Robert		19.3	37.3	0.1	20.1	23.5	37.4	0.2	24
271	567831.12	4973214.19	271.41	Wood, Hamilton	Participant	26.4	37.5	0.3	27.2	28.9	37.8	0.6	29.4
277	569367.5	4973198.5	305.9	Bracy, Kelly M.		33.1	38.6	1.4	33.9	35	39.2	2.0	35.5
279	569501.17	4973177.5	309.86	McElwain, Kenneth Jr		32.5	38.5	1.3	33.3	34.6	39.1	1.9	35.1
280	569705.97	4972922.5	315.52	Chase Michael,		33.4	38.7	1.5	34.2	35.4	39.4	2.2	35.9
281	569686.85	4972987.45	314.67	Reynolds, Scott M.		33.1	38.6	1.4	33.9	35.1	39.3	2.1	35.6
282	569717.58	4973063.4	314.75	Plattsburgh Wholesale		32.6	38.5	1.3	33.4	34.6	39.1	1.9	35.1
284	569959.46	4972577.33	318.86	Patnode Maxim,		35.1	39.3	2.1	35.9	37	40.1	2.9	37.5
285	569874.86	4972419.94	318.81	Barcomb Kathleen,		35.3	39.4	2.2	36.1	37.2	40.2	3.0	37.7
286	569746.96	4972489.57	317.52	Dora Donald,		35.1	39.3	2.1	35.9	37.1	40.2	3.0	37.6
287	569810.72	4970676.54	352.03	Jock, Ricky	Participant	34.6	39.1	1.9	35.4	36.6	39.9	2.7	37.1
289	569920.62	4969693.64	364.19	Ingraham, Anita		36.2	39.7	2.5	37	38	40.6	3.4	38.5
290	569952.05	4969222.32	377.28	Bilow, Vincent A.		35.4	39.4	2.2	36.2	37.3	40.3	3.1	37.8
292	570067.41	4968436.87	386.58	Gilbride, Crystal		37.5	40.4	3.2	38.3	39.3	41.4	4.2	39.8
293	569998.95	4968407.93	386.48	Sweet, Richard		37.4	40.3	3.1	38.2	39.3	41.4	4.2	39.8
295	570130.24	4968366.84	388.06	Sweet, Dean		37.6	40.4	3.2	38.4	39.5	41.5	4.3	40
296	569957.27	4968085.01	390.62	Legacy, Jerry R.	Participant	39.1	41.3	4.1	39.9	41	42.5	5.3	41.5
298	569201.47	4967459.91	375.09	Myers, James R.	Participant	34.9	39.2	2.0	35.7	36.8	40.0	2.8	37.3
299	569155.15	4967450.18	375.48	Myers, James R.	Participant	34.9	39.2	2.0	35.7	36.8	40.0	2.8	37.3
301	569063.97	4967331.96	380.88	Roulston, John		36	39.7	2.5	36.8	37.9	40.6	3.4	38.4
302	567945.75	4972694.2	291.16	Mcgillicuddy, Joseph M	Participant	28.4	37.7	0.5	29.2	30.8	38.1	0.9	31.3
303	567960.28	4972508	295.08	Labarge, Alfred	Participant	28.5	37.7	0.5	29.3	30.9	38.1	0.9	31.4
304	568180.09	4971340.25	318.25	Selkirk, Dale		27.8	37.7	0.5	28.6	30.2	38.0	0.8	30.7
305	568098.04	4971171.35	321.05	Franklin County Treasu		26.7	37.6	0.4	27.5	28.9	37.8	0.6	29.4
307	567422.91	4969768.72	331.22	Soucia, Brian		24.2	37.4	0.2	25	26.9	37.6	0.4	27.4
308	567297.71	4969746.22	329.35	Blair, Robert E.		22.9	37.4	0.2	23.7	25.6	37.5	0.3	26.1
309	567291.12	4969786.97	328.49	Blair, Robert E.		23.6	37.4	0.2	24.4	26.6	37.6	0.4	27.1
310	567259.39	4969873.36	327.52	Blair, Leonard A.		23.7	37.4	0.2	24.5	26.8	37.6	0.4	27.3
311	567268.79	4969942.21	326.3	Blair, Robert E.		23.7	37.4	0.2	24.5	26.8	37.6	0.4	27.3
312	567267.29	4970017.72	324.12	Defayette, Sharon A.		23.7	37.4	0.2	24.5	26.7	37.6	0.4	27.2
317	566574.78	4969451.3	333.52	Cook, Alton		21.4	37.3	0.1	22.2	25.3	37.5	0.3	25.8
318	567437.11	4970995.36	314.01	Garwood, William		24.4	37.4	0.2	25.2	27.3	37.6	0.4	27.8
319	567412.27	4970937.88	312.68	Carey, Donald	Participant	24.3	37.4	0.2	25.1	27.2	37.6	0.4	27.7
320	567421.44	4971142.07	314.89	Thibault, Ronald R.		24.4	37.4	0.2	25.2	27.4	37.6	0.4	27.9
321	567432.15	4971095.23	315.52	Thibault, Romeo R.	Participant	24.4	37.4	0.2	25.2	27.4	37.6	0.4	27.9
322	567679.81	4971025.12	315.99	Bruce, Mary L.		25.1	37.5	0.3	25.9	27.7	37.7	0.5	28.2
323	568414.5	4970997.74	330.58	Cook, Alden	Participant	28.2	37.7	0.5	29	30.5	38.0	0.8	31
324	572076.56	4971447.1	356.87	Bracy Bruce,		37.4	40.3	3.1	38.2	39.3	41.4	4.2	39.8
325	571644.11	4972295.2	338.63	Bracy, Robert	Participant	34.3	39.0	1.8	35.1	36.2	39.7	2.5	36.7
326	571804.04	4972598.73	309.23	Rodrigue, Pierre		31	38.1	0.9	31.8	33	38.6	1.4	33.5
327	571818.07	4972671.16	315.52	Rodrigue, Luce		31.2	38.2	1.0	32	33.3	38.7	1.5	33.8
328	572239.23	4972850.03	316.01	Sibbert Jorge G,		28.6	37.8	0.6	29.4	30.7	38.1	0.9	31.2
329	572824.21	4972702.36	341.52	Rankin, Arthur		28.4	37.7	0.5	29.2	30.7	38.1	0.9	31.2
330	573190.62	4972161.34	358.52	Lavoie, Gary P.		30.2	38.0	0.8	31	32.3	38.4	1.2	32.8
331	573205.31	4971911.5	361.89	Perry, Bradley J.		31.7	38.3	1.1	32.5	33.7	38.8	1.6	34.2
332	573453.4	4971784.12	366.17	Otis, Harry		30.5	38.0	0.8	31.3	32.5	38.5	1.3	33
333	573252.09	4971792.09	361.52	Sampica, John W.		32.1	38.4	1.2	32.9	34.1	38.9	1.7	34.6
335	574397.77	4969491.51	379.52	Collins, Herbert		32.9	38.6	1.4	33.7	34.9	39.2	2.0	35.4
337	574634.32	4969289.04	382.28	Helm, William J.		33.5	38.7	1.5	34.3	35.5	39.4	2.2	36
338	575044.94	4969183.85	396.29	Curtin, Jonathan P.		30.6	38.1	0.9	31.4	32.7	38.5	1.3	33.2

APPENDIX B: JRWF ENVIRONMENTAL NOISE ASSESSMENT
SUMMARY OF ACOUSTIC MODEL OUTPUT

Date: 12.16.2007

339	575499.59	4968551.33	405.11	McDonald, Ronald R.		28.4	37.7	0.5	29.2	30.6	38.1	0.9	31.1
341	575655.45	4967278.56	389.66	Hoy, Malcolm G.		25.3	37.5	0.3	26.1	27.6	37.7	0.5	28.1
342	575540.73	4967297.25	394.13	Hoy, Malcolm		25.5	37.5	0.3	26.3	27.7	37.7	0.5	28.2
345	575146.23	4967220.77	421.87	Unidentified		28.5	37.7	0.5	29.3	30.6	38.1	0.9	31.1
347	573591.58	4966847.98	445.68	Wood, Debbie Bigness		35.6	39.5	2.3	36.4	37.4	40.3	3.1	37.9
348	572996.56	4966692.69	435.05	Gopal, Raja G.		35.8	39.6	2.4	36.6	37.7	40.5	3.3	38.2
350	572737.06	4966742.22	428.55	Titus, Donald F.	Participant	36.7	40.0	2.8	37.5	38.5	40.9	3.7	39
351	572164.31	4966692.85	425.65	Hiscock, Gordon C.		36.5	39.9	2.7	37.3	38.4	40.9	3.7	38.9
352	572120.25	4966690.82	425.91	Lavalley, Lena		36.5	39.9	2.7	37.3	38.4	40.9	3.7	38.9
353	571818.96	4966653.7	429.37	Titus, John F.		36.5	39.9	2.7	37.3	38.4	40.9	3.7	38.9
354	571898.65	4966597.77	429.78	King, Richie L.		35.8	39.6	2.4	36.6	37.7	40.5	3.3	38.2
355	571895.64	4966513.12	430.65	King, Adam R.		34.9	39.2	2.0	35.7	36.9	40.1	2.9	37.4
357	571544.16	4966542.06	428.52	Titus, Harley E.		35.6	39.5	2.3	36.4	37.5	40.4	3.2	38
360	571067.31	4966507.74	417.24	Hesseltine, Douglas		36.2	39.7	2.5	37	38.1	40.7	3.5	38.6
362	570801.06	4966591.88	402.74	King, William	Participant	36.5	39.9	2.7	37.3	38.3	40.8	3.6	38.8
363	570216.13	4966439.73	414.03	Titus, Dawn		34.2	39.0	1.8	35	36.2	39.7	2.5	36.7
364	569904.7	4966385.51	419.2	Nichols, Donald J.		35.1	39.3	2.1	35.9	37.1	40.2	3.0	37.6
365	569244.76	4966453.69	398.94	Soucia, Peggy J.		35.8	39.6	2.4	36.6	37.7	40.5	3.3	38.2
366	569200.06	4966383.94	402.6	Dibble, Alice L.		34.9	39.2	2.0	35.7	36.8	40.0	2.8	37.3
367	569131.04	4966311.9	405.03	Russell, Gerald		34	38.9	1.7	34.8	35.9	39.6	2.4	36.4
368	568934.97	4966284.19	404.58	Soucia, Stuart		33.5	38.7	1.5	34.3	35.4	39.4	2.2	35.9
369	568879.66	4966310.35	405.28	Soucia, Stuart		33.7	38.8	1.6	34.5	35.6	39.5	2.3	36.1
370	568730.75	4966183.39	410.76	Legacy, Jeffrey M.		31.5	38.2	1.0	32.3	33.5	38.7	1.5	34
373	570514.75	4968128.96	397.52	Legacy, Daniel J.		38.1	40.7	3.5	38.9	40	41.8	4.6	40.5
374	570611.04	4968144.16	398.52	Tam, Felix		38.6	41.0	3.8	39.4	40.5	42.2	5.0	41
375	571296.11	4968115.27	406.39	Helm, Anne E.		38.9	41.1	3.9	39.7	40.8	42.4	5.2	41.3
376	571355.45	4968122.45	407.53	Helm, David E.		38.9	41.1	3.9	39.7	40.8	42.4	5.2	41.3
377	572805.56	4968281.3	428.11	Bilow Rolland,		40.5	42.2	5.0	41.3	42.3	43.5	**6.3**	42.8
378	572954.7	4968252.04	428.52	Wilson, Kenneth		39.4	41.4	4.2	40.2	41.2	42.7	5.5	41.7
379	574547.33	4968507.18	423.02	Desotelle, Jane		37.5	40.4	3.2	38.3	39.3	41.4	4.2	39.8
380	574717.42	4968394.32	425.41	Piasecki, John A&Monic		34.6	39.1	1.9	35.4	36.4	39.8	2.6	36.9
382	571726	4969299.92	403.53	Demarse Robert E,		39.5	41.5	4.3	40.3	41.4	42.8	5.6	41.9
383	571712.07	4969276.97	403.77	Demarse Robert E,		39.5	41.5	4.3	40.3	41.4	42.8	5.6	41.9
386	573741.35	4969163.69	374.7	Osborne, John W.		36.8	40.0	2.8	37.6	38.6	41.0	3.8	39.1
387	568479.07	4969441.09	347.27	Selkirk, John		27.9	37.7	0.5	28.7	30.1	38.0	0.8	30.6
388	568874.03	4969368.14	357.52	Carey, Donald	Participant	29.4	37.9	0.7	30.2	31.5	38.2	1.0	32
389	569278.05	4969573.26	357.27	Fraser, Mark		30.8	38.1	0.9	31.6	32.9	38.6	1.4	33.4
390	569447.75	4969516.55	361.09	Lye, Okley		31.9	38.3	1.1	32.7	33.9	38.9	1.7	34.4
391	570195	4972857.56	321.45	Young, Kip		36.2	39.7	2.5	37	38.1	40.7	3.5	38.6
393	571196.48	4972531.76	331.04	Tracy, Richard		36.6	39.9	2.7	37.4	38.5	40.9	3.7	39
394	569915.38	4973447.76	312.48	Green, Kenneth J.	Participant	30.2	38.0	0.8	31	32.3	38.4	1.2	32.8
397	570447.92	4973960.42	295.6	Malone, Del		27.4	37.6	0.4	28.2	29.7	37.9	0.7	30.2
398	575694.6	4968404.06	412.46	Walley, Gleason E. Jr		27.3	37.6	0.4	28.1	29.7	37.9	0.7	30.2
400	566217.12	4972385.26	274.94	Dunn, Carl		18.8	37.3	0.1	19.6	23.8	37.4	0.2	24.3
403	566256.64	4972137.56	275.37	Prue, Sharon M.		17.8	37.2	0.0	18.6	22.5	37.3	0.1	23
404	566252.91	4972093.55	274.76	Mitchell, Clark		17.7	37.2	0.0	18.5	22.3	37.3	0.1	22.8
405	566309.09	4971657.5	284.84	Powers, Isabella		18.5	37.3	0.1	19.3	23	37.4	0.2	23.5
406	566312.66	4971563.54	288.43	Lawrence, Frank		18.1	37.3	0.1	18.9	22.6	37.3	0.1	23.1
407	566303.35	4971615.47	286.42	Jordan, Peter E.		18.3	37.3	0.1	19.1	22.9	37.4	0.2	23.4
409	566427.46	4970862.82	306.87	Flanagan, James		20.5	37.3	0.1	21.3	24.8	37.4	0.2	25.3
410	566436.25	4970083.86	318.52	Soulia, Richard		21	37.3	0.1	21.8	25	37.5	0.3	25.5
412	566460.06	4969790.08	322.16	Flynn, Michael		20.8	37.3	0.1	21.6	25.1	37.5	0.3	25.6
415	565158.41	4969874.24	309.08	Valley, Zara L.		13.2	37.2	0.0	14	21.6	37.3	0.1	22.1
417	565226.01	4969864.41	309.23	Valley, Zara L.		13.4	37.2	0.0	14.2	22.3	37.3	0.1	22.8
418	565169.73	4969798.31	306.52	Valley, Zara L.		12.7	37.2	0.0	13.5	20.6	37.3	0.1	21.1
419	565190.86	4969680.55	309.74	Downer, Alfred Jr		14	37.2	0.0	14.8	22.6	37.3	0.1	23.1
420	565214.88	4969463.04	312.85	Boyer, Michael		14	37.2	0.0	14.8	22.3	37.3	0.1	22.8
422	566398.98	4970928.84	305.19	Robinson Joyce,		19.1	37.3	0.1	19.9	22.9	37.4	0.2	23.4
423	566421.62	4971252.49	300.68	Barrett, Scott		19.6	37.3	0.1	20.4	23.4	37.4	0.2	23.9
424	566237.74	4972235.31	276.24	Carley, John		18.9	37.3	0.1	19.7	24	37.4	0.2	24.5
426	575546.06	4968618.62	409.56	LaPoint, Lawrence J.		28.1	37.7	0.5	28.9	30.4	38.0	0.8	30.9
428	575891.24	4968042.23	415.46	Unidentified		25.9	37.5	0.3	26.7	28.4	37.7	0.5	28.9
							# IMPACTS > 50 dBA	**0**			**# IMPACTS > 50 dBA**	**0**	
							# INCREASES > 6 dBA	**0**			**# INCREASES > 6 dBA**	**3**	
							# INCREASES > 3 to 6 dBA	**73**			**# INCREASES > 3 to 6 dBA**	**119**	
							# INCREASES > 0 to 3 dBA	**170**			**# INCREASES > 0 to 3 dBA**	**141**	

APPENDIX C

MODIFIED CNR CALCULATION SUMMARY OUTPUT

APPENDIX C: JRWF ENVIRONMENTAL NOISE ASSESSMENT
MODIFIED CNR CALCULATION SUMMARY OUTPUT FOR THE GE sle 1.5 MW WTG
Date: 01.28.2008

	UTM NAD 27 Z18N											
R Identifie	**Northing**	**Easting**	**EL (Grade + H)**	**Owner**	**Status**	**WTG SPL (dBA)**	**Initial CNR Ranking**	**Background Correction @ (6 ms)**	**Seasonal / Temporal Correction**	**Character Adjustment**	**Subjective Perception of Project**	**FINAL mCNR RATING**
	m	m	m									
216	571877.86	4967872.37	413.1	Titus, Richard	Non-Participant	42.5	c	-1	-1	+1	0	**B**
247	571632.01	4968843.64	416.88	Dunn, David H.	Non-Participant	42.1	c	-1	-1	+1	0	**B**
377	572805.56	4968281.3	428.11	Bilow Rolland,	Non-Participant	42.3	c	-1	-1	+1	0	**B**

APPENDIX D

NOISE MEASUREMENT EQUIPMENT CALIBRATION CERTIFICATION SHEETS

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2007-93616

Instrument Model 831, Serial Number 0001350, was calibrated on 24MAY2007. The instrument meets factory specifications per Procedure D0001.8310, ANSI S1.4-1983 (R 2006) Type 1; S1.4A-1985 ; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 0; S1.25-1991; IEC 61672-2002 Class 1; 60651-2001 Type 1; 60804-2000 Type 1; 61260-2001 Class 0; 61252-2002.

New Instrument
Date Calibrated: 24MAY2007
Calibration due: 24MAY2008

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2239	0099 / 0104	12 Months	26JAN2008	2007-89317

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 24 ° Centigrade

Relative Humidity: 26 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

Tested with PRM831-010875

Signed: Ron Harris
Technician: Ron Harris

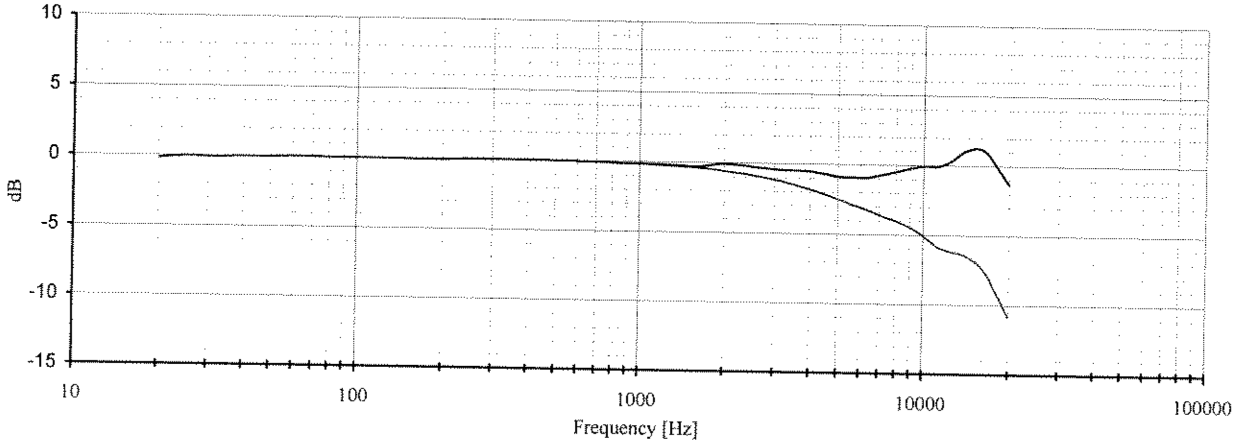
Provo Engineering and Manufacturing Center, 1681 West 820 North, Provo, Utah 84601
Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2000 Certified

THE MODAL SHOP INC.
3149 East Kemper Rd.
Cincinnati, OH 45241
Ph: 513-351-9919
Fax: 513-458-2172
www.modalshop.com

~Calibration Certificate~

Description: Free-Field Microphone
Manufacturer: PCB
Model Number: 377B02
Serial Number: 100935

Customer : Tetra Tech EC



Test Results:

Sensitivity:	**250 Hz**	**1kHz**	
	-26.09	-26.25	dB re. 1V/Pa
	49.60	48.70	mV/Pa
Cal. Results:	In Tolerance		

Frequency Response Characteristics : The upper curve is the free field characteristic for the microphone with protection grid. The lower curve is the pressure response recorded by electrostatic actuator.

Sensitivity : The stated sensitivity is the open-circuit sensitivity. When used with a typical preamplifier the sensitivity will be 0.2 dB lower.

Polarization Voltage : 0 V

Traceability : The calibration is traceable through NIST TN 822/274345-07.

Notes :
Calibration results relate only to the items calibrated.
This certificate may not be reproduced, except in full, without written permission.
This calibration is performed in compliance with ISO 9001, ISO 17025 and ANSI Z540.
Measurement uncertainty at 95% confidence level: 0.25 dB
Calibrated per procedure PRD-P204.

User Note : As Found / As Left: In Tolerance.

Cal Date:	24-Oct-2007	11:50:01	Temperature:	78 (26)	°F (°C)
Due Date:			Humidity:	36	%
Technician:	Ed Devlin		Pressure:	1016	mbar
Approval:					

Reference Equipment Used:

Manuf.	*Model*	*Serial*	*Cal. Date*	*Due Date*
G.R.A.S.	40AG	50893	8/3/2007	8/3/2008

THE MODAL SHOP INC
A PCB GROUP CO.

~Calibration Certificate~

3149 East Kemper Rd.
Cincinnati, OH 45241
Ph : 513-351-9919
Fax: 513-458-2172
www.modalshop.com

Description: **Larson Davis Acoustic Calibrator**

Model: **CAL200**

Serial Number: **5229**

Asset Number:

Customer: **Tetra Tech EC, Inc.**

The subject instrument was calibrated to the indicated specification using standards stated below or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the customer.

This calibration is traceable through **NIST TN 822/274345-07**

Calibration Results: **Measured SPL: 94.05 dB re. 20μPa**
Measured Frequency: 1000.28 Hz

Measurement uncertainty at 95% confidence level: 0.25 dB

The calibration was performed under operating procedures intended to implement the requirements of ISO 9001, ISO 17025 and ANSI Z540. This calibration was performed per procedure PRD-P204. Unless otherwise noted, the reported value is both "as found" and "as left" data. Calibration results relate only to the items calibrated. This certificate may not be reproduced, except in full, without written permission.

Upon receipt for calibration, the instrument was found to be:
☑ Within ☐ Outside the stated tolerance of the manufacturer's specification.

Note: As Found / As Left: In Tolerance.

Test Conditions:

Temperature: **77 (25) °F (°C)**
Humidity: **35%**
Pressure: **1015.0mbar**

Cal Date: **10-24-2007 12:23:13**
Due Date:
Technician: **Ed Devlin**
Approval:

Reference Equipment Used:

Manuf.	*Model*	*Serial*	*Cal. Date*	*Due Date*
G.R.A.S.	40AG	50893	7/10/2007	7/10/2008

THE MODAL SHOP INC.
A PCB GROUP CO.

~Calibration Certificate~

3149 East Kemper Rd.
Cincinnati, OH 45241
Ph : 513-351-9919
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Description: **Larson Davis Acoustic Calibrator**

Model: **CAL200**

Serial Number: **5229**

Asset Number:

Customer: **Tetra Tech EC, Inc.**

The subject instrument was calibrated to the indicated specification using standards stated below or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the customer.

This calibration is traceable through **NIST TN 822/274345-07**

Calibration Results: **Measured SPL: 114.05 dB re. 20μPa**
Measured Frequency: 1000.27 Hz

Measurement uncertainty at 95% confidence level: 0.25 dB

The calibration was performed under operating procedures intended to implement the requirements of ISO 9001, ISO 17025 and ANSI Z540. This calibration was performed per procedure PRD-P204. Unless otherwise noted, the reported value is both "as found" and "as left" data. Calibration results relate only to the items calibrated. This certificate may not be reproduced, except in full, without written permission.

Upon receipt for calibration, the instrument was found to be:
☑ Within ☐ Outside the stated tolerance of the manufacturer's specification.

Note: As Found / As Left: In Tolerance.

Test Conditions:
Temperature: **77 (25) °F (°C)**
Humidity: **35%**
Pressure: **1015.0mbar**

Cal Date: **10-24-2007 12:20:21**
Due Date:
Technician: **Ed Devlin**
Approval:

Reference Equipment Used:

Manuf.	*Model*	*Serial*	*Cal. Date*	*Due Date*
G.R.A.S.	40AG	50893	7/10/2007	7/10/2008

If a systematic drift of several dB occurs, there is no reliable way to verify which instrument is at fault, although it is more likely to be the instrument. We recommend that the CAL200 be checked against another calibrator at this time.

2. For one calibrator and several measurement instruments, one certification a year is recommended. But if no systematic drift occurs, every two years might be satisfactory.

   If the CAL200 is being used to calibrate several instruments, then the history of calibration adjustments can usually pinpoint which instrument is drifting. If all the measurements are drifting the same direction by an amount you consider significant, then the CAL200 should be recertified.

3. For several calibrators and several instruments, one certification per year is recommended.

   If several instruments and several calibrators are in use, then the history of calibration adjustments would precisely pinpoint any problem pieces of equipment. Furthermore, it is probably satisfactory to recalibrate only one of the calibrators each year.

Specifications

Calibration Sound Pressure Level	94.0 and 114.0 dB re: 20 μPa (± 0.2 dB) @ 1013 millibars, 23° C, and 50% relative humidity
Equivalent free-field level	-.015dB for 1/2" free-field microphones
Frequency	1 kHz ±1%
Harmonic Distortion	<2%
Stability	±0.1dB after 2 seconds
Barometric Pressure Range	650 to 1080 mbar SPL will be within < ±0.3 dB.
Temperature Range	SPL variation < ±0.3 dB (typically ±0.005 dB/° C) Frequency variation < ±2% over the range -10 to 50° C
Humidity Range	SPL variation < ±0.3 dB over the range 10 to 90% relative humidity Frequency variation < ±2% over the range 10 to 90% relative humidity
Storage Temperature	-40 to 60.0° C
Storage Humidity	0 to 99% relative humidity (non-condensing)
Effective Volume of Calibrator & Microphone	3.48 cm^3 (0.21 in^3)
Battery	9 V NEDA 1604A or IEC 6LR61 With sufficient battery voltage, calibrator will run (after releasing ON button) for 1 to 1.5 minutes before automatic shutdown. With insufficient battery voltage, calibrator will not remain ON after release of button.
Traceability	Utilize the Larson Davis 1/2" Model 2559 or 2560 precision condenser microphone in conjunction with other traceable measuring instruments to establish traceability of the output level and frequency of the Model CAL200.
Standards met	ANSI S1.40-1984 - Specifications for Acoustic Calibrators IEC 60942-1997 Class 1 - Sound Calibrators
CE	CE-mark indicates compliance with : EMC Directive
EMC Emission	EN 50081-1: Generic emission standard. Part 1: Residential, commercial and light industry.
EMC Immunity	EN 50082-2: Generic immunity standard. Part 2: Industrial environment.

Specifications subject to change without notification.

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2007-93510

Instrument Model CAL200, Serial Number 5731, was calibrated on 22MAY2007. The instrument meets factory specifications per Procedure D0001.8190.

New Instrument
Date Calibrated: 22MAY2007
Calibration due: 22JUL2008

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Hewlett Packard	34401A	US36033460	12 Months	02JUN2007	290347
Hewlett Packard	34401A	3146A10352	12 Months	23JUN2007	291010
Larson Davis	MTS1000/2201	0111	12 Months	11SEP2007	2006-0911-2
Larson Davis	PRM915	0112	12 Months	18SEP2007	2006-84212
Larson Davis	PRM902	0480	12 Months	18SEP2007	2006-84211
Larson Davis	2559	2504	12 Months	11OCT2007	14485-1
Schaevitz	P3061-15PSIA	17590	12 Months	16NOV2007	294809
Larson Davis	2900	0661	12 Months	04APR2008	2007-91426

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Environmental test conditions as shown on calibration report.

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

Signed:
Technician: Scott Montgomery

Provo Engineering and Manufacturing Center, 1681 West 820 North, Provo, Utah 84601
Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2000 Certified

Larson Davis
A PCB Group Co.

Larson Davis CAL200 Acoustic Calibrator, SN: 5731
Certificate of Measured Output

Acoustic Calibrator

Nominal Level (dB SPL):	114	94
Measured Level (dB SPL):	**114.00**	**94.00**
Expanded Uncertainty (dB):	0.099	0.107
Nominal Frequency (Hz):	1000	1000
Measured Frequency (Hz):	**1000.1**	**1000.1**
Expanded Uncertainty (Hz):	0.2	0.2

The data is aquired by the insert voltage calibration method using a reference microphone's open circuit sensitivity.

Environmental Conditions

Temperature (°C):	25	25
Relative Humidity (%):	24	24
Pressure (kPa):	101.1	101.1

Reference Microphone

Model: Larson Davis 2559
Serial Number: 2504
Sensitivity: 11.443 mV/Pascal
Uncertainty: 0.060 dB

Influence of Static Pressure

Nominal Level (dB SPL): 114

Nominal Pressure (kPa)	Pressure (kPa)	Sensitivity (dB)
108.0	107.9	-0.01
101.3	101.2	0.00
92.0	91.9	0.01
83.0	83.0	-0.01
74.0	73.9	-0.06
65.0	65.1	-0.15
Expanded Uncertainty:	1.2	0.04

Reference microphone corrections applied.

Environmental Conditions

Temperature (°C):	25
Relative Humidity (%):	23

Reference Microphone

Model: Larson Davis 2559
Serial Number: 2504

Static pressure was measured with a calibrated Motorola pressure sensor MPX2100AP.
Expanded uncertainty of environmental measurements: 2 °C, 3 %RH, 1.2 kPa
Uncertainty values are given at 95% confidence level (k = 2).

A Sound Level Meter can be calibrated to a level (L) defined as: L = measured level + pressure sensitivity or if a Sound Level Meter is calibrated using the nominal level, the adjustments to data (X) are defined as: X = measured level - nominal level - pressure sensitivity

Scott Montgomery

05 / 22 / 2007

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2007-99623

Instrument Model 831, Serial Number 0001496, was calibrated on 05NOV2007. The instrument meets factory specifications per Procedure D0001.8310, ANSI S1.4-1983 (R 2006) Type 1; S1.4A-1985 ; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 0; S1.25-1991; IEC 61672-2002 Class 1; 60651-2001 Type 1; 60804-2000 Type 1; 61260-2001 Class 0; 61252-2002.

New Instrument
Date Calibrated: 05NOV2007

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2239	0099 / 0104	12 Months	26JAN2008	2007-89317

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 23 ° Centigrade

Relative Humidity: 27 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

Tested with PRM831-010912

Signed: Ron Harris
Technician: Ron Harris

Provo Engineering and Manufacturing Center, 1681 West 820 North, Provo, Utah 84601
Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2000 Certified

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2007-93617

Instrument Model 831, Serial Number 0001351, was calibrated on 24MAY2007. The instrument meets factory specifications per Procedure D0001.8310, ANSI S1.4-1983 (R 2006) Type 1; S1.4A-1985 ; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 0; S1.25-1991; IEC 61672-2002 Class 1; 60651-2001 Type 1; 60804-2000 Type 1; 61260-2001 Class 0; 61252-2002.

New Instrument
Date Calibrated: 24MAY2007
Calibration due: 24MAY2008

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2239	0099 / 0104	12 Months	26JAN2008	2007-89317

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 24 ° Centigrade

Relative Humidity: 26 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

Tested with PRM831-010876

Signed:
Technician: Ron Harris

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2007-99625

Instrument Model 831, Serial Number 0001497, was calibrated on 05NOV2007. The instrument meets factory specifications per Procedure D0001.8310, ANSI S1.4-1983 (R 2006) Type 1; S1.4A-1985 ; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 0; S1.25-1991; IEC 61672-2002 Class 1; 60651-2001 Type 1; 60804-2000 Type 1; 61260-2001 Class 0; 61252-2002.

New Instrument
Date Calibrated: 05NOV2007

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2239	0099 / 0104	12 Months	26JAN2008	2007-89317

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 23 ° Centigrade

Relative Humidity: 27 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

Tested with PRM831-010913

Signed: Ron Harris
Technician: Ron Harris

Provo Engineering and Manufacturing Center, 1681 West 820 North, Provo, Utah 84601
Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2000 Certified

~ Calibration Report ~

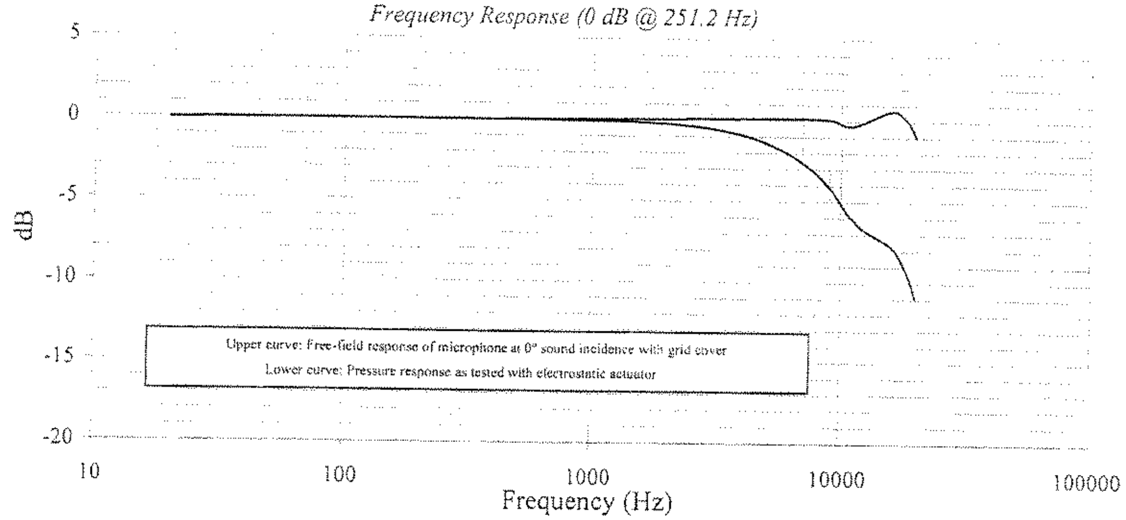
Microphone Model: 377B02 Serial Number: 106757 Description: 1/2" Free-Field Microphone

Calibration Data

Open Circuit Sensitivity @ 251.2 Hz: 53.77 mV/Pa
-25.39 dB re 1V/Pa

Polarization Voltage, External: 0 V
Capacitance: 11.7 pF

Temperature: 74 °F (23°C) Ambient Pressure: 994 mbar Relative Humidity: 32 %


Frequency Response (0 dB @ 251.2 Hz)

Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)
20.0	-0.03	-0.03	1584.9	-0.14	0.07	6683.4	-2.36	0.16	-	-	-
25.1	-0.01	-0.01	1678.8	-0.15	0.08	7079.5	-2.62	0.16	-	-	-
31.6	0.01	0.01	1778.3	-0.17	0.08	7498.9	-2.92	0.15	-	-	-
39.8	0.01	0.01	1883.7	-0.20	0.08	7943.3	-3.24	0.15	-	-	-
50.1	0.01	0.01	1995.3	-0.21	0.10	8414.0	-3.60	0.13	-	-	-
63.1	0.01	0.01	2113.5	-0.24	0.10	8912.5	-4.03	0.08	-	-	-
79.4	0.01	0.01	2238.7	-0.27	0.10	9440.6	-4.50	0.02	-	-	-
100.0	0.01	0.01	2371.4	-0.31	0.10	10000.0	-5.11	-0.16	-	-	-
125.9	0.01	0.01	2511.9	-0.34	0.12	10592.5	-5.69	-0.29	-	-	-
158.5	0.01	0.01	2660.7	-0.39	0.12	11220.2	-6.13	-0.27	-	-	-
199.5	0.00	0.00	2818.4	-0.43	0.13	11885.0	-6.48	-0.16	-	-	-
251.2	0.00	0.00	2985.4	-0.49	0.13	12589.3	-6.77	0.00	-	-	-
316.2	0.00	0.01	3162.3	-0.55	0.13	13335.2	-7.00	0.19	-	-	-
398.1	-0.01	-0.01	3349.7	-0.62	0.12	14125.4	-7.22	0.37	-	-	-
501.2	-0.01	0.03	3548.1	-0.69	0.13	14962.4	-7.44	0.53	-	-	-
631.0	-0.02	0.02	3758.4	-0.78	0.12	15848.9	-7.72	0.63	-	-	-
794.3	-0.04	0.05	3981.1	-0.87	0.13	16788.0	-8.14	0.58	-	-	-
1000.0	-0.06	0.06	4217.0	-0.98	0.13	17782.8	-8.85	0.26	-	-	-
1059.3	-0.07	0.06	4466.8	-1.10	0.13	18836.5	-9.69	-0.18	-	-	-
1122.0	-0.07	0.07	4731.5	-1.23	0.14	19952.6	-10.90	-0.97	-	-	-
1188.5	-0.08	0.07	5011.9	-1.38	0.15	-	-	-	-	-	-
1258.9	-0.09	0.07	5308.8	-1.54	0.16	-	-	-	-	-	-
1333.5	-0.10	0.08	5623.4	-1.72	0.16	-	-	-	-	-	-
1412.5	-0.11	0.08	5956.6	-1.92	0.15	-	-	-	-	-	-
1496.2	-0.12	0.08	6309.6	-2.13	0.16	-	-	-	-	-	-

Technician: Joe Ziewicki JZ Date: October 1, 2007

ACCREDITED
Cert. No. 1862.01

PCB PIEZOTRONICS™
VIBRATION DIVISION
3425 Walden Avenue, Depew, New York, 14043
TEL: 888-684-0013 FAX: 716-685-3886 www.pcb.com

~ *Certificate of Calibration and Compliance* ~

Microphone Model: 377B02 Serial Number: 106757 Manufacturer: PCB

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Reference Equipment

Manufacturer	Model #	Serial #	PCB Control #	Cal Date	Due Date
Hewlett Packard	34401A	MY41045214	LD-001	3/21/07	3/21/08
Bruel & Kjaer	4192	2493416	LD-029	2/20/07	2/20/08
Fisher Scientific	02-400	51253176	LD-014	11/30/06	11/30/07
Larson Davis	PRM915	123	CA-866	not required	not required
Larson Davis	PRM902	2699	TA-468	not required	not required
Larson Davis	PRM902	3773	CA-887	not required	not required
Larson Davis	PRM902	3766	CA-885	not required	not required
Larson Davis	2559LF	3216	CA-883	not required	not required
Larson Davis	ADP005	1	LD-017	not required	not required
Larson Davis	PRM916	104	LD-015	not required	not required
Larson Davis	CAL250	4147	LD-018	not required	not required
Larson Davis	2201	115	TA-472	not required	not required
Larson Davis	2900	1079	CA-521	not required	not required
Larson Davis	PRA951-4	222	LD-026	not required	not required

Frequency sweep performed with B&K UA0033 electrostatic actuator.

Condition of Unit

As Found: N/A

As Left: New unit in tolerance

Notes

1. Calibration of reference microphone is traceable through PTB.
2. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
3. Calibration is performed in compliance with ISO 9001, ISO 10012-1, ANSI/NCSL Z540-1-1994 and ISO 17025.
4. See Manufacturer's Specification Sheet for a detailed listing of performance specifications.
5. Open circuit sensitivity is measured using the insertion voltage method following procedure AT603-5.
6. Measurement uncertainty (95% confidence level with coverage factor of 2) for sensitivity is +/-0.20 dB.
7. Unit calibrated per ACS-20.

Technician: Joe Ziewicki

Date: October 1, 2007

ACCREDITED
Cert. No. 1862.01

PCB PIEZOTRONICS
VIBRATION DIVISION
3425 Walden Avenue, Depew, New York, 14043
TEL: 888-684-0013 FAX: 716-685-3886 www.pcb.com

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2007-97662

Microphone Model 377B02, Serial Number 105954, was calibrated on 12SEP2007. The microphone meets current factory specifications per Test Procedure D0001.8167.

New Instrument
Date Calibrated: 12SEP2007

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	PRM902	0206	12 Months	13NOV2007	2006-85999
Larson Davis	PRM916	0102	12 Months	13NOV2007	2006-86001
Hewlett Packard	34401A	3146A62099	12 Months	13NOV2007	294807
Larson Davis	2559	2506	12 Months	30JAN2008	14714-1
Larson Davis	2900	0575	12 Months	25JUN2008	2007-94768
Larson Davis	CAL250	42630	12 Months	30JUL2008	2007-96065
Larson Davis	PRM915	0102	12 Months	27AUG2008	2007-97054
Larson Davis	MTS1000 / 2201	1000 / 0100	12 Months	11SEP2008	2007-SM907

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

Signed: Abraham Ortega
Technician: Abraham Ortega

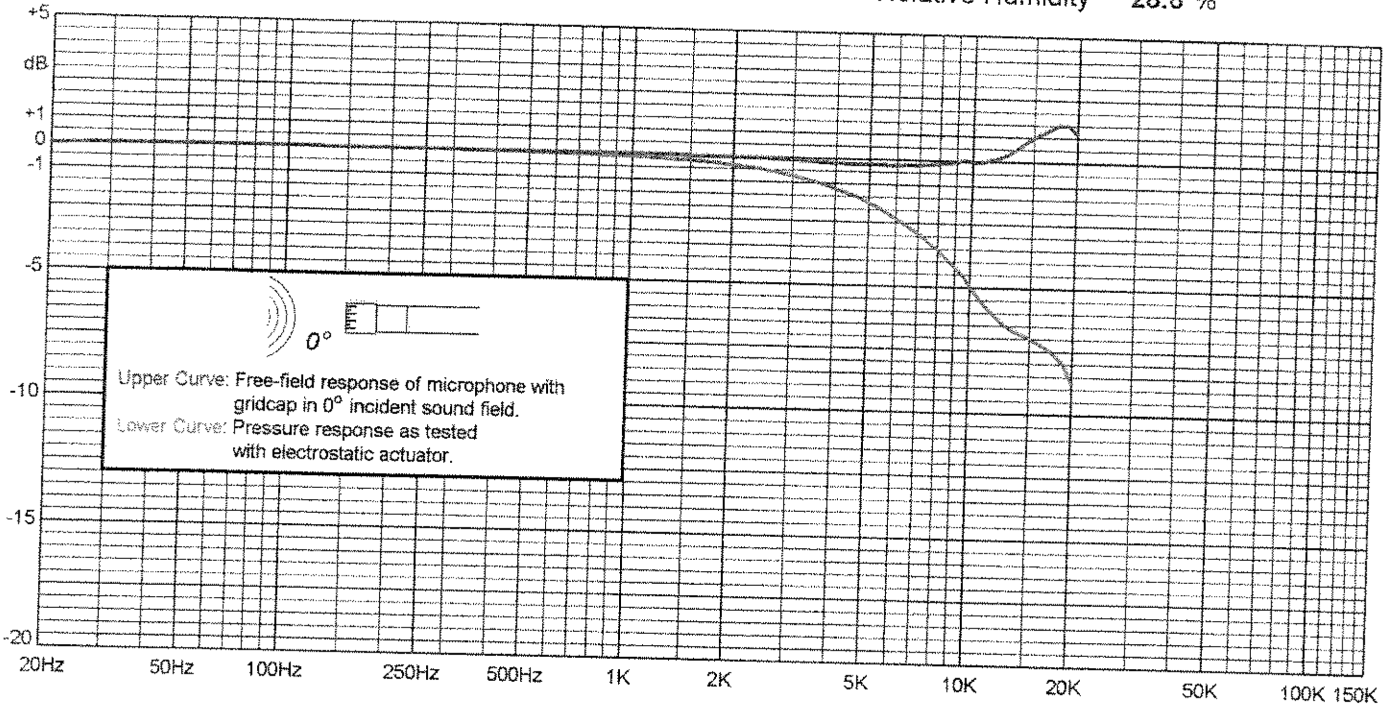
Provo Engineering and Manufacturing Center, 1681 West 820 North, Provo, Utah 84601
Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2000 Certified

Larson Davis

PCB 1/2" Microphone Calibration Chart
Model: 377B02 Serial Number: 105954

Open Circuit Sensitivity @ 1014.0 mbar & 251.2 Hz
-26.79 dB re 1V/Pascal
45.74 mV/Pascal
+0.77 K_0(-dB re 50 mV/Pascal)
Expanded Uncertainty @ ~95% confidence level
0.13 dB

Capacitance @ 251.2 Hz
12.4 pF
Lower Limiting Frequency
-3 dB @ **1.98** Hz
Test Conditions:
Polarization Voltage **0** V
Ambient Pressure **1014.0** mbar
Temperature **24.3** °C
Relative Humidity **28.6** %



Frequency Response (0 dB @ 251.2 Hz)
Free-field and actuator response with reference to level at 251.2 Hz

Freq (Hz)	Upper	Lower
19.95	-0.04	-0.04
25.12	-0.01	-0.01
31.62	0.01	0.01
39.81	0.02	0.02
50.12	0.02	0.02
63.10	0.02	0.02
79.43	0.02	0.02
100.00	0.02	0.02
125.89	0.01	0.01
158.49	0.01	0.01
199.53	0.00	0.00
251.19	0.00	0.00
316.23	0.00	-0.01
398.11	-0.02	-0.02
501.19	0.01	-0.03
630.96	0.00	-0.04
794.33	0.02	-0.07
1000.00	0.02	-0.10
1059.25	0.02	-0.11
1122.02	0.02	-0.12
1188.50	0.02	-0.13
1258.93	0.01	-0.15
1333.52	0.02	-0.16
1412.54	0.01	-0.18
1496.24	0.00	-0.20
1584.89	-0.01	-0.22
1678.80	-0.02	-0.25
1778.28	-0.02	-0.27
1883.65	-0.02	-0.30
1995.26	-0.03	-0.34
2113.49	-0.04	-0.38
2238.72	-0.04	-0.41
2371.37	-0.05	-0.46
2511.89	-0.05	-0.51
2660.73	-0.06	-0.57
2818.38	-0.08	-0.64
2985.38	-0.09	-0.71
3162.28	-0.11	-0.79
3349.65	-0.13	-0.87
3548.13	-0.14	-0.96
3758.37	-0.16	-1.06
3981.07	-0.18	-1.18
4216.97	-0.19	-1.30
4466.84	-0.21	-1.44
4731.51	-0.21	-1.58
5011.87	-0.21	-1.74
5308.84	-0.21	-1.91
5623.41	-0.22	-2.10
5956.62	-0.23	-2.30
6309.57	-0.22	-2.51
6683.44	-0.21	-2.73
7079.46	-0.19	-2.97
7498.94	-0.16	-3.23
7943.28	-0.12	-3.51
8413.95	-0.09	-3.82
8912.51	-0.04	-4.15
9440.61	0.02	-4.50
10000.00	-0.03	-4.98
10592.54	-0.04	-5.44
11220.19	0.05	-5.81
11885.02	0.14	-6.18
12589.25	0.29	-6.48
13335.21	0.60	-6.69
14125.38	0.75	-6.84
14962.36	0.98	-6.99
15848.93	1.17	-7.18
16788.04	1.34	-7.38
17782.80	1.50	-7.61
18836.49	1.48	-8.03
19952.62	1.17	-8.76

Abraham Ortega
12SEP2007
Larson-Davis Model 9700 ES Microphone Calibration System

~ Calibration Report ~

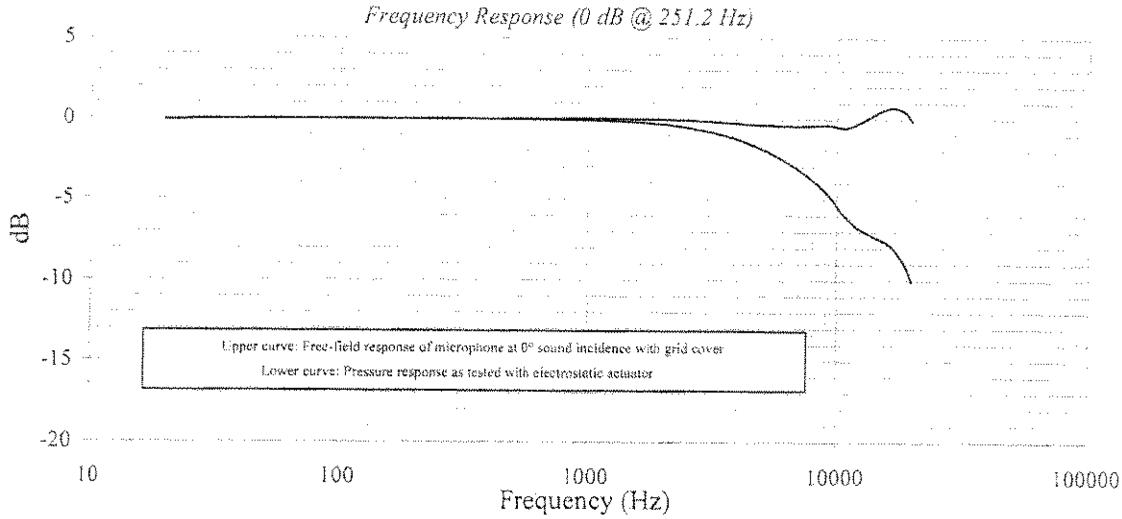
Microphone Model: 377B02 Serial Number: 106774 Description: 1/2" Free-Field Microphone

Calibration Data

Open Circuit Sensitivity @ 251.2 Hz: 48.94 mV/Pa
-26.21 dB re 1V/Pa

Polarization Voltage, External: 0 V
Capacitance: 12.1 pF

Temperature: 72 °F (22°C) Ambient Pressure: 993 mbar Relative Humidity: 32 %



Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)
20.0	-0.08	-0.08	1584.9	-0.20	0.01	6683.4	-2.93	-0.41	-	-	-
25.1	-0.05	-0.05	1678.8	-0.23	0.00	7079.5	-3.19	-0.41	-	-	-
31.6	-0.03	-0.03	1778.3	-0.26	-0.01	7498.9	-3.47	-0.40	-	-	-
39.8	-0.02	-0.02	1883.7	-0.29	-0.01	7943.3	-3.78	-0.39	-	-	-
50.1	-0.02	-0.02	1995.3	-0.32	-0.01	8414.0	-4.10	-0.37	-	-	-
63.1	-0.01	-0.01	2113.5	-0.36	-0.02	8912.5	-4.47	-0.36	-	-	-
79.4	-0.01	-0.01	2238.7	-0.42	-0.05	9440.6	-4.89	-0.37	-	-	-
100.0	-0.01	-0.01	2371.4	-0.46	-0.05	10000.0	-5.40	-0.45	-	-	-
125.9	0.00	0.00	2511.9	-0.52	-0.06	10592.5	-5.93	-0.53	-	-	-
158.5	0.00	0.00	2660.7	-0.59	-0.08	11220.2	-6.32	-0.46	-	-	-
199.5	0.00	0.00	2818.4	-0.66	-0.10	11885.0	-6.63	-0.31	-	-	-
251.2	0.00	0.00	2985.4	-0.73	-0.11	12589.3	-6.89	-0.12	-	-	-
316.2	0.00	0.01	3162.3	-0.82	-0.14	13335.2	-7.09	0.10	-	-	-
398.1	-0.01	-0.01	3349.7	-0.91	-0.17	14125.4	-7.28	0.31	-	-	-
501.2	-0.02	0.02	3548.1	-1.01	-0.19	14962.4	-7.45	0.52	-	-	-
631.0	-0.03	0.01	3758.4	-1.12	-0.22	15848.9	-7.67	0.68	-	-	-
794.3	-0.05	0.04	3981.1	-1.25	-0.25	16788.0	-7.97	0.75	-	-	-
1000.0	-0.08	0.04	4217.0	-1.39	-0.28	17782.8	-8.47	0.64	-	-	-
1059.3	-0.09	0.04	4466.8	-1.54	-0.31	18836.5	-9.07	0.44	-	-	-
1122.0	-0.10	0.04	4731.5	-1.70	-0.33	19952.6	-10.04	-0.11	-	-	-
1188.5	-0.11	0.04	5011.9	-1.87	-0.34	-	-	-	-	-	-
1258.9	-0.13	0.03	5308.8	-2.05	-0.35	-	-	-	-	-	-
1333.5	-0.14	0.04	5623.4	-2.25	-0.37	-	-	-	-	-	-
1412.5	-0.16	0.03	5956.6	-2.47	-0.40	-	-	-	-	-	-
1496.2	-0.18	0.02	6309.6	-2.69	-0.40	-	-	-	-	-	-

Technician: Joe Ziewicki Date: October 2, 2007

ACCREDITED
Cert. No. 1862.01

PCB PIEZOTRONICS™
VIBRATION DIVISION

3425 Walden Avenue, Depew, New York, 14043
TEL: 888-684-0013 FAX: 716-685-3886 www.pcb.com

~ Certificate of Calibration and Compliance ~

Microphone Model: 377B02 Serial Number: 106774 Manufacturer: PCB

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Reference Equipment

Manufacturer	Model #	Serial #	PCB Control #	Cal Date	Due Date
Hewlett Packard	34401A	MY41045214	LD-001	3/21/07	3/21/08
Bruel & Kjaer	4192	2493416	LD-029	2/20/07	2/20/08
Fisher Scientific	02-400	51253176	LD-014	11/30/06	11/30/07
Larson Davis	PRM915	123	CA-866	not required	not required
Larson Davis	PRM902	2699	TA-468	not required	not required
Larson Davis	PRM902	3773	CA-887	not required	not required
Larson Davis	PRM902	3766	CA-885	not required	not required
Larson Davis	2559LF	3216	CA-883	not required	not required
Larson Davis	ADP005	1	LD-017	not required	not required
Larson Davis	PRM916	104	LD-015	not required	not required
Larson Davis	CAL250	4147	LD-018	not required	not required
Larson Davis	2201	115	TA-472	not required	not required
Larson Davis	2900	1079	CA-521	not required	not required
Larson Davis	PRA951-4	222	LD-026	not required	not required

Frequency sweep performed with B&K UA0033 electrostatic actuator.

Condition of Unit

As Found: N/A

As Left: New unit in tolerance

Notes

1. Calibration of reference microphone is traceable through PTB.
2. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
3. Calibration is performed in compliance with ISO 9001, ISO 10012-1, ANSI/NCSL Z540-1-1994 and ISO 17025.
4. See Manufacturer's Specification Sheet for a detailed listing of performance specifications.
5. Open circuit sensitivity is measured using the insertion voltage method following procedure AT603-5.
6. Measurement uncertainty (95% confidence level with coverage factor of 2) for sensitivity is +/-0.20 dB.
7. Unit calibrated per ACS-20.

Technician: Joe Ziewicki

Date: October 2, 2007

ACCREDITED

Cert No 1862.01

PCB PIEZOTRONICS
VIBRATION DIVISION
3425 Walden Avenue, Depew, New York, 14043
TEL: 888-684-0013 FAX: 716-685-3886 www.pcb.com

ID 3274181063 945

Appendix J
Transportation Study

TRANSPORTATION STUDY

FOR

Jericho Rise Wind Farm

Franklin County, New York

Applicant:
Jericho Rise Wind Farm, LLC
3 Columbia Place
Albany, New York 12207

Prepared For:
Tetra Tech EC, Inc.
133 Federal Street
6th Floor
Boston, Massachusetts 02110
TtEC #061573

Published: October 2007

Prepared By:

FISHERASSOCIATES
135 Calkins Road, Rochester, NY 14623
Phone: 585-334-1310
www.fisherassoc.com

FA No.: 065016

TABLE OF CONTENTS

Appendix A

References

1) Turbine Layout Drawings and GIS Data prepared by Tetra Tech EC, Inc., Rev00a dated June 2007.
2) "Preliminary Transportation Assessment Report" for the Marble River Wind Project by ESS Group, Inc., dated November 9, 2005.
3) New York State Department of Transportation (NYSDOT) Highway Design Manual: Chapter 5 – Basic Design, Revision 50 (2006).
4) NYSDOT Highway Design Manual: Exhibit 5-30 – Deceleration Distances for Passenger Cars Approaching Intersections.
5) NYSDOT 2006 Traffic Data Report.
6) Franklin County Highway Department Local Highway Traffic Volume Report (accessed 2006).
7) NYSDOT Safety Information Management System (SIMS) Accident Data from January 1, 1999 to December 31, 2003.
8) "VIRTIS" Bridge Load Rating Software, Version 5.5.0. Copyright 1997-2006 AASHTO.

I. Introduction

Fisher Associates, P.E., L.S., P.C. (FA) has been contracted by Tetra Tech EC, Inc. to complete a Traffic and Transportation Study for the proposed Jericho Rise Wind Farm. The project is located in the area between the Villages of Burke and Chateaugay, and the Hamlet of Brainardsville in the Towns of Burke, Chateaugay, and Bellmont in Franklin County, New York as shown on the location map included in Exhibit 1. This report reviewed the existing local traffic and safety patterns and roadway conditions within the project area and summarized the ESS report along the proposed hauling route from Interstate 87 to the project site. The review revealed areas where modifications to the roadway system will be required to accommodate construction activities.

A. Marble River Report

ESS Group, Inc. prepared a Preliminary Transportation Assessment Report for the Marble River Wind Farm project which is located approximately 10 miles east of the Jericho Rise Wind Farm in neighboring Clinton County. This report examined both off-site and on-site route planning, including identifying potential roadway deficiencies and possible mitigation measures. A map showing the route planning and project area for the Marble River project is contained in Exhibit 3. The off-site route planning is of particular relevance as the main delivery route will be the same for the two projects.

Two Over-Size/Over-Weight (OS/OW) off-site truck routes were identified and evaluated to determine the safest and most feasible route to the project area. “Route No. 1” began at the intersection of Route 9N (Exit 34 off I-87) and State Route 22 and proceeded to take SR 22 to Military Turnpike to SR 190 west to the Franklin/Clinton County Line. “Route No. 2” began at Exit 42 off I-87 and proceeded to take US Route 11 to the County Line. Both routes were evaluated using the following planning parameters:

a) Traffic Safety (i.e. accident data);
b) Traffic Capacity (i.e. traffic volume as a function of roadway capacity); and
c) Structural Capacity (e.g. roadway width, roadway condition, drainage structures, bridges, intersection geometry and roadway alignment).

The following is a summary of ESS Group’s findings as reported in their Preliminary Transportation Assessment Report for the Marble River Wind Project.

1. Route No. 1

a) Traffic Safety, Route No. 1, as reported by ESS Group

		ACCIDENTS**			
Section	**Length**	**Intersection**	**Non-Intersection**	**Fatal**	**Injury**
SR 22 - Military Turnpike	7.2 mi.	27	29	1	31
Military Turnpike - SR 190 W	7.0 mi.	16	17	3	13
SR 190 W - County Line Rd	31.4 mi.	82	309	6	105
TOTAL	45.6 mi.	125	355*	10	149

* includes 63 collisions with an animal
** 35 months period (July 1999 to May 31, 2002)

b) Traffic Capacity, Route No. 1, as reported by ESS Group

Route No.	# Lanes	Paved Shoulder Width (ft.)	Pavement Width (ft.)	AADT Range (estimated)
SR 22	2	6 - 7	22 -23	2340 - 7590
Military Tpke.	2	0 - 1	22 -23	Not available
SR 190	2	4 - 8	22 -24	980 - 7590

* AADT = Average Annual Daily Trips
** Highway Sufficiency Ratings data through 2003

c) Structural Capacity, Route No. 1, as reported by ESS Group

- In general the roadway width was found to be at least 26 feet, reaching 40 feet wide in populated urban areas.
- As of 10/10/05 the condition of the pavement was determined to be very good and the pavement markings were determined to be clear and well-defined.
- Inventory of drainage culvert size, culvert type, depth of cover and general condition of culverts was recommended to be performed by an experienced Route Surveyor.
- Low overhead electric wire and vertical clearance problem locations were recommended to be identified, possibly by a Route Surveyor.
- No railroad crossings encountered by ESS Group personnel.
- No bridge underpasses encountered by ESS Group personnel.
- Partial list of bridges and culverts encountered included in report (16 total).
- Physical characteristics such as allowable weight loads, bridge type and condition were recommended to be performed by NYSDOT Structures Division during the actual Special Hauling Permit application process.
- The following locations were noted in the Marble River report as appearing to have problematic roadway geometry:
  - Left turn from SR 9N to SR 22 North
  - Sharp bend to right on SR 22B
  - Left turn from SR 22 North to Military Turnpike

- Left turn from SR 190 West to SR 190 West (just before US 11, Ellenburg Corners)
- Right turn from SR 190 West to SR 190 West (leaving Ellenburg Corners)

2. Route No. 2

The Marble River Preliminary Transportation Assessment Report makes the assumption for Route No. 2 that OS/OW transports with height restricted loads will have to get off I-87 at Exit 34 because there are low bridges on I-87 between Exits 34 and 42.

a) Traffic Safety, Route No. 2, as reported by ESS Group

		Accidents**			
Section	**Length**	**Intersection**	**Non-Intersection**	**Fatal**	**Injury**
TOTAL	30.5 mi.	52	213*	4	72

* includes 29 collisions with an animal
** 35 months period (July 1999 to May 31, 2002)

b) Traffic Capacity, Route No. 2, as reported by ESS Group

Route No.	# Lanes	Paved Shoulder Width (ft.)	Pavement Width (ft.)	AADT Range (estimated)
US 11	2	8 - 12	22 -24	2950 - 7810

* AADT = Average Annual Daily Trips
** Highway Sufficiency Ratings data through 2003

c) Structural Capacity, Route No. 2, as reported by ESS Group

- In general the roadway width was found to be at least 40 feet, narrowing to 32 feet wide after the first 10 miles.
- As of 10/10/05 the condition of the pavement was determined to be very good and the pavement markings were determined to be clear and well-defined.
- Inventory of drainage culvert size, culvert type, depth of cover and general condition of culverts was recommended to be performed by an experienced Route Surveyor.
- Low overhead electric wire and vertical clearance problem locations were recommended to be identified, possibly by a Route Surveyor.
- No railroad crossings encountered by ESS Group personnel.
- No bridge underpasses encountered by ESS Group personnel.
- Partial list of bridges and culverts encountered included in report (12 total).
- Physical characteristics such as allowable weight loads, bridge type and condition were recommended to be performed by NYSDOT Structures Division during the actual Special Hauling Permit application process.
- The following locations were noted in the Marble River report as appearing to have problematic roadway geometry:
    - Left turn from end of I-87 NB off-ramp to US 11 South
    - Right turn on US 11 in Mooers Center

Based on the above parameters, the Marble River report's discussion of mitigation measures was contained in the following table:

OBSERVED ROADWAY DEFICIENCY	POTENTIAL MITIGATION MEASURE
Insufficient Roadway Width	Widen roadway for OS/OW transport trucks
Poor Roadway Condition	Roadway reconstruction and/or regrading
Insufficient Cover Over Structure	Add cover or steel plates over structure
Poor Structure Condition	Replace structure
Inadequate Bridge Capacity	Use bridge plates or jumpers
	Find alternative route
Low Overhead Wires	Coordinate raising wires with utility company
Insufficient Roadway Geometry	Construct large radius intersection geometry
	Find alternative route

Both routes were found to be adequate based upon traffic safety, traffic capacity and structural capacity. The report concluded however that US Route 11 is the preferred delivery route given that it:

- is shorter and more direct.
- avoids Plattsburgh which has heavier traffic volume and more accidents.
- has fewer intersections along its route where the potential for accidents resulting in injury is higher.
- is wider and has more capacity to handle the large number of OS/OW loads.
- has only three signalized intersections and two of those are at the very beginning of the route at the I-87 off ramps (Route No. 1 has seven signalized intersections).
- has only two problem intersections where the roadway geometry appears to be insufficient for large-radius turns (Route No. 1 has five problem intersections).
- encounters fewer bridge and culvert crossings than Route No. 2.

The local area road network (on-site) was also examined for the Marble River Wind Farm project. Drainage structures were inventoried and roadway width and condition were recorded. Report appendices included sample truck turning diagrams, generic intersection improvement figures, local road photos and NYSDOT sample permits.

B. Jericho-Rise Project Delivery Route

Interstate 87 to US Route 11 is projected to be the primary delivery route to the Jericho Rise Wind Farm project area. Interstate 87 was not included in the scope of this study as the hauling company delivering the turbine components will be required to analyze any highways to be used in order to obtain a Special Hauling Permit prior to component delivery. A Special Hauling Permit is required for vehicles and/or loads that exceed the legal maximum dimensions or weights specified in Section 385 of the New York State Vehicle and Traffic Law. Those dimensions and weights include a maximum width of 8 feet 6 inches, maximum height of 13 feet 6 inches, maximum length of single trailer of 53 feet, and maximum weight of one axle of 22,400 pounds.

As recommended by the Marble River Transportation Study, the turn-by-turn delivery route from I-87 to the Clinton-Franklin County Line and into the project area will be as follows:

- I-87 North off-ramp to end of ramp, 0.1 miles to Exit 42
- Turn left on US 11 South to Mooers Center, 6.5 miles then
- Right on US 11 South to Ellenburg Corners (JCT SR 190 West), 14.3 miles then
- Straight on US 11 South to CR 23, 13.7 miles. END ROUTE.

The local on-site roads that will complete the delivery routes include the following:

- Cassidy Road
- Sancomb Road
- State Route 374
- County Route 23
- County Route 33
- Jerdon Road
- Toohill Road
- Hartnett Road
- Mary Carey Road
- Legacy Road
- Ponderosa Road
- County Route 24
- Mahoney-Jericho Road
- Titus Road
- Healey Road
- Chase Road

The portion of NYS Route 190 not included in the Marble River Study (from the County line to Brainardsville) was included in this study as an alternate delivery route from US Route 11 in Ellenburg Corners to the southern portion of the project. The delivery route is presented in Exhibit 1. Project area roads are presented in Exhibit 2.

C. Construction Vehicles

Construction traffic will consist of standard construction equipment and specialized hauling trucks to deliver the turbine components. Standard construction traffic consists of gravel/dump trucks, concrete trucks, excavation equipment, conventional semi-trailers, transport/tool vehicles and employee vehicles. These standard construction vehicles should not require physical modifications to the roadways to accommodate their presence.

Delivery of the wind turbine components will utilize Over-Size/Over-Weight (OS/OW) trucks to bring the components from the manufacturer to the project area.

The OS/OW trucks are special hauling vehicles with unique lengths, widths, heights, and weights depending on the component being transported. These trucks require particular clearances due to their size and turning radii. The actual vehicles used to deliver the turbines varies dependent on the transportation contractor. For the basis of this study a minimum inside radius of 150 feet has been used to model intersection modification scenarios. The anticipated truck configurations and turning radii are included in Exhibit 4. The following is a summary of wind turbine components with corresponding truck configurations:

Wind Turbine Part	Approx. Component Weight (lbs.)	Comp. Length (ft)	Comp. Height / Dia. (ft)	Comp. Width (ft)	Truck Description	Overall Length (ft)	Overall Height (ft.)	Overall Width (ft.)	Est. Gross Vehicle Wt. (lbs.)
Rotor Blade	14,800	139.4	10.4	7.2	5-Axle Double Drop Stretch	160*	14	11'-6"	45,000
Two Blade cage	33,100	141.4	9.7	12.8	5-Axle Double Drop Stretch	160*	14	13'-0"	45,000
Base Tower	#	#	#	#	6-Axle Stretch	108	16*	13'-6"	150,000
Lower Mid Tower	135,300	56.7	13.3 dia.	--	6-Axle Stretch	113	16*	13'-6"	165,000
Mid Tower	105,150	56.8	13.2 dia.	--	6-Axle Stretch	113	16*	13'-6"	135,000
Upper Mid Tower	87,000	64.7	13.2 dia.	--	6-Axle Stretch	113	16*	13'-6"	120,000
Top Tower	62,600	76.1	13.2 dia.	--	6-Axle Stretch	113	16*	13'-6"	95,000
Nacelle	165,400	30.8	13.3	13.1	11-Axle Low Profile	160*	16*	13'-6"	200,000*
Hub Assembly	33,250	9.6	10.3	9.6	8-Axle Stretch	102	15	14'-0"	75,000
Rotor Nose cone	2,500	12.8	7.6	14.8	#	#	#	#	#

All truck configurations are assumed based on previous projects and the base tower data has not been provided. The truck configurations to be finalized after components and hauling company have been selected.

* SUPERLOAD (PERM12S) permits required by NYSDOT for any vehicle or combination of vehicles which exceed 16 feet in width; or 16 feet in height or greater; or greater than 160 feet in length; or 200,000 lbs. or greater in gross weight; or a combination of any of the above.

This report determines potential impacts to the existing traffic capacity/patterns, safety concerns and existing roadway features due to the anticipated construction/delivery traffic. For each impact, proposed mitigation methods are identified to address specific deficiencies due to the additional traffic created during construction and due to the requirements of the OS/OW vehicles.

II. Traffic

This section summarizes the existing conditions and potential impacts to the traffic capacity and safety along the delivery routes. Refer to Exhibits 1 and 2 for roadway locations.

A. Traffic Flow and Capacity

A review of the State routes in the project area indicates that all appear to be operating below vehicle capacity. Detailed capacity analysis was not completed for this study, however, field observation of the transportation network did not reveal any locations where traffic flow and/or capacity appeared to create undue delay for the traveling public.

The following table presents the existing traffic data along the state and county roadways within the project area:

Roadway Name	Lanes	Travel Lane Widths	Shoulder Widths	Posted Speed Limit	AADT
US Route 11	2	12’	10’ (asphalt)	55 MPH	3020 – 8850
NYS Route 374	2	12’	6’ (asphalt)	55 MPH	590 – 1480
NYS Route 190	2	12’	9’ (asphalt)	55 MPH	850 – 2440
CR 23	2	10.5’	1’ (gravel)	55 MPH	1200 – 1250
CR 24	2	12’	6’ (asphalt)	55 MPH	1950 – 2000
CR 33	2	10’	2’ (gravel/asphalt)	55 MPH	100-150

* AADT = Average Annual Daily Trips.

* Traffic volumes for Federal and State routes obtained from the NYSDOT Traffic Volume Report dated 8/16/2006.

* Franklin County traffic counts were obtained from the Franklin County Highway Department. Latest counts as follows: CR 23 – 1998; CR 24 – 2002; CR 33 – 2000.

1. During Construction

There will be approximately 10 OS/OW trucks required for each turbine. Approximately 53 turbines are proposed for this project which will create a total 530 OS/OW vehicle trips along with multiple standard construction equipment trips which could include the following:

- Gravel trucks with capacity of approximately 10 cubic yards (cy) per truck and an estimated gross weight of 75,000 pounds (lbs), for access road construction (given the estimate of each access road being 1500 feet long and 32 feet wide with gravel 15 inches deep; total of approximately 11,000 to 12,000 trips).
- Concrete trucks for construction of turbine foundations and transformer pads with capacity of approximately 10 cy per truck (total of approximately 40 trips per foundation depending on final design).

- Variety of conventional semi-trailers for delivery of reinforcing steel (two per turbine foundation) and small substation components and interconnection facility material (approximately 30 to 50 trucks).
- Pickup trucks for equipment and tools.
- Trucks and cars for transporting construction workers.

While OS/OW vehicles are traveling along project area and delivery route roadways, the existing traffic may experience minor delays as escort vehicles, flag persons, and/or temporary traffic signals slow or stop traffic to allow the safe passage of the OS/OW vehicles.

As the existing traffic volumes do not appear to exceed capacities, the roadways should not be significantly impacted by standard construction traffic or during OS/OW load transport. The area that will receive the greatest impact due to the OS/OW vehicles is the Interstate 87 / US Route 11 interchange as all OS/OW vehicles will travel through this intersection.

2. Post Construction

The project will employ approximately 10 to 25 individuals, all of whom may drive separately to the Operation and Maintenance (O&M) building. Some of these personnel will need to visit each turbine location and return to the O&M building. Each turbine typically requires routine maintenance visits once every 3 months, but certain turbines or other project improvements may require periods of more frequent service visits should a problem arise. Such service visits typically involve 1 to 2 pick-up trucks.

Project personnel (or utility company personnel) may also need to service the project substation. Such servicing would likely be carried out on a similar quarterly basis (unless a problem arose) and would involve a similar number of maintenance vehicles.

Based on the preceding information, employee/maintenance traffic is not anticipated to have a significant impact on the local traffic patterns.

In addition to maintenance activity, the operation of a wind power project typically increases tourist traffic, which can negatively impact roadways within the project area. The impacts, if any, are unknown as of the publishing date of this report.

3. School Bus Routes

The Chateaugay Central School District services the residences within the project area. The morning pickup times are from 6:45 am to 8:00 am and afternoon drop-offs occur between 2:20 pm and 4:20 pm. Due to the distance from the school buildings and lack of sidewalks, most students are picked-up/dropped-off at their place of residence. The number of stops and busses within the project area is limited due to the low density of houses within and adjacent to the project area. With the school buildings located on NYS Route 374, just north of US Route 11, there are children who walk to school from within the Village of Chateaugay. There are approximately 60 children that cross US Route 11 in the morning and afternoon each school day with no crossing guards present. The US Route 11 and NYS Route 374 intersection is a signal controlled intersection with pedestrian controls.

However, the majority of the project activities and deliveries will likely occur during the summer months and through the middle of the day, therefore, the impacts to the local school bus routes should be minimal.

B. Safety

Five-year accident summaries were obtained from the New York State Department of Transportation (NYSDOT) Safety Information Management System (SIMS) database in order to identify historical accident patterns or clusters. The latest five-year history on file was January 1, 1999 to December 31, 2003. In this time period, 59 accidents were reported along project area roadways with 16.9 percent (11 accidents) of the accidents containing an injury. The safety history review did not indicate any definable accident clusters or patterns within the main project area that warrant avoidance or safety mitigations.

The following table presents the number of accidents within the study area along each roadway:

Roadway Name	5-Year Injury Accidents	5-Year Non-Injury Accidents	5-Year Total Accidents	Accidents Per Year
US Rt. 11 (Ketcham-County Line)	21	97	118	24
NYS Route 374 (US Rt. 11 – CR 24)	10	35	45	9
NYS Route 190 (CR 24 – County Line)	3	14	17	3
Cassidy Road	0	1	1	<1
Sancomb Road	0	1	1	<1
CR 23 (Malone-Chateaugay Rd)	2	3	5	1
Jerdon Road	0	1	1	<1
Pulpmill Rd	0	0	0	0
Cook Rd	0	0	0	0
Toohill Rd	0	1	1	<1
Hartnett Rd	1	2	3	<1
Taylor Rd	0	0	0	0
Mary Carey Rd	0	0	0	0
Legacy Rd	0	0	0	0
Ponderosa Road	0	0	0	0
CR 24 (Brainardsville Rd)	3	32	35	7
Chase Hollow Rd	0	0	0	0

(closed)				
Chase Rd	0	0	0	0
Healey Rd	0	1	1	<1
Cemetery Rd	0	2	2	<2
Mahoney-Jericho Rd	1	0	1	<1
Titus Rd	0	3	3	<1
CR 33 (Willis Rd)	3	2	5	1
Selkirk Rd	0	1	1	<1

Accident rates were calculated along the Federal and State highways within the study area and compared to the state averages. The following presents the average accident rates for those state roadways:

Roadway Section	5-Year Total Accidents	Average Traffic Volume* (Vehicles per day)	Segment Length (miles)**	Average Accident Rate (accidents per million vehicle miles)
US Rt. 11 (Ketcham-County Line)	118	5,000	6.3	2.1
NYS Route 190 (CR 24 – County Line)	17	1,240	1.8	4.2
US Rt. 11 (County Line – I-87)	410	4,000	30.8	1.8
NYS Route 374 (Commons Road to No. 5 Road)	20	1,500	2.9	2.5
NYS Route 190 (County Line – US Rt. 11)	73	1,240	8.5	3.8
CR 24 (Pinnacle Road to NYS Rt 374)	35	2,000	4.85	2.0

* Weighted by individual segment lengths
**Includes 0.05 miles on either end of the segment for comparison to NYSDOT Statewide Averages

All segments, except for NYS Route 190, are below the statewide average rate of 2.81 for Rural Functional Class, Undivided, 2-Lane highways including mainline and juncture accidents.

The above SIMS data includes accidents that occurred early in the morning, late at night, in the rain, snow and ice with poor visibility. However, the NYSDOT Special Hauling permit specifically prohibits operating in these conditions. The one exception is a waiver for peak-hour restriction which may allow OS/OW transports between 7-9AM and 4-6PM which NYSDOT considers as "curfew hours". The NYSDOT Special Hauling/Superload permits require several full-time vehicle escorts, several police escorts, speed limit restrictions and hours of operation limited to daytime-only, preferably in the summer. In addition, standard construction traffic will also occur during the daytime of the normal construction season. Thus, this data represents the worse case scenario for these roadways.

In conjunction with the safety analysis, sight distances were measured for each proposed project area intersection. This data is presented in the table below:

Intersection	Leg	Sight Distance (ft)	Limited
CR 33 / Legacy	North	1,000 +	
	East	443	
	West	1,000 +	
CR 33 / Mary Carey	North	1,000 +	
	South	755	
	East	558	
	West	1,000 +	
CR 33 / Toohill / Hartnett	North	377	Yes*
	South	1,000 +	
	East	443	
	West	1,000 +	
CR 33 / Jerdon	North	1,000 +	
	South	1,000 +	
	East	1,000 +	
CR 33 / CR 23	South	1,000 +	
	East	984	
	West	902	
US 11 / CR 23	South	1,000 +	
	East	1,000 +	
	West	1,000 +	
Hartnett / Mahoney-Jericho	South	722	
	East	887	
	West	1,000 +	
Hartnett / Healey	North	902	
	South	887	
	West	984	
Healey / Ponderosa	North	902	
	South	282	Yes*
	West	590	
CR 24 / Titus	North	820	
	East	1,000 +	
	West	1,000 +	
Titus / Ponderosa / Legacy	North	984	
	South	1,000 +	
	East	1,000 +	
	West	1,000 +	
Mahoney-Jericho / Mary Carey	North	1,000 +	
	South	1,000 +	
	West	1,000 +	
US 11 / Cassidy	South	361	Yes*
	East	820	
	West	1,000 +	
Cassidy / Sancomb	North	771	
	South	1,000 +	

	East	656	
	West	853	
Sancomb / NYS 374	North	984	
	South	1,000 +	
	East	935	
	West	1,000 +	

* Based upon NYSDOT Highway Design Manual, Exhibit 5-30 – Deceleration Distances for Passenger Cars Approaching Intersections (Braking at a Comfortable Rate).

In the New York State Department of Transportation (NYSDOT) Highway Design Manual, Exhibit 5-30 is a graph of initial vehicle speed versus deceleration distance. A copy of this graph is contained in Exhibit 5. For the purposes of this report, the roadway posted design speed was plotted to the "full stop" line. This gives the distance a vehicle would require to come to a complete stop (braking at a comfortable rate) after the intersection first appears in the driver's line of sight. A posted speed limit of 90 km/h (approximately 55 mph) results in a stopping distance of 130 meters (approximately 430 feet). This figure was used to determine those intersections with limited sight distance that will require mitigation.

The intersections of CR 33 and Toohill Road, Healey and Ponderosa Roads, and US 11 and Cassidy Road are junctions known to have limited sight distance at the designated speed of 55 miles per hour. At these locations slow moving construction equipment could increase the potential for accidents.

C. Projected Traffic Impacts & Proposed Mitigation

Traffic Flow and Capacity

Impact – During construction activities local traffic may experience minor delays due to slow moving vehicles and increased construction related traffic.

Mitigation – No areas appear to warrant immediate installation of measures to mitigate the minor delays that will be experienced by local traffic. The applicant should, in conjunction with the NYSDOT and local highway departments, establish a traffic/transportation notification protocol to respond to any locations that experience significant traffic flow or capacity issues. The following is a protocol that could be used for the project:

- Prior to construction, the applicant will identify one or more construction managers as the primary traffic contact(s) for traffic/transportation concerns that may arise during the construction of the project.
- The Town, County, and State Highway departments will be notified of the primary traffic contact(s).
- All construction personnel will be instructed to watch for traffic/transportation concerns and to contact the primary traffic contact immediately following a traffic/transportation issue.

- The primary traffic contact will call the appropriate Town, County, or State Highway Department immediately following identification of a congestion problem.
- The applicant will consult with all town and county highway departments prior to construction to identify potential traffic congestion areas and to develop potential detours.
- If construction-related congestion occurs, the primary traffic contact will call the appropriate Town, County, or State Highway Department immediately and discuss the implementation of pre-determined detour routes.

Electronic Vehicle Message Systems (VMS) may assist in notifying drivers of the construction activities. All road improvements will be designed and submitted for approval to the appropriate highway authorities.

Safety

Impact – Sight distance appears to be limited in at least three locations where slow moving construction vehicles could increase the potential for accidents.

Mitigation – The Special Hauling/Superload Permits obtained for OS/OW vehicles specifically prohibits operating early in the morning, late at night, and in poor weather conditions. The one exception is a waiver for peak-hour restriction which may allow OS/OW transports between 7-9AM and 4-6PM which NYSDOT considers as "curfew hours". The NYSDOT Special Hauling/Superload permits require several full-time vehicle escorts, several police escorts, speed limit restrictions and hours of operation limited to daytime-only, preferably in the summer. The conditions of the Special Hauling/Superload Permits provide mitigation for the sight distance concerns for OS/OW vehicles.

Construction signage will be placed at any areas of limited sight distance as an additional measure to warn drivers of general construction traffic. Solar powered flashers and advisory signage could also be placed at these locations to further warn drivers of potential conflicts.

III. Transportation Systems

The physical characteristics assessment completed as a part of the study included a review of the roadway widths, drainage structures, bridges, intersection geometry, overhead clearances, and roadway alignments. Each bridge or drainage structure found in the field was inventoried for approximate location, type, size, approximate depth of cover over the structure, and roadway width at the structure. The structure and road data is included in the Drainage Structure Inventory Table in Exhibit 6. Several locations appeared to have existing features that may not accommodate the construction traffic anticipated for the proposed project. In the Structure Inventory Table these locations are indicated as blue cells under the "Concern" column and were marked as such for one or more of the following reasons:

- Roadway width less than 20 feet
- Less than 2 feet of cover
- Structure in poor condition
- Unknown conditions
- Bridge location (discussed in a later section)

A. Existing Roadway Conditions

1. Surface Type

The Drainage Structure Inventory Table, Exhibit 6, and the Roadway Type & Width map in Exhibit 7 present the roadway type at each drainage structure. As depicted, the majority of the roadways within the project area are paved with asphalt with the remaining roads having a gravel surface. The federal, state, and County Route 24 roadways appear to be in good condition with clear pavement markings and signage. The remaining county and local town roads are in fair condition with little to no pavement markings. All roadway surface conditions appear to be adequate to accommodate construction activities.

2. Roadway Width

The Roadway Type & Width map, Exhibit 7, presents the width of the roadways, excluding shoulders, at each drainage structure. The majority of the roadways in the project area have widths between 21 feet and 24 feet. The State Routes are all 24 feet wide with at least 4 feet wide asphalt shoulders. The county and town roads vary with either asphalt or gravel shoulders varying in width from 0 feet to 2 feet. The majority of the existing roadway widths will accommodate construction activities.

3. Intersections

As shown in the diagrams in Exhibit 8, all intersections being used by the OS/OW trucks will need improvements to accommodate the OS/OW vehicles. Exhibit 10 depicts the anticipated OS/OW travel routes identifying the intersections that will need to be improved.

The following table includes a list of intersections that will need improvements to accommodate the OS/OW vehicles. Also included is a preliminary assessment of the modification scenario that appears to best fit the intersections and attempts to minimize impacts, using the typical intersections contained in Exhibit 9. Exhibit 8 examines each intersection traveled and illustrates the application of these scenarios per the proposed traffic routes as of the date of this report. Note that the intersections will need to be re-evaluated during final engineering once topographic mapping and final truck configurations are available to determine the optimal solution for each intersection.

Intersections to be used by OS/OW Trucks		Modification Scenario
Approaching Road	Receiving Road	
US Rt. 11 (wb)	Cassidy Rd (sb)	9
Cassidy Rd (sb)	Sancomb Rd (wb)	8
Sancomb Rd (wb)	SR 374 (sb)	12
US Rt. 11 (wb)	CR 23 (wb)	2
CR 23 (wb)	CR 33 (sb)	10
CR 33 (sb)	Jerdon Rd (eb)	7
CR 33 (sb)	Hartnett Rd (eb) Toohill Rd (wb)	8, 5
CR 33 (sb)	Mary Carey Rd (eb)	8
CR 33 (sb)	Legacy Rd (eb) CR 33 (wb)	9, 5
Hartnett Rd (eb)	Mahoney-Jericho Rd (sb)	3
Hartnett Rd (eb)	Healey Rd (sb)	3
Legacy Rd (eb)	Titus Rd (sb)	10
Ponderosa Rd (eb)	Chase Rd (sb)	8
Titus (sb)	CR 24 (eb & wb)	12

(nb) – northbound (sb) – southbound
(wb) – westbound (eb) – eastbound

The Interstate 87 northbound exit ramp onto US Route 11 and the corresponding on ramp and the US Route 11 90-degree turn in Mooers Center will also need improvements per the Marble River transportation assessment report.

4. Weight

The project area roads are not posted with weight limits. There are also no reported structures along these roadways that have posted weight limits.

5. Vertical Curvature

There are existing vertical curves along project area roadways that OS/OW trucks may not be able to traverse without modifications. Exhibit 10 identifies the locations along roads that may require modifications to accommodate the low clearance trailers. These locations should be avoided if possible or evaluated during final design of the roadway improvements, once detailed topographic information and final truck configurations are available. A number of the modifications will not be needed based on the current project layout and proposed travel routes.

6. Height

Based on the OS/OW truck configurations, any locations along the travel routes with a vertical clearance less than 16 feet will need to be adjusted to allow movement. The Overhead Wire map, Exhibit 11, presents the location of overhead utilities along the project area roadways as measured in the field. As depicted by the highlighted areas, several roadways have a significant number of overhead utility crossings that may present difficulties for crane and construction equipment movement. The following table includes a preliminary count of overhead adjustments needed, where overhead clearances are less than 16 feet along the proposed travel routes.

Roadway Name	Mainline Electric	Mainline Cable/Telephone	Services Electric	Services Cable/Telephone	Total Height Adjustments
US Route 11	0	0	0	9	9
CR 23 (Malone-Chateaugay Rd)	0	0	2	11	13
Jerdon Road	0	0	0	0	0
Pulpmill Rd	0	0	0	0	0
Cook Rd	0	0	1	0	1
Toohill Rd	0	0	0	0	0
Hartnett Rd	0	0	0	0	0
Taylor Rd	0	0	0	0	0
Mary Carey Rd	0	0	0	0	0
Legacy Rd	1	0	1	0	2
Ponderosa Road	0	0	0	0	0
CR 24 (Brainardsville Rd)	0	0	0	5	5
SR 190	0	0	1	1	2
Chase Rd	0	0	0	0	0
Healey Rd	0	0	0	1	1
Cemetery Rd	0	0	0	0	0
Mahoney-	0	0	0	1	1

Jericho Rd					
Titus Rd	0	0	1	0	1
CR 33 (Willis Rd)	0	0	1	2	3
Selkirk Rd	0	0	1	0	1
Cassidy Rd	0	0	0	0	0
Sancomb Rd	0	0	0	2	2

The applicant will need to coordinate and obtain permits from the utility companies in order to adjust the utility lines crossing the roadways. The signal heads located at the US Route 11 and NYS Route 374 intersection in the Village of Chateaugay may also need to be raised.

A cursory review of the delivery route section from Interstate 87 to the Clinton/Franklin County line revealed multiple utility lines and additional signal heads that will also need to be raised. The actual heights and proposed modifications will be included in the route survey required for the Special Hauling/Superload permits from the NYSDOT. These measurements and verifications will be performed at a later date by the company contracted to deliver WTG components.

B. Existing Drainage Structures

Drainage structures with a span length of greater than twenty feet are considered bridges and referenced as such in this summary. Information regarding bridge structure type and history was obtained from the 2006 NYSDOT bridge inspection reports inventory for the BINs indicated. Information regarding culverts was obtained through field inspection and evaluation.

1. Bridges

There are eight bridge structures that were reviewed for this study:

- BIN 1008970 – Rte. 11 over the Chateaugay River
- BIN 3337780 – CR 24 over the Little Trout River
- BIN 3337790 – CR 24 over the Chateaugay River
- BIN 3337800 – CR 33 (Willis Road) over the Little Trout River
- BIN 3337900 – CR 36 (Flynn Road) over the Little Trout River
- BIN 1008980 – Rte. 11 over Boardman Brook
- BIN 3337650 – Pulp Mill Road over the Chateaugay River
- BIN 3337610 – Chase Hollow Road over the Chateaugay River

The locations of these bridges can be found in Exhibit 12, while photographs of each are contained in Appendix D. The bridges will all carry loads over water. Each of these bridges was reviewed using NYSDOT procedures for geometric conditions and load rating to determine if each could accommodate the OS/OW vehicles. Most of the bridges are safe for legal loads, do not have posted weight restrictions, and also have sufficient horizontal and vertical clearances to accommodate the OS/OW trucks.

Five bridges, BIN 1008970 (Rte. 11 over the Chateaugay River), BIN 3337780 (CR 24 over the Little Trout River), BIN 3337790 (CR 24 over the Chateaugay River), BIN 3337800 (CR 33 (Willis Road) over the Little Trout River), and BIN 3337900 (CR 36 (Flynn Road) over the Little Trout River) were ratable without the need for further investigation with non-destructive and destructive testing of the structure. The sixth bridge, BIN 1008980 (Rte. 11 over Boardman Brook), consisted of a reinforced concrete arch of unknown construction and was not ratable. The seventh bridge, BIN 3337650 (Pulp Mill Road over the Chateaugay River), is a steel through truss bridge with a vertical clearance limitation of 14.8 ft and was not evaluated. The last bridge, BIN 3337610 (Chase Hollow road over the Chateaugay River) is a steel pony truss bridge currently closed to traffic and was not evaluated.

Since the hauling company has not been selected at the time of this report, exact truck configurations are not known. However, based on truck configurations from previously completed wind power projects, the Nacelle transport truck load and configuration was selected as the vehicle with the highest potential load for both bridges, since it has the highest overall load (200 kips), most number of axles (11), and highest axle loads (22 kips). Note that the bridges should be reanalyzed during final design of the roadway upgrades once the actual transport vehicles have been selected for the project.

Bridges were analyzed using VIRTIS bridge rating software (version 5.5.0) in accordance with NYSDOT procedures. The latest VIRTIS computer files were obtained and reviewed from the NYSDOT and field inspections were performed. Using this software, input for main support members, secondary floor beams and deck elements are utilized where applicable. Controlling elements are identified and used to determine the overall load rating of the bridge. Deck elements are not rated, unless significant deterioration is encountered, in which case the elements are checked independently. If results of the analysis indicate that deck elements control, they are noted in the report. No elements were deteriorated on the subject bridges examined to warrant this rating step.

All of the bridges evaluated were rated for the Nacelle Truck axle configuration and H20 and HS20 design load for comparisons. A summary of the results of the field inspections and rating computations are provided herein:

<u>BIN 1008970, Rte. 11 over the Chateaugay River</u>

BIN 1008970 is a 760 foot long continuous steel multi-stringer bridge with reinforced concrete piers, deck and abutments. The roadway includes 2 - 12 foot lanes and 2 – 8 foot shoulders. The bridge was constructed in 1989.

This bridge was found to be in good condition with no significant section loss to the girders or deterioration which would affect the load carrying capacity of the members.

The table below summarizes the results of the load analysis for both the design vehicles and the Nacelle Truck. Factors for inventory and operating ratings for the design vehicles are greater than 1, indicating that the bridge can carry the design loads with no load posting. However, Inventory rating for the transport vehicle is lower than 1, and the operating rating is 1.336. This rating includes impact and is for two lanes of load. When the analysis allows for a single lane, and eliminates impact, the Inventory Rating increases to 1.019 and the Operating Rating increases to 1.701. Although the operating rating for multi-lane analysis with impact indicates that the bridge can carry the Nacelle truck, we recommend that the vehicle cross the bridge at no greater than 10 mph and traffic be restricted to one-direction during the crossing. This will significantly improve the rating of the bridge and minimize the potential for overstressing of the girders.

Bridge Rating Summary
BIN 1008970 - Rte. 11 over the Chateaugay River

Live Load	Girder	Design Method	Load Type	Inventory Rating Factor	Operatin g Rating Factor	Impact	Lane
H 20-44	G2	LFD	Lane	1.280	2.138	Y	Multi-Lane
HS 20-44	G2	LFD	Truck	1.172	1.957	Y	Multi-Lane
Nacelle Truck	G2	LFD	Truck	0.800	1.336	Y	Multi-Lane
Nacelle Truck	G2	LFD	Truck	1.019	1.701	N	Single-Lane

BIN 3337780, CR 24 over the Little Trout River

BIN 3337780 is an 80 foot long prestressed concrete box beam bridge with a reinforced concrete deck and integral abutments. The roadway includes 2 - 12 foot lanes and 2 – 5 foot shoulders. The bridge was constructed in 2001.

This bridge was found to be in excellent condition. The table below summarizes the results of the load analysis for both the design vehicles and the Nacelle Truck. Factors for inventory and operating ratings are greater than 1, indicate that the transport vehicles can cross the bridge with no restrictions.

Bridge Rating Summary
BIN 3337780 – CR 24 over the Little Trout River

Live Load	Girder	Design Method	Load Type	Inventory Rating Factor	Operatin g Rating Factor	Impact	Lane
H 20-44	G1	LFD	Lane	1.803	2.537	Y	Multi-Lane
HS 20-44	G1	LFD	Truck	1.556	1.273	Y	Multi-Lane
Nacelle Truck	G1	LFD	Truck	1.164	1.779	Y	Multi-Lane

BIN 3337790, CR 24 over the Chateaugay River

BIN 3337790 is a 100 foot long prestressed concrete "T" beam multi-stringer bridge with a reinforced concrete deck and cantilever abutments. The roadway includes 2 - 12 foot lanes and 2 – 5 foot shoulders. The bridge was constructed in 2001.

This bridge was found to be in excellent condition. The table below summarizes the results of the load analysis for both the design vehicles and the Nacelle Truck. Factors for inventory and operating ratings for the design vehicles are greater than 1, indicating that the bridge can carry the design loads with no load posting. However, Inventory rating for the transport vehicle is lower than 1, and the operating rating is 1.506. This rating includes impact and is for two lanes of load. When the analysis allows for a single lane, and eliminates impact, the Inventory Rating increases to 1.414 and the Operating Rating increases to 2.362. Therefore, we recommend the same restrictions as indicated for BIN 1008970 above.

Bridge Rating Summary
BIN 3337790 – CR 24 over the Chateaugay River

Live Load	Girder	Design Method	Load Type	Inventory Rating Factor	Operating Rating Factor	Impact	Lane
H 20-44	G2	LFD	Lane	1.244	1.789	Y	Multi-Lane
HS 20-44	G2	LFD	Truck	1.102	1.567	Y	Multi-Lane
Nacelle Truck	G2	LFD	Truck	0.902	1.506	Y	Multi-Lane
Nacelle Truck	G2	LFD	Truck	1.414	2.362	N	Single-Lane

BIN 3337800, CR 33 over the Little Trout River

BIN 3337800 is a 25 foot long steel multi-stringer ("jack arch") bridge with a reinforced concrete deck and gravity abutments and an asphalt wearing surface. The roadway includes 2 - 11 foot lanes and 2 – 2 foot shoulders. The bridge was constructed in 1939.

This bridge was found to be in good condition with no significant section loss to the girders or deterioration which would affect the load carrying capacity of the members. The table below summarizes the results of the load analysis for both the design vehicles and the Nacelle Truck. Factors for inventory and operating ratings are greater than 1, indicate that the transport vehicles can cross the bridge with no restrictions.

Bridge Rating Summary
BIN 3337800 – CR 33 over the Little Trout River

Live Load	Girder	Design Method	Load Type	Inventory Rating Factor	Operating Rating Factor	Impact	Lane
H 20-44	G1	LFD	Truck	2.849	4.758	Y	Multi-Lane
HS 20-44	G1	LFD	Truck	2.849	4.758	Y	Multi-Lane
Nacelle Truck	G1	LFD	Truck	2.125	3.548	Y	Multi-Lane

BIN 3337900, CR 36 over the Little Trout River

BIN 3337900 is a 34 foot long steel multi-stringer ("jack arch") bridge with a reinforced concrete deck and gravity abutments and an asphalt wearing surface.The roadway includes 2 - 11 foot lanes and 2 – 4 foot shoulders. The bridge was constructed in 1941.

This bridge was found to be in good condition with no significant section loss to the girders or deterioration which would affect the load carrying capacity of the members. The table below summarizes the results of the load analysis for both the design vehicles and the Nacelle Truck. Factors for inventory and operating ratings are greater than 1, indicate that the transport vehicles can cross the bridge with no restrictions.

Bridge Rating Summary
BIN 3337900 – CR 36 over the Little Trout River

Live Load	Girder	Design Method	Load Type	Inventory Rating Factor	Operating Rating Factor	Impact	Lane
H 20-44	G4	LFD	Truck	3.734	6.235	Y	Multi-Lane
HS 20-44	G4	LFD	Truck	2.934	4.899	Y	Multi-Lane
Nacelle Truck	G4	LFD	Truck	2.647	4.421	Y	Multi-Lane

BIN 1008980, Rte. 11 over Boardman Brook

This bridge is a 28 foot long concrete arch structure. The inspection found that the arch is in fair to good condition with no significant concrete deterioration which would affect the capacity of the arch components, and no distress observed in the arch sections. No drawings of this structure are available, since it was constructed in 1937. Without further in-depth testing and investigation, this structure could not be rated. However, we believe that the structure can carry the loads, with restrictions indicated for BIN 1008970 above.

Appendix D contains the ratings results summary for each bridge. Note that NYSDOT and the NYS Thruway Authority Structures Divisions will review and approve all bridges proposed to be used during the Special Hauling Permit application process.

The bridges located along the delivery route from Interstate 87 to the limit of this study are identified in the report for the Marble River Wind Farm. These bridges will be evaluated as required when obtaining the Special Hauling Permit.

2. Culverts

The Culvert Type & Diameter and Culvert Minimum Cover & Condition maps, Exhibit 12, present the locations of the drainage structures apparent in the field. For the purposes of this study, it is assumed that any culvert with less than 2 feet of cover may be susceptible to damage during construction activities. The inventory table in Exhibit 6 highlights any locations with concerns in regards to insufficient cover, roadway width, and/or structure condition. These locations will be further analyzed during final engineering to determine if improvements are necessary prior to construction of the turbines. The existing drainage ditch systems will be kept if

C. Projected Physical Impacts & Proposed Mitigation

Roadway Type

Impact – The majority of the existing surface conditions appear adequate to accommodate construction activities. However, the amount, type, and weight of general construction traffic (gravel/concrete trucks, semi-trailers, etc.) and OS/OW vehicles will likely damage the surface condition of the roadways in the project area.

Mitigation – Prior to construction, the applicant will improve any roadway portions found inadequate. After completion of construction activities, the applicant will be required to repair the roadway surface to preconstruction conditions. A roadway condition video survey can be completed prior to construction to document the existing surface conditions. The applicant will need to repair the roadways using the appropriate treatment (oil & stone, hot or cold mix asphalt) to re-establish the preconstruction surface conditions.

Roadway Width

Impact – The existing roadway widths for the on-site traveled roads at the time of this report are adequate to accommodate the construction activities.

Mitigation – None required.

Intersections

Impact – All intersections used by OS/OW vehicles will need radius improvements to accommodate construction activities (Exhibit 10). The intersection impacts include:

- Clearing and grubbing of existing vegetation
- Relocating traffic signs, fences, and utility poles
- Grading of the terrain to accommodate the improvement
- Extension of existing drainage pipes and/or culverts
- Re-establishment of ditch line (if necessary)
- Construction of a suitable roadway surface to carry the construction traffic (based on the existing geotechnical conditions)

Mitigation – Each public roadway intersection will require a detailed engineering plan to quantify and provide a solution for the impacts listed above. The intersection radii will generally need to be improved to 150-feet. This study provided a preliminary engineering solution that can be completed, based on observed field conditions, to accommodate the OS/OW vehicles. See section III.A.4 and Exhibits 3, 4 and 8 for the preliminary recommendations. Drainage ditch systems will be maintained when intersections are modified and culvert pipes will be installed as necessary to accommodate the road side drainage system. After construction of the project, the applicant should coordinate with the NYSDOT and local highway departments to determine if the radii improvements will need to be returned to preconstruction conditions or left for future use by the County or Town.

Weight

Impact – The existing roadways and structures are not posted with weight limits.

Mitigation – None required.

Impact – Seven drainage pipes/culverts have been identified as having less than 2-feet of cover or are in poor condition as shown in Exhibit 6. These culverts may be crushed or deformed by construction activities causing construction delays, delays to local motorists, and damage to construction vehicles and/or turbine components.

Mitigation – Each pipe should be evaluated during final design of the roadway improvements to determine if improvements will be necessary to accommodate the construction activities. Improvements may include:

- Additional cover over pipes,
- Reinforce pipes with bracing,
- Use bridge jumpers to clear pipes,
- Use bridge plates to distribute vehicle loading,
- Replace pipes prior to construction,
- Replace pipes during or after construction if damaged by construction activities.

Impact – The bridges in the project area are safe for legal loads and do not have posted weight restrictions except for BIN 3337610 on Chase Hollow road over the Chateaugay River which is closed to traffic. They have sufficient horizontal and vertical clearances to accommodate the OS/OW trucks, except for BIN 3337650 over the Chateaugay River where there is insufficient vertical clearance. These bridges will not be available for use by OS/OW trucks during construction. There appears to be no detrimental impacts to the remaining bridges within the project area.

Mitigation – Based on the bridge study findings, BINs 3337780, 3337800 and 3337900 will not require any mitigation for weight concerns. However, BIN 1008970, BIN 3337790 and BIN 1008980 may require that the OS/OW vehicles travel over the center of the bridges at 10 mph. All three bridges will require that a lane be closed during transport. The escort vehicles traveling with the OS/OW vehicles should ensure safe passage over the bridges. The NYSDOT and the NYS Thruway Authority Structures Divisions will still review and approve all bridges proposed to be used during the Special Hauling Permit application process.

Vertical Curvature

Impact – Locations exist along the project roadways where the vertical curvature of the roadway may not accommodate the OS/OW vehicles. Exhibit 10 presents the locations of the vertical curves that were identified through visual observation which may not accommodate OS/OW vehicles.

Mitigation – Each vertical curve will be analyzed during final design of the roadway improvements (using topographic survey information) to determine if OS/OW vehicles will be able to traverse the existing roadways. If the vehicles cannot traverse the vertical curves in question, the following mitigation measures may be used to accommodate construction traffic:

- Re-route OS/OW vehicles to roadway that can accommodate construction traffic,
- Modification of access road locations to avoid vertical curves,
- Reconstruct vertical curves to accommodate OS/OW vehicles which may involve additional grading and drainage improvements to reestablish the roadside features.

Height

Impact – Overhead wires that do not meet OS/OW vehicle clearances and the traffic signals along US Route 11 will need to be raised to accommodate OS/OW vehicles.

Mitigation – The applicant will be required to coordinate with the electric, telephone and cable companies, and NYSDOT to obtain the necessary permits to raise wires and the traffic signal. The utility companies and the NYSDOT will assist in the final solution at each location once final engineering plans and permit applications have been submitted. Solutions include permanently raising wires/signal, temporarily raising wires/signal for the duration of construction, or temporarily raising each wires/signal as a vehicle passes under.

IV. Conclusion

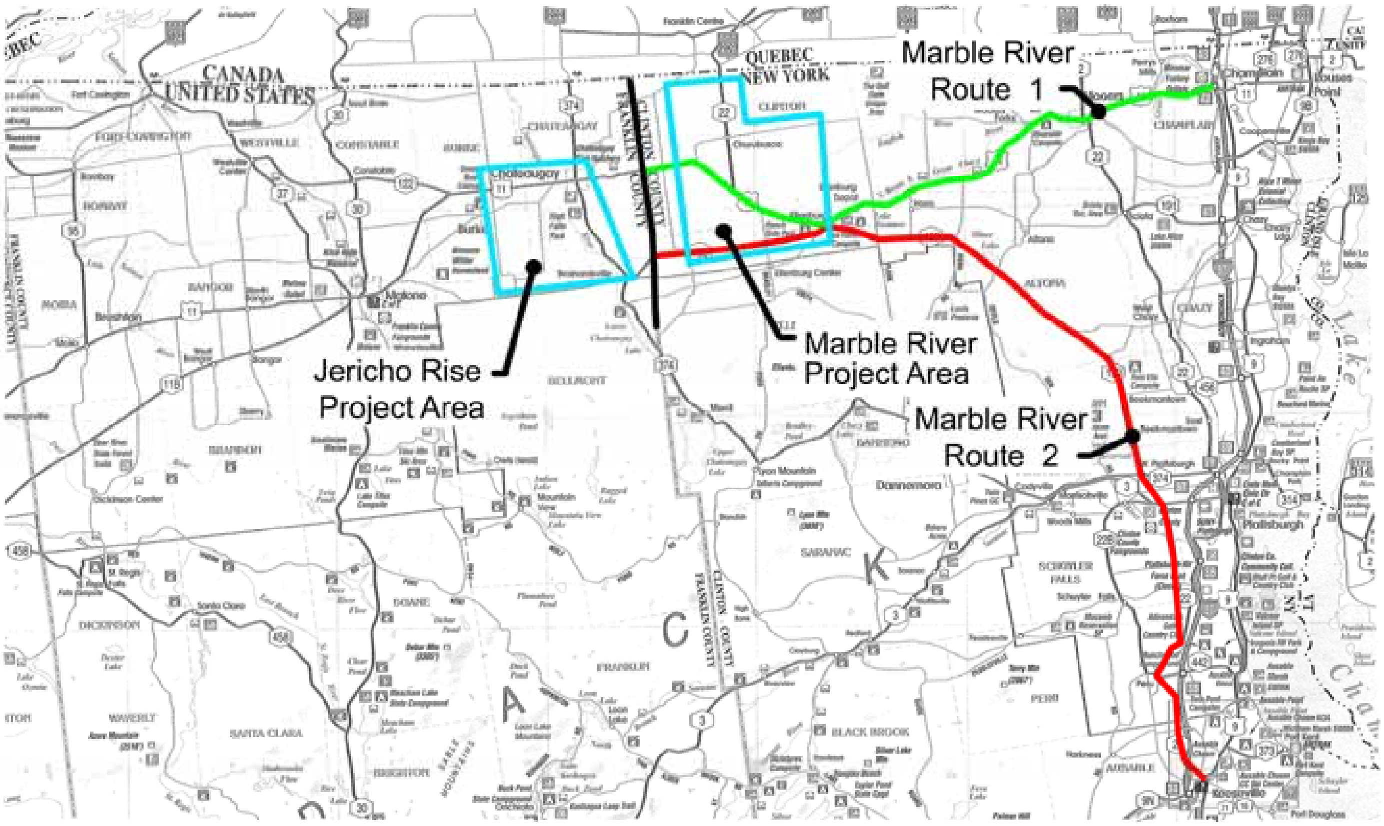
This study has identified the transportation related impacts that may be experienced during construction of the Jericho Rise Wind Farm. Mitigation measures have been provided to accommodate the construction traffic and minimize impacts to the traveling public. Final engineering design will be required prior to construction activities to ensure all transportation related impacts have been addressed to the satisfaction of the NYSDOT and the local highway departments.

FISHERASSOCIATES

135 Calkins Road, Rochester, NY 14623
Phone: 585-334-1310
www.fisherassoc.com

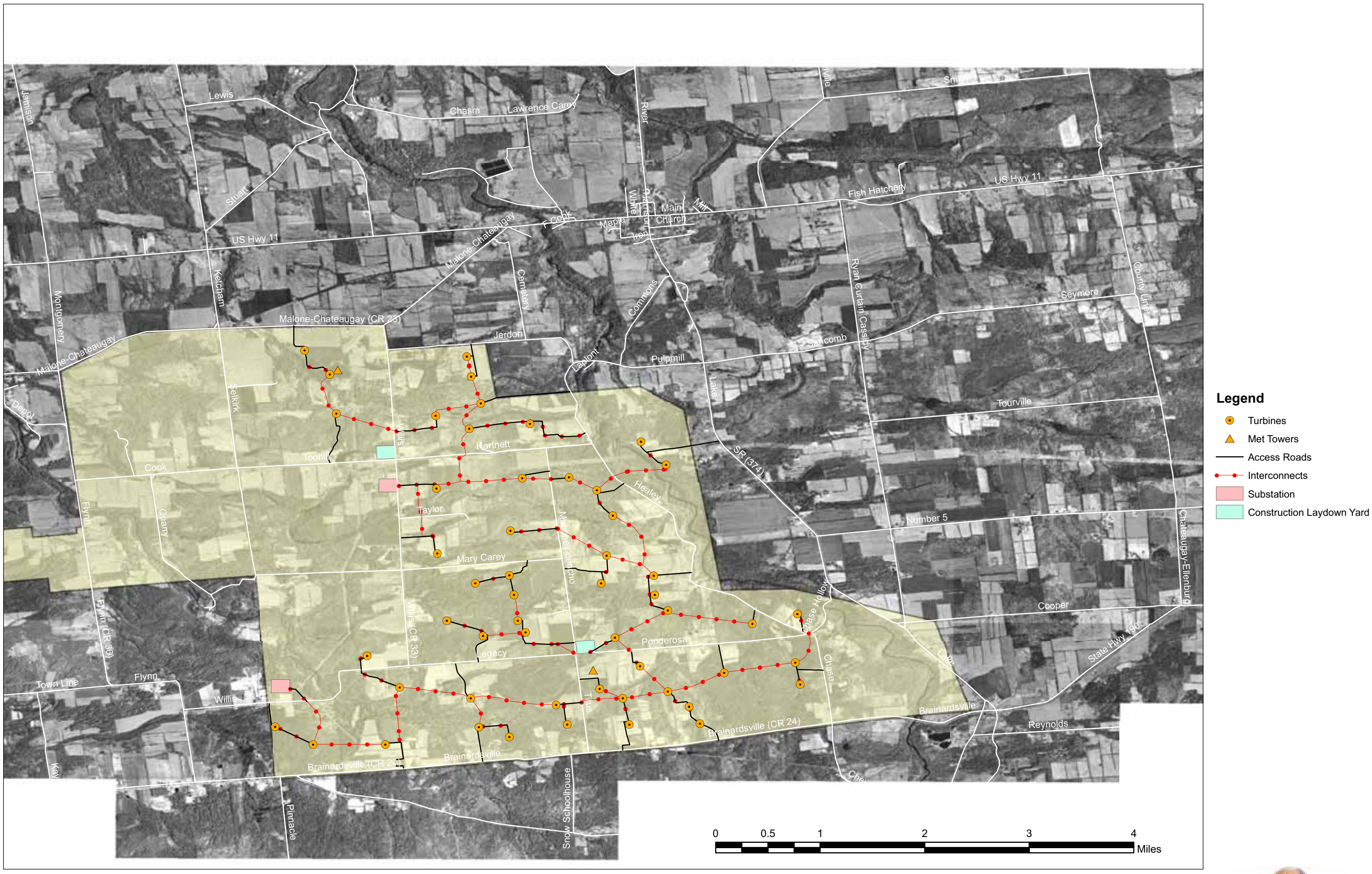
APPENDIX A

Exhibit 1: *Project Location Map*



PROJECT AREA MAP

Exhibit 2: *Project Map*



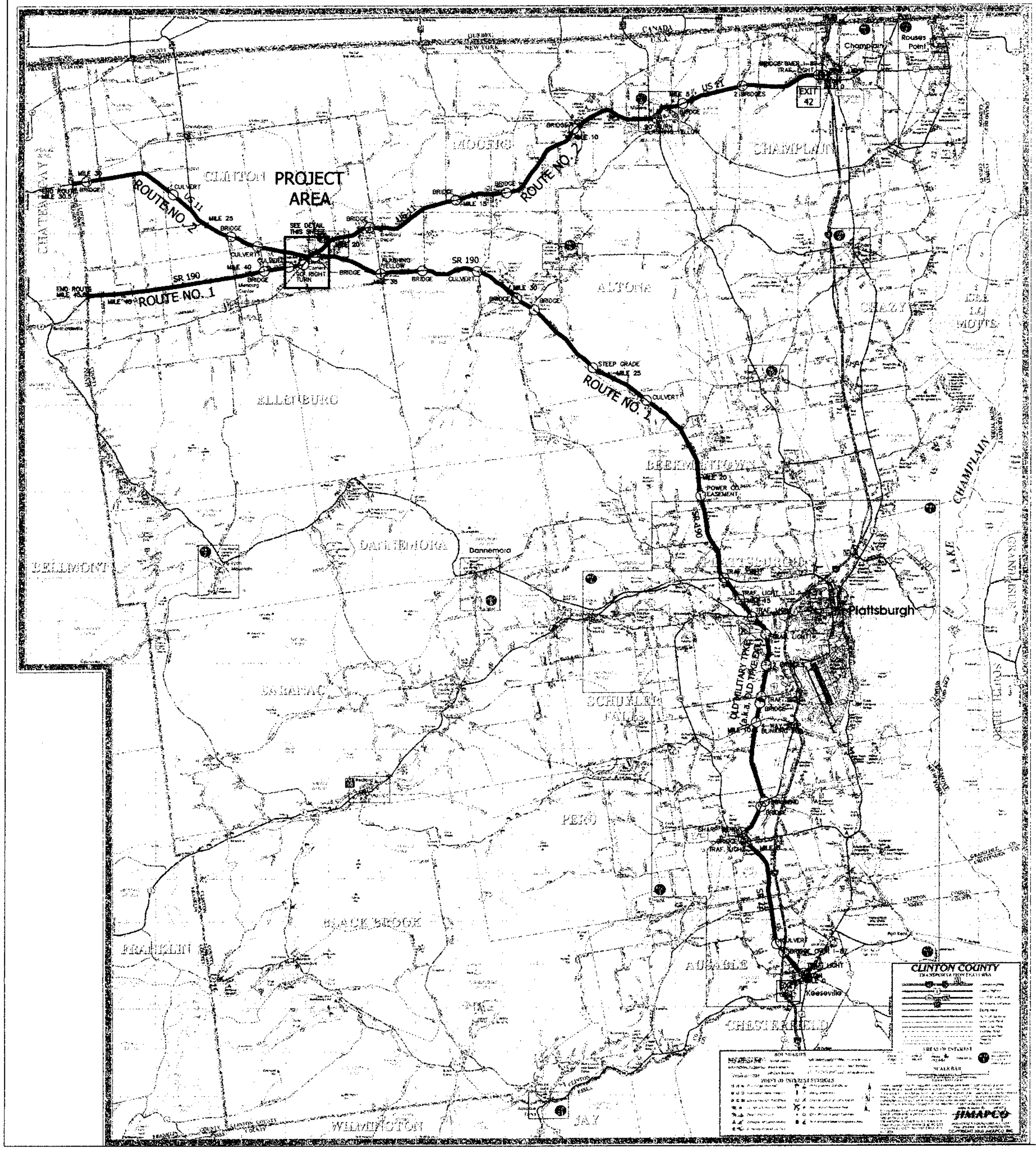
N
W E
S

Jericho Rise Wind Farm

Project Location

FISHERASSOCIATES

Exhibit 3: *Marble River Wind Project Route Map*



OS/OW ROUTE SUMMARY

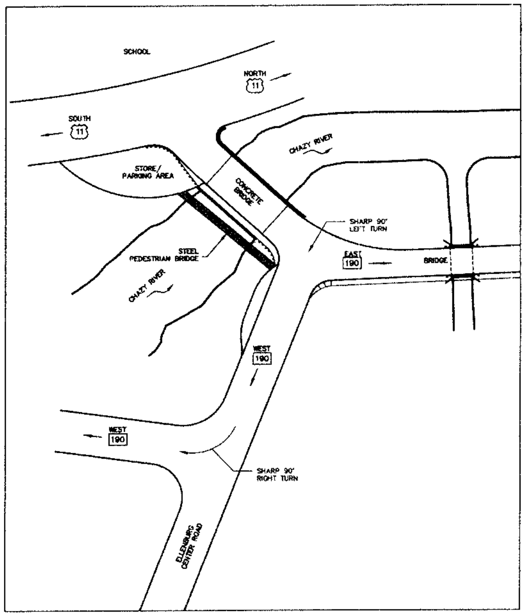
ROUTE No. 1

	LOCATION (MILE)	OS/OW VEHICLE ISSUE OR CONCERN
STATE ROUTE 22	0.0	TRAFFIC LIGHT/INSUFFICIENT ROADWAY GEOMETRY
	1.1	BRIDGE OVER 1-87
	1.5	CULVERT
	5.55	TRAFFIC LIGHT/SR 442
	5.6	BRIDGE OVER WATER
	5.65	CURVE RIGHT/INSUFFICIENT ROADWAY GEOMETRY
	7.2	BRIDGE OVER WATER
	7.2	90° TURN LEFT/INSUFFICIENT ROADWAY GEOMETRY
OLD TURNPIKE EXT.	10.2	BLINKING RED LIGHT/SALMON RIVER RD
	11.0	BRIDGE OVER WATER
	11.1	TRAFFIC LIGHT/IRISH SETTLEMENT RD
	12.3	BRIDGE OVER WATER
	12.31	BRIDGE OVER WATER
	13.4	TRAFFIC LIGHT/RUGAR RD
	14.2	TRAFFIC LIGHT/ROUTE 3
STATE ROUTE 190	15.0	TRAFFIC LIGHT/TOM MILLER RD
	16.0	TRAFFIC LIGHT/ROUTE 374
	23.5	CULVERT
	28.6	BRIDGE OVER WATER
	29.4	BRIDGE OVER WATER
	31.0	CULVERT
	33.2	BRIDGE OVER WATER
	34.6	FLASHING YELLOW LIGHT/PLANK RD
	37.3	BRIDGE OVER WATER
	37.31	ELLENBURG CORNERS/INSUFFICIENT ROADWAY GEOMETRY
	37.7	SR 190 TURNS RIGHT/INSUFFICIENT ROADWAY GEOMETRY
	38.4	CULVERT
	39.1	BRIDGE OVER WATER
	45.6	COUNTY LINE RD/END OF ROUTE
SUMMARY		
		NUMBER OF BRIDGES: 11 NUMBER OF TRAFFIC LIGHTS: 9 (2 FLASHING) NUMBER OF 90° TURNS: 5

ROUTE No. 2

	LOCATION (MILE)	OS/OW VEHICLE ISSUE OR CONCERN
STATE ROUTE 11	0.1	TRAFFIC LIGHT/INSUFFICIENT ROADWAY GEOMETRY
	0.2	BRIDGE OVER 1-87
	0.2	TRAFFIC LIGHT/1-87 OFF RAMP
	3.1	BRIDGE OVER WATER
	3.1	BRIDGE OVER WATER
	5.1	BRIDGE OVER WATER
	6.6	FLASHING YELLOW LIGHT/INSUFFICIENT ROADWAY GEOMETRY
	9.8	BRIDGE OVER WATER
	13.3	BRIDGE OVER WATER
	15.3	BRIDGE OVER WATER
	18.5	BRIDGE OVER WATER
	20.9	TRAFFIC LIGHT AT JCT 190
	22.9	CULVERT
	24.0	BRIDGE OVER WATER
	26.5	CULVERT
	29.8	BRIDGE OVER WATER
	30.5	COUNTY LINE RD/END OF ROUTE
SUMMARY		
		NUMBER OF BRIDGES: 10 NUMBER OF TRAFFIC LIGHTS: 4 (1 FLASHING) NUMBER OF 90° TURNS: 2

0 1.8 3.6
ONE INCH EQUALS 1.80 MILES



ELLENBURG CORNERS DETAIL
N.T.S.

ESS Group, Inc.
Engineers
Scientists
Consultants

888 Worcester Street, Suite 240
Wellesley, Massachusetts 02482
p 781.431.0500
f 781.431.7434
www.essgroup.com

No.	REVISION	DATE	APP BY
DRAWN BY: JSC		CHECKED BY: RAH	
DESIGNED BY:		APPROVED BY: RAH	

Marble River
Wind Project
Clinton County, New York

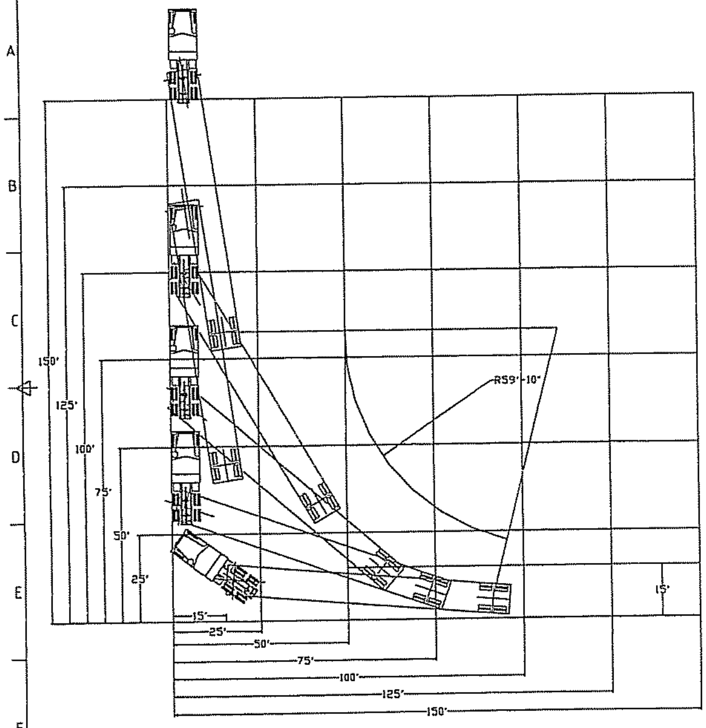
Off-Site Highway
Map For OS/OW
Route Planning

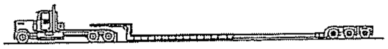
PROJECT No.: A456-005.6
DATE OF ISSUE: November 4, 2005
SHEET No. 1 of 3
SCALE: AS SHOWN

DRAWING No.
Map 1

Exhibit 4: *Truck Data and Turning Movement Diagrams*

RevNo	Revision note	Date	Signature	Checked





APPENDIX A:

Figure 1

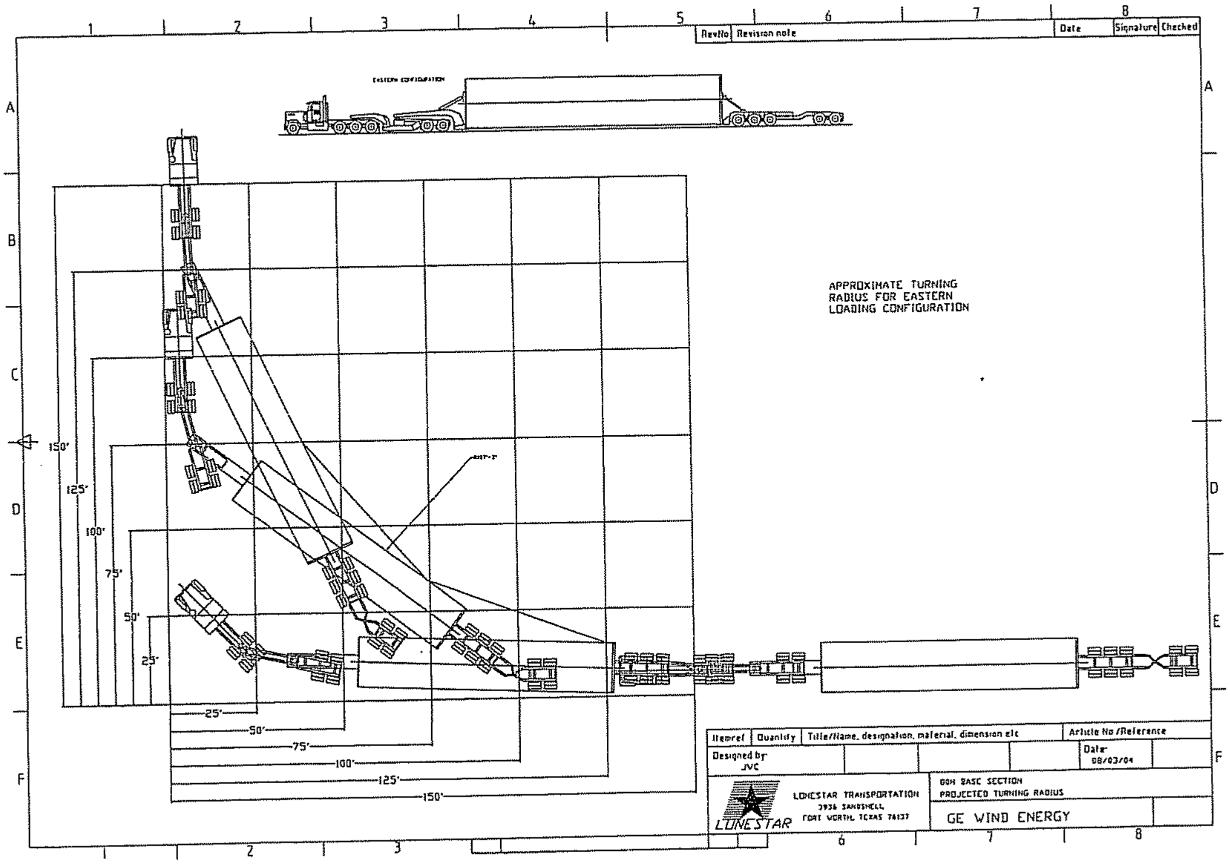
Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No /Reference

Designed by:	Checked by	Approved by - date	Sheet Number.	Date:	Scale:
Hector Hernandez	Davila White	4/8/02	4	4/8/02	N/A

LONESTAR
LONESTAR TRANSPORTATION
HEAVY HAUL DIVISION
1510 MOSS LAKE ROAD
GAINESVILLE, TX. 76240
800-899-5744

Project Name:
TURNING RADIUS FOR STRETCH DOUBLE DROP

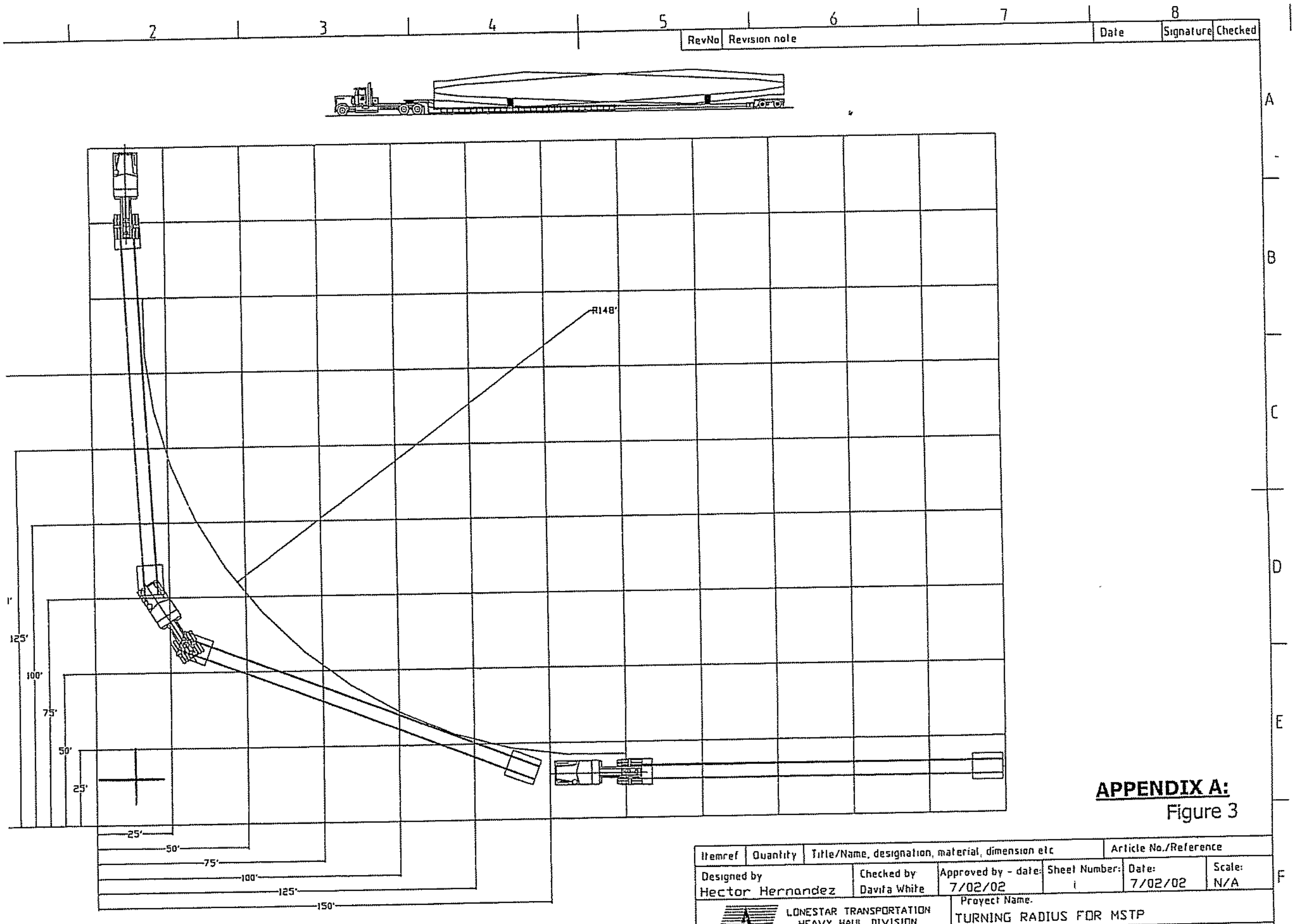
Filename:	Sheet Seq:
2AXRODDSTRETCH	4/4



APPENDIX A:

Figure 2

RevNo	Revision note	Date	Signature	Checked



APPENDIX A:

Figure 3

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference

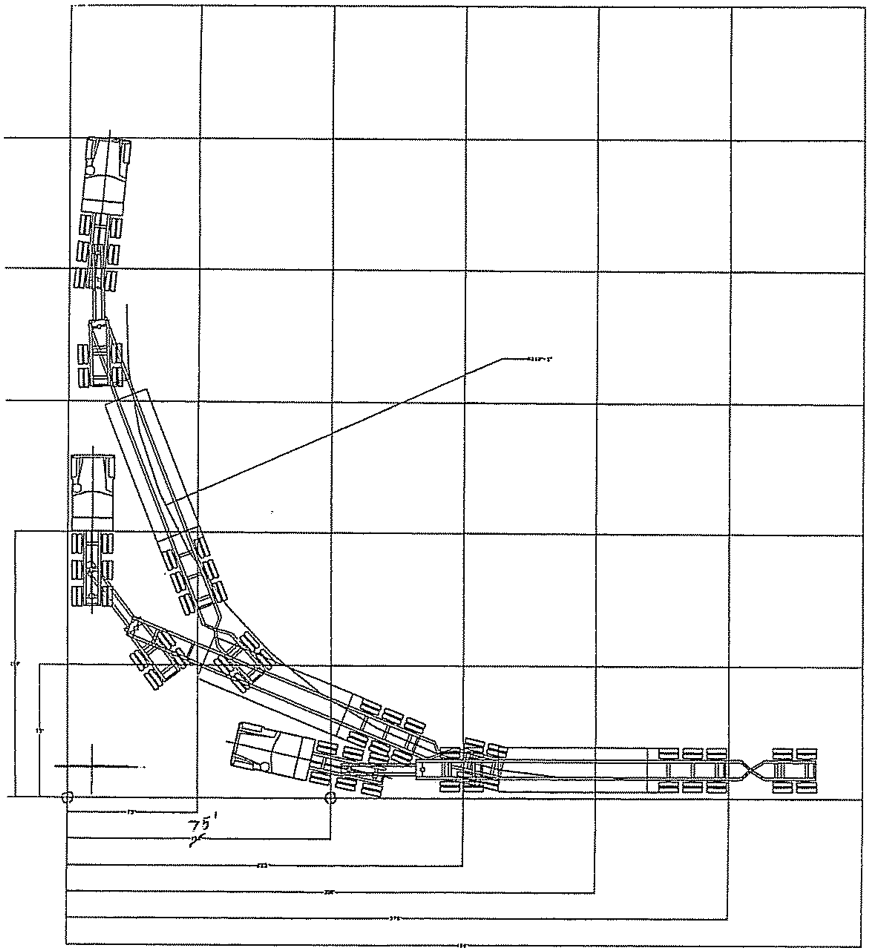
Designed by	Checked by	Approved by - date:	Sheet Number:	Date:	Scale:
Hector Hernandez	Davita White	7/02/02	i	7/02/02	N/A

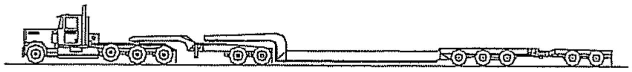
LONESTAR TRANSPORTATION
HEAVY HAUL DIVISION
1010 HOSS LAKE ROAD
GAINESVILLE, TX. 76240
800-899-5744
LONESTAR

Proyect Name.
TURNING RADIUS FOR MSTP

Filename
SAXRODDMSTP

Sheet Seq
1/1





APPENDIX A:

Figure 4

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Ref

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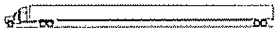
LONESTAR TRANSPORTATION
HEAVY HAUL DIVISION
1810 MOSS LAKE ROAD
GAINESVILLE, TX. 76240
800-899-5744

LONESTAR

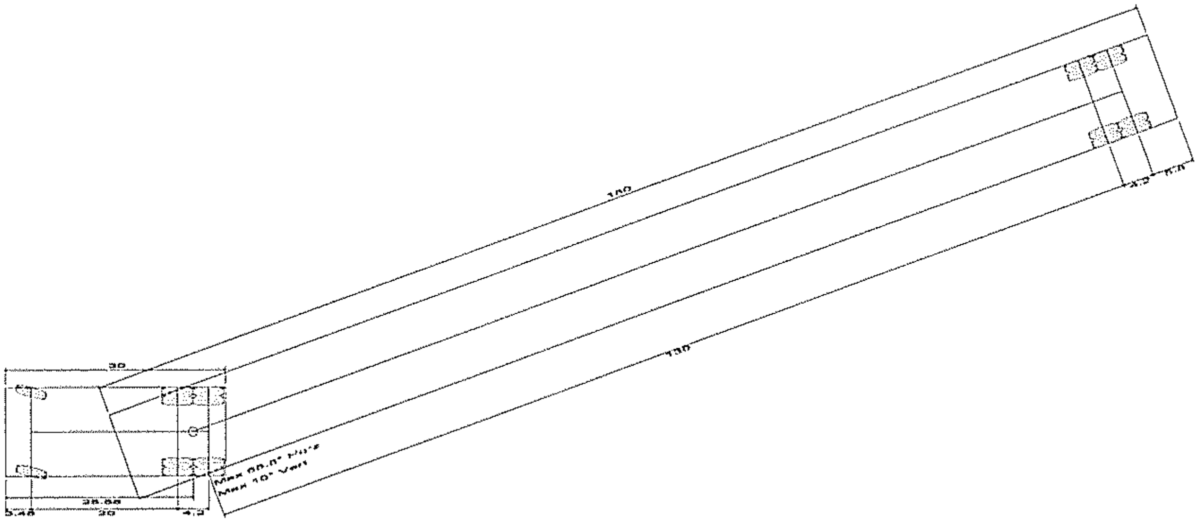
Proyect Name:
TURNING RADIUS FOR 11 AXLE

Filename:
11AXROLOWBOY



AutoTrack Vehicle Details Ref: 100033

Vehicle Name:	**Blade Truck**
Type:	Articulated vehicle
Category:	Savoy
Classification:	Savoy
Source:	AASHTO handbook 2004
Description:	Design vehicle
Notes:	
Unit 1 Name:	Blade Truck Tractor
Unit 2 Name:	Blade Truck Trailer 1



Blade Truck	
Overall Length	165.560ft
Overall Width	12.000ft
Overall Body Height	13.452ft
Min Body Ground Clearance	2.034ft
Track Width	12.000ft
Lock to Lock Time	6.00sec
Curb to Curb Turning Radius	148.000ft

AutoTrack v7.50 - Pool

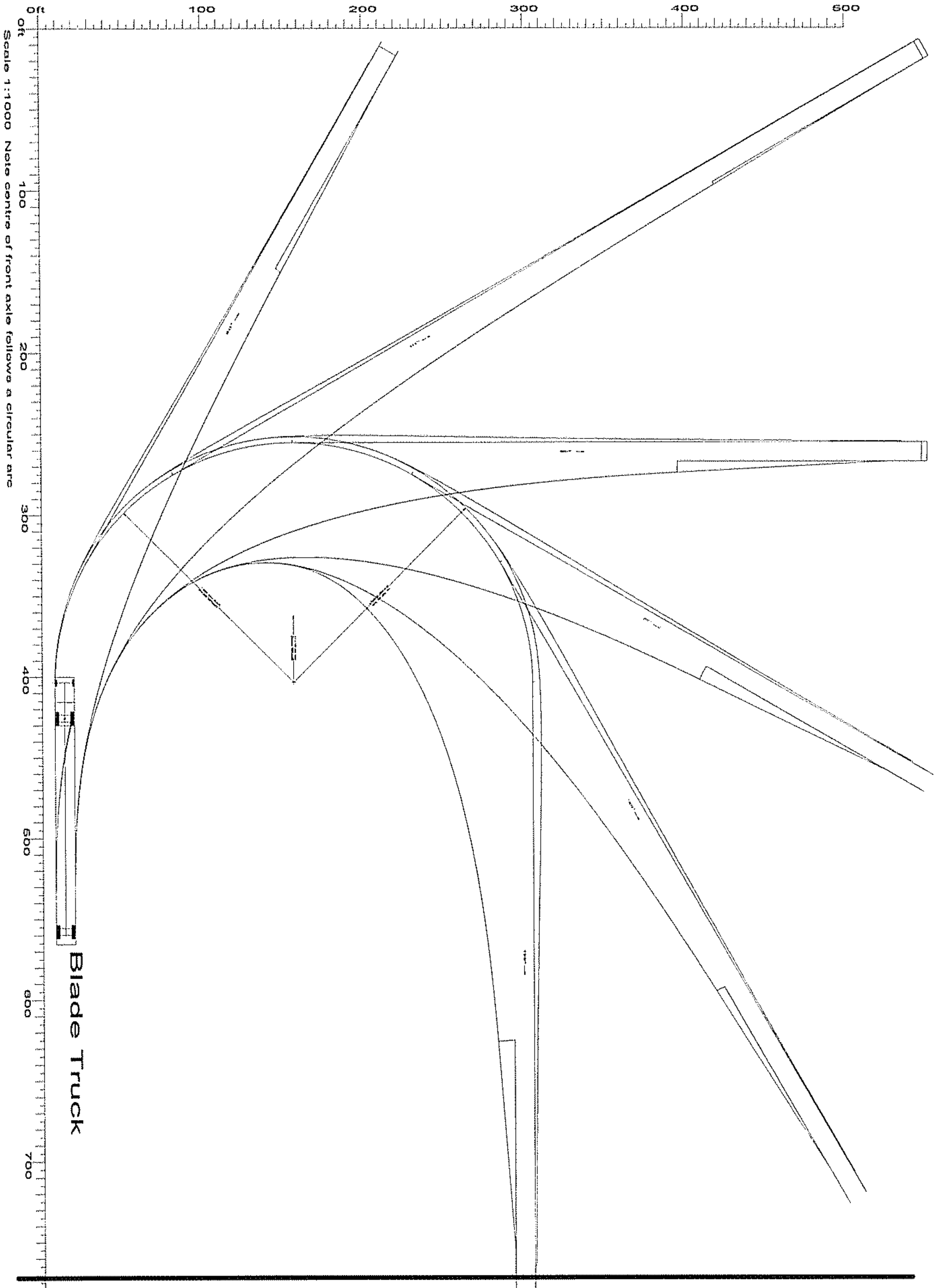
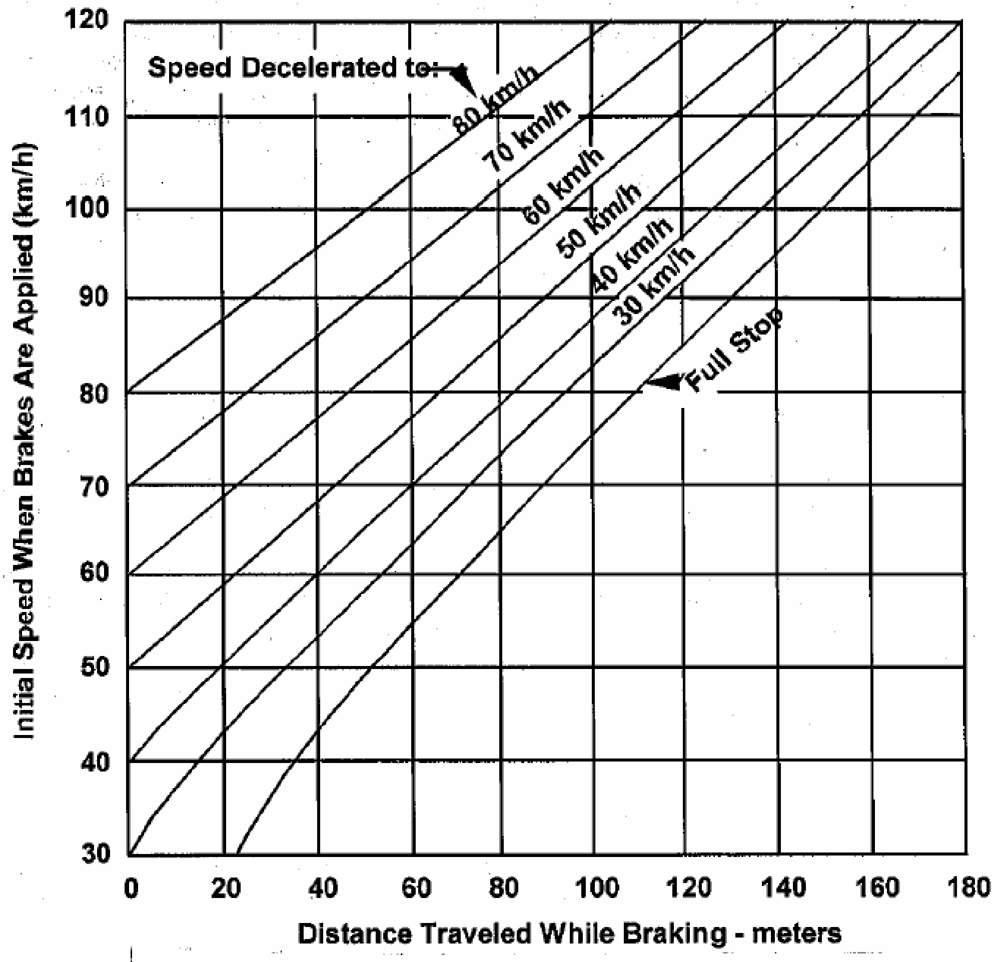


Exhibit 5: *NYSDOT Highway Design Manual Exhibit 5-30*

Exhibit 5-30 Deceleration Distances for Passenger Cars Approaching Intersections (Braking at a Comfortable Rate)



08/23/06 §5.9.8.2 G

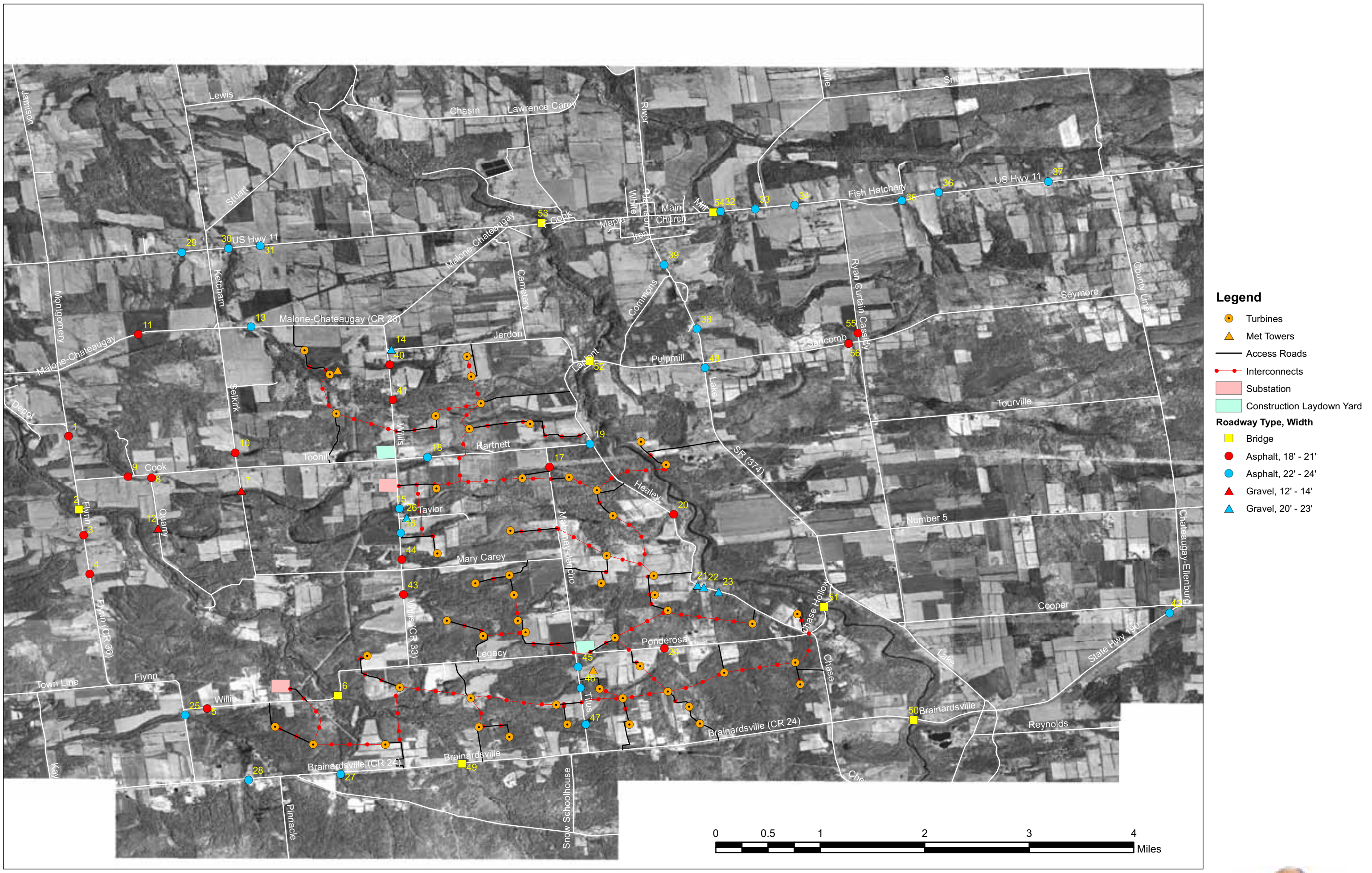
Source: New York State Department of Transportation (NYSDOT) Highway Design Manual: Chapter 5 – Basic Design (Revision 50, 2006).

Exhibit 6: *Drainage Structure Inventory*

Jericho Rise Wind Farm Drainage Structure Inventory

ID	TYPE	SIZE (in.)	COVER (ft.)	LENGTH (ft.)	CULVERT CONDITION	ROADWAY WIDTH (ft.)	ROAD TYPE	SHOULDER WIDTH (ft.)	SHOULDER TYPE	CLEAR ZONE (ft.)	ROAD NAME	NOTES	CONCERN		
1	CMP	24	2.5	62	Good	20	Asphalt	1	Asphalt	30	CR 36				
2	Bridge		10.0	40	Fair	20	Asphalt	1	Asphalt	36	CR 36	BIN 3337900			
3	CMP	24	2.0	36	Good	20	Asphalt	1	Asphalt	35	CR 36				
4	Conc	24	2.0	28	Fair	20	Asphalt	1	Asphalt	60	CR 36				
5	Conc	24	2.0	35	Fair	20	Asphalt	2	Asphalt	60	CR 33				
6	Bridge				Good	21	Asphalt	2	Asphalt	25	CR 33	BIN 3337800			
7	CMP	60	3.5	18	Good	12	Gravel	0	-	18	Selkirk				
8	CMP	72	8.0	40 +/-	Good	20	Asphalt	0	-	20	Quarry				
9	Conc	36	10.0	36	Good	19	Asphalt	4	Grass	19	Cook			roadway width	
10	Conc	18	8.0	30	Poor	18	Asphalt	1	Gravel	30	Selkirk			roadway width	condition
11	CMP	36	2.5	36	Good	21	Asphalt	1	Gravel	35	CR 23				
12	CMP	18	1.0	20	Fair	14	Gravel	0	-	20	Quarry		cover	roadway width	
13	CMP	36	2.0	60	Good	24	Asphalt	10	Asphalt	48	CR 23				
14	CMP	16	3.0	30	Fair	20	Gravel	2	Gravel	30	Jerdon				
15	Conc	24	2.0	34	Fair	22	Asphalt	0	-	30	CR 33				
16	Conc	30	2.0	33	Fair	22	Asphalt	0	-	33	CR 33				
17	Unknown	Unknown				21	Asphalt	0	-	26	Mahoney-Jericho				
18	SICPP	24	2.0	28	Fair	22	Asphalt	0	-	28	Hartnett				
19	SICPP	18	1.0	28	Good	22	Asphalt	0	-	28	Hartnett		cover		
20	Conc	12	2.0	35	Fair	20	Asphalt	0	-	35	Healey				
21	Conc	18	2.0	28	Fair	23	Gravel	0	-	28	Healey				
22	SICPP	18	1.0	27	Good	23	Gravel	0	-	24	Healey		cover		
23	CMP	48	3.0	35	Good	22	Gravel	0	-	26	Healey				
24	CMP	24	2.0	30	Fair	21	Asphalt	0	-	30	Ponderosa				
25	Conc-Steel Arch	5' x 6'	3.0	47	Good	22	Asphalt	0.5	Gravel	45	CR 33				
26	Conc	18	1.0		Fair	20	Gravel	0	-	35	Taylor		cover		
27	Conc Box	5' x 5'	4.0	43	Good	24	Asphalt	6	Asphalt	36	CR 24				
28	Conc Box	4' x 5'	3.0	45	Good	24	Asphalt	6	Asphalt	36	CR 24				
29	Conc Arch	3' x 5'	4	55	Good	24	Asphalt	10	Asphalt		US Rt 11				
30	Elliptical CMP	8' x 6'	4	50	Good	24	Asphalt	10	Asphalt	44	US Rt 11				
31	Conc Arch	3' x 5'	3		Good	24	Asphalt	10	Asphalt		US Rt 11				
32	Unknown	Unknown	12	65		24	Asphalt	10	Asphalt	44	US Rt 11				
33	Conc Box	3' x 3'	4	52	Fair	24	Asphalt	9	Asphalt	43	US Rt 11				
34	Conc	24	2	48	Fair	24	Asphalt	10	Asphalt	48	US Rt 11				
35	Elliptical CMP	36" x 28"	4	60	Fair	24	Asphalt	9	Asphalt	44	US Rt 11				
36	Conc	36	14	56	Fair	24	Asphalt	10	Asphalt	44	US Rt 11				
37	CMP	24	5			24	Asphalt	10	Asphalt	44	US Rt 11				
38	CMP	30	3	46	Fair	24	Asphalt	6	Asphalt	37	SR 374				
39	Conc Box	5' x 4'	2	50	Fair	24	Asphalt	6	Asphalt	45	SR 374				
40	Conc Box	3' x 3'	3	48	Fair	20	Asphalt	2	Gravel	45	CR 33				
41	Conc Box	3' x 3'	5	58	Fair	20	Asphalt	2	Gravel	48	CR 33				
42	Conc Box	8' x 6'	2	48	Good	24	Asphalt	9	Asphalt	34	SR 190				
43	Conc	24	3	35	Fair	20	Asphalt	2	Gravel	35	CR 33				
44	Conc	24	2	41	Fair	20	Asphalt	2	Gravel	38	CR 33				
45	CMP	12	2	37	Poor	22	Asphalt	0	-	36	Titus				condition
46	CMP	18	2	39	Fair	22	Asphalt	0	-	38	Titus				
47	Conc	36	2	38	Fair	22	Asphalt	0	-	38	Titus				
48	Conc Box	4' x 3'	2	52	Fair	24	Asphalt	6	Asphalt	52	SR 374				
49	Bridge										CR 24	BIN 3337780			
50	Bridge										CR 24	BIN 3337790			
51	Bridge										Chase Hollow	BIN 3337610			
52	Bridge										Pulpmill	BIN 3337650			
53	Bridge										US Rt 11	BIN 1008970			
54	Bridge										US Rt 11	BIN 1008980			
55	CMP	24	4.0	34	Good	20	Asphalt	0	-	34	Cassidy				
56	Steel	80	6.0	52	Good	18	Asphalt	0	-	38	Sancomb			roadway width	

Exhibit 7: *Roadway Type & Width*

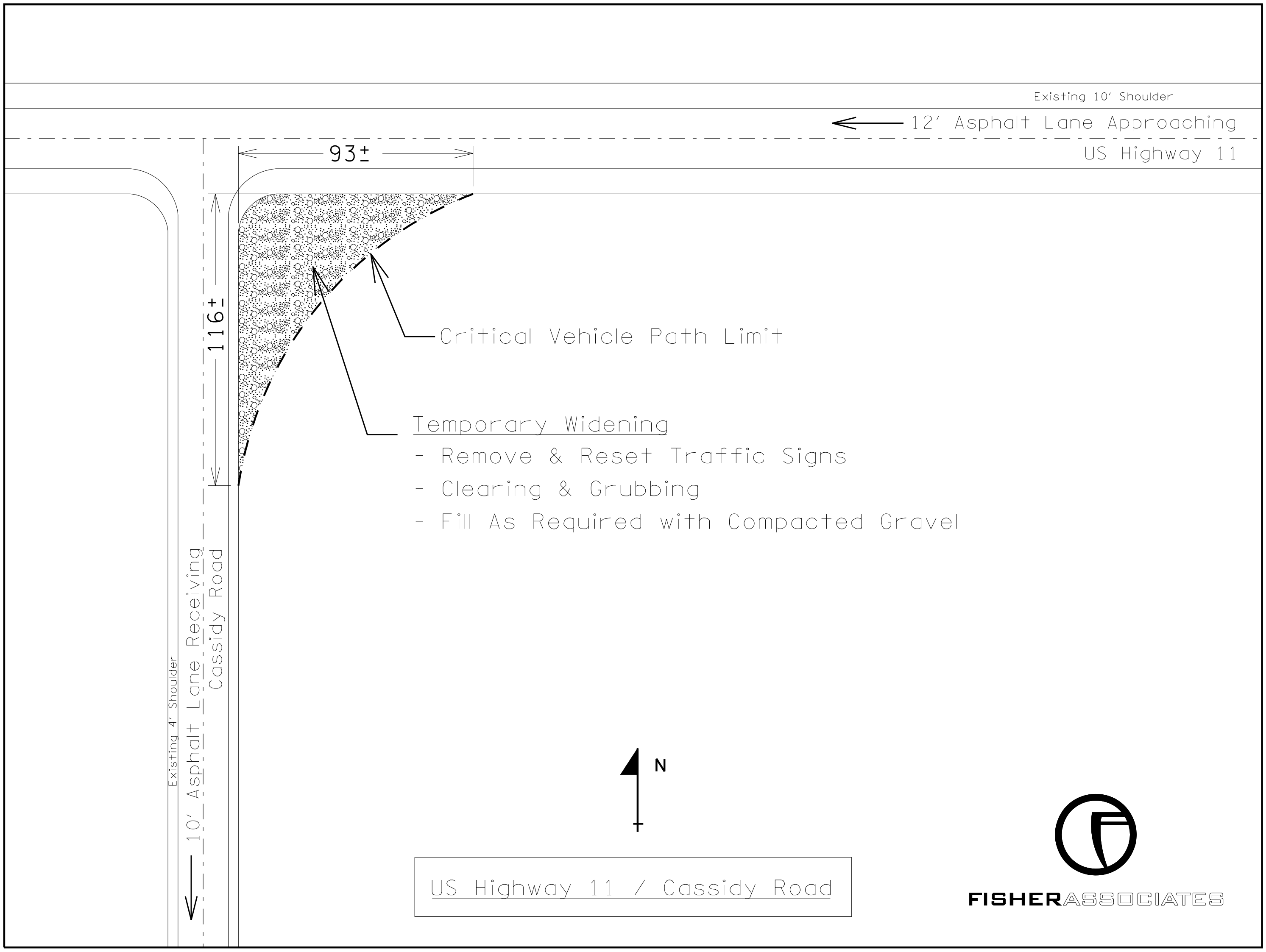


Jericho Rise Wind Farm

Roadway Type & Width

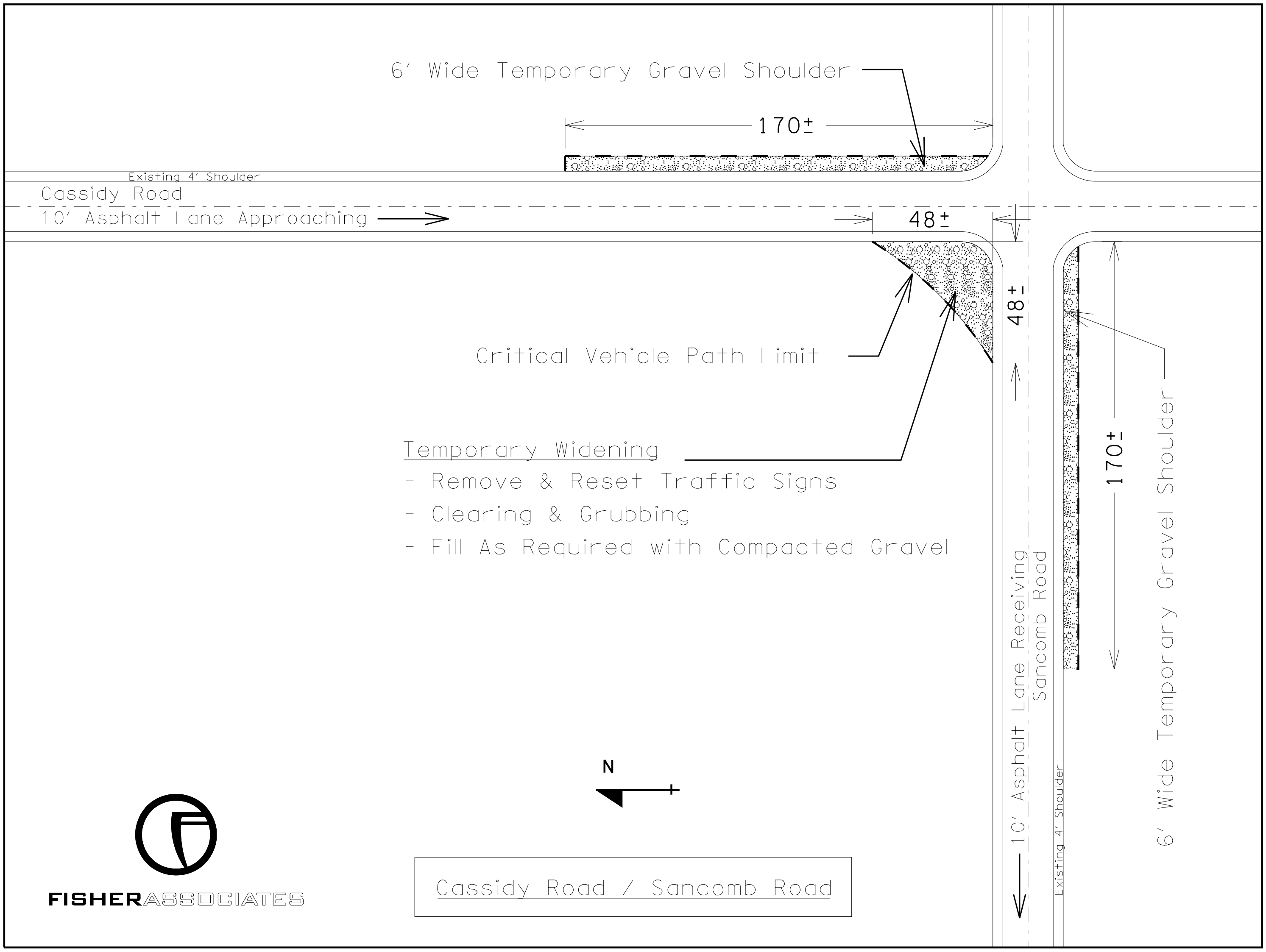
FISHER ASSOCIATES

Exhibit 8: *Specific Intersection Improvements*

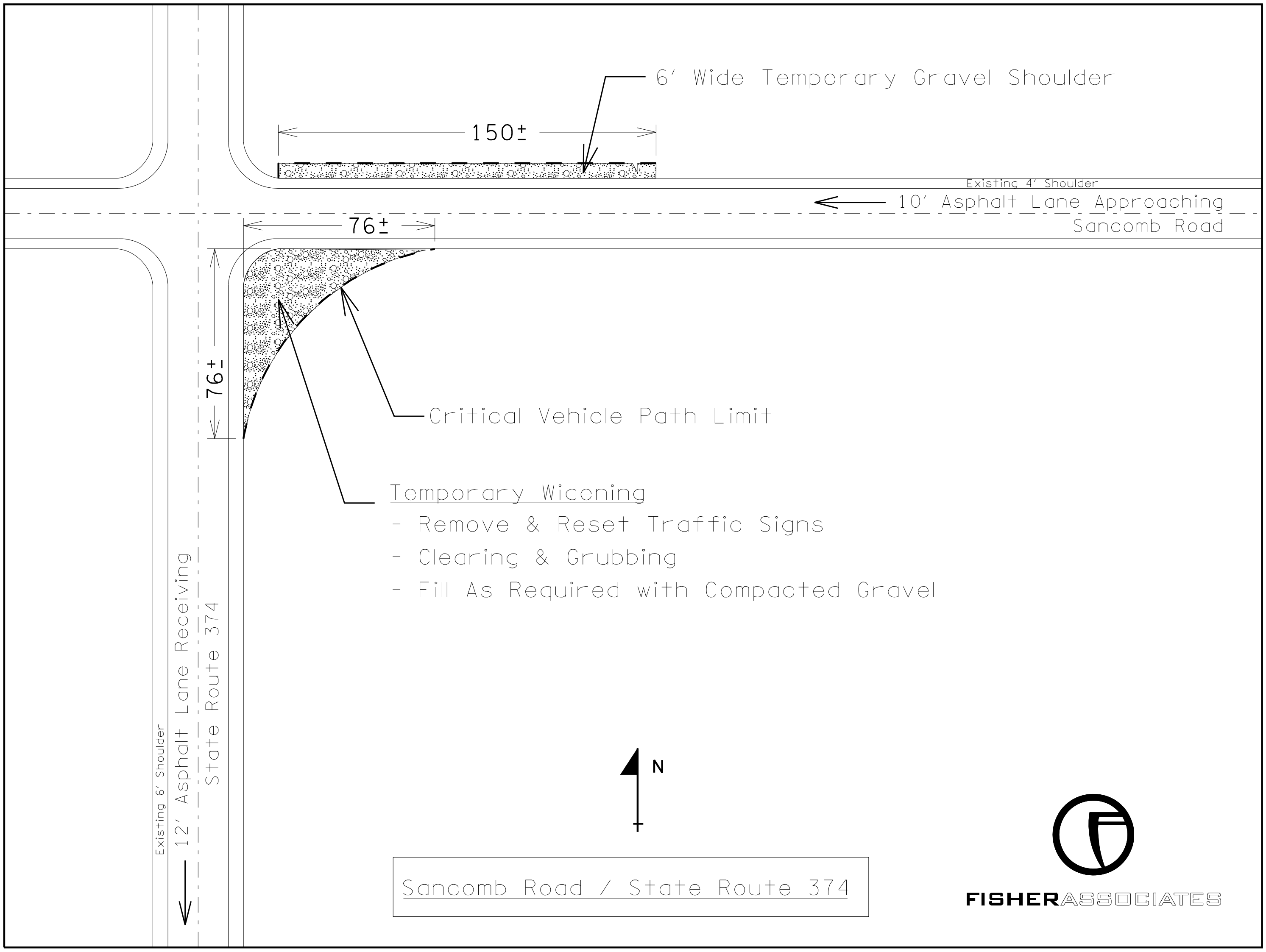


US Highway 11 / Cassidy Road

FISHERASSOCIATES

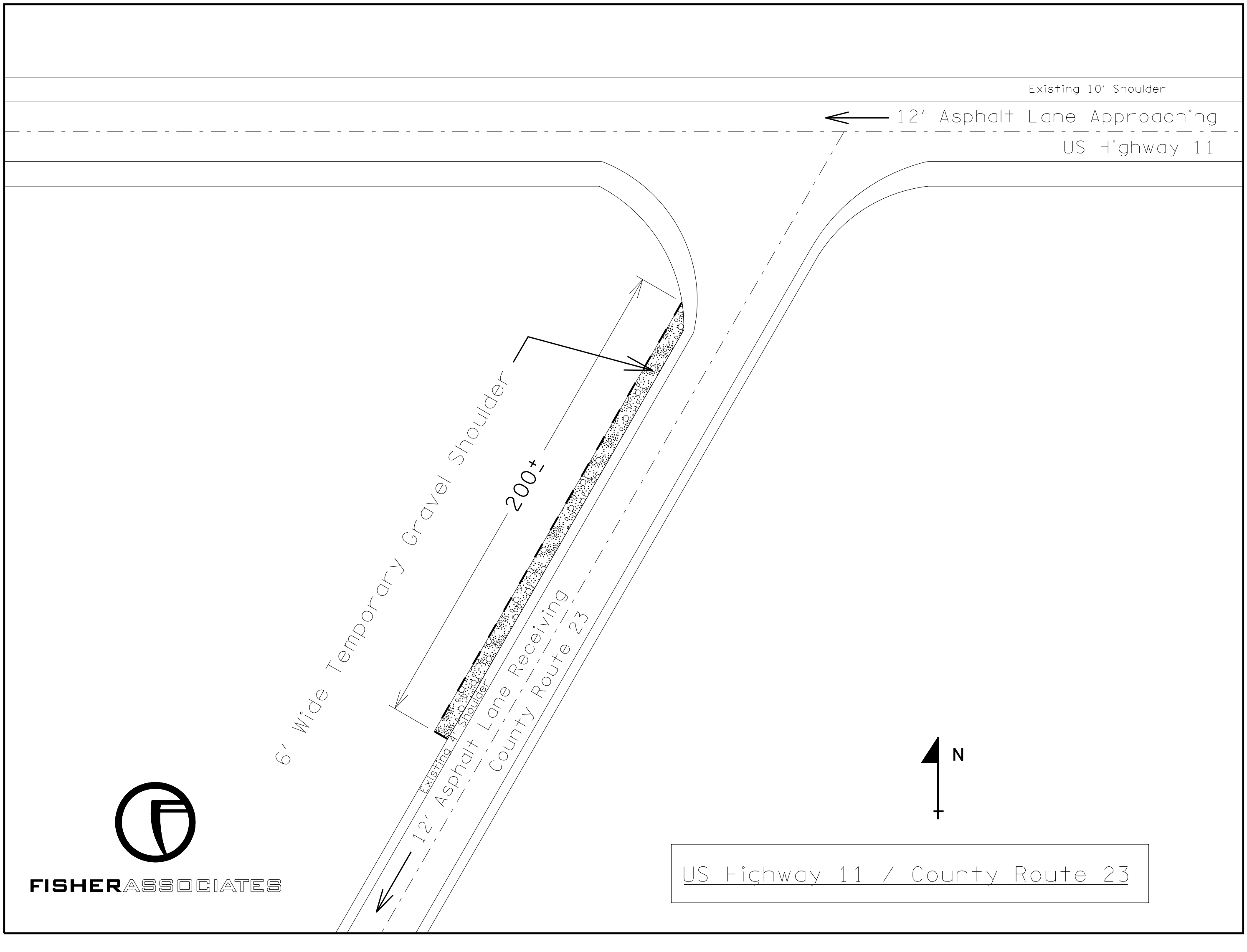


Cassidy Road / Sancomb Road

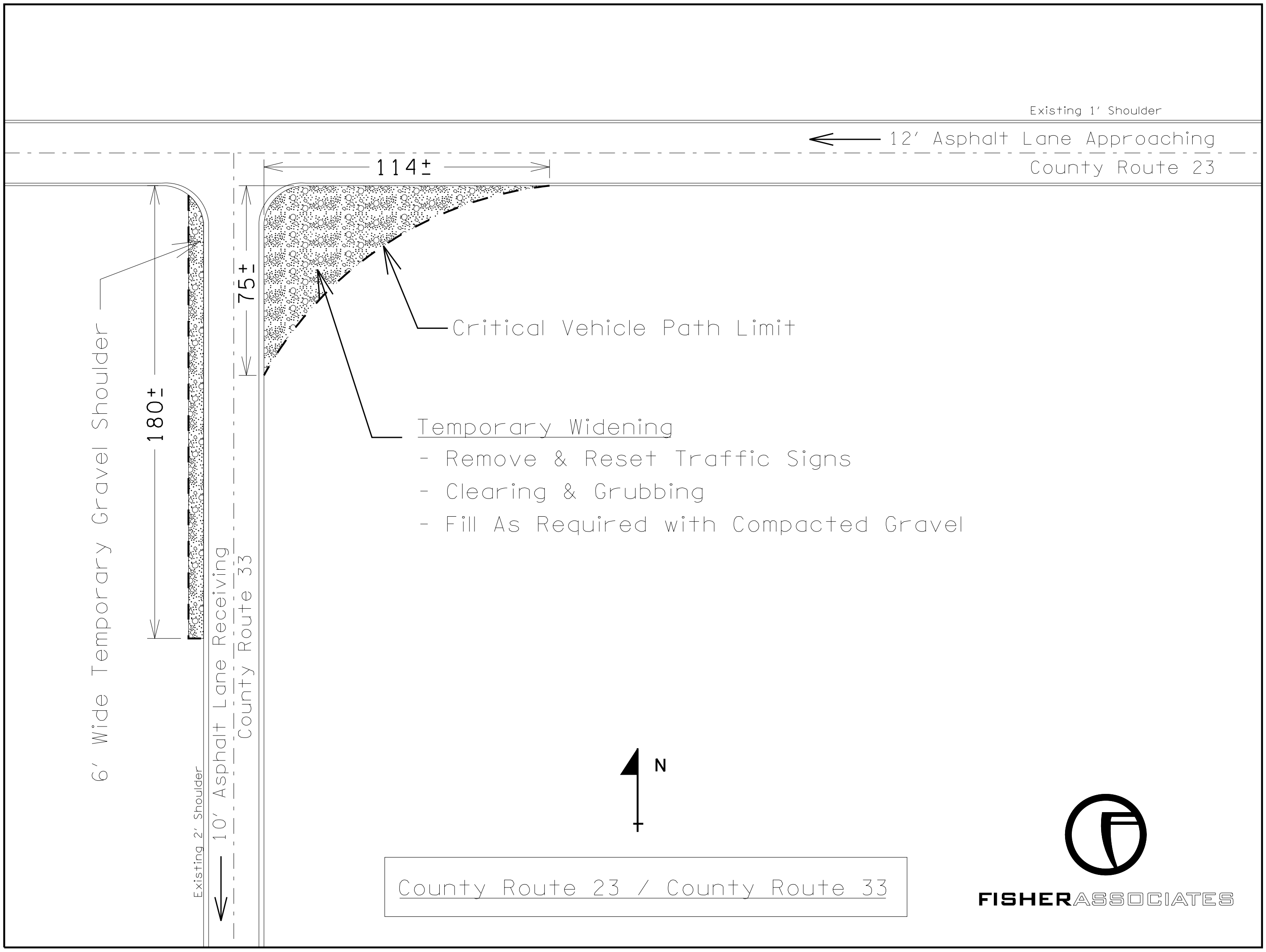


Sancomb Road / State Route 374

FISHERASSOCIATES

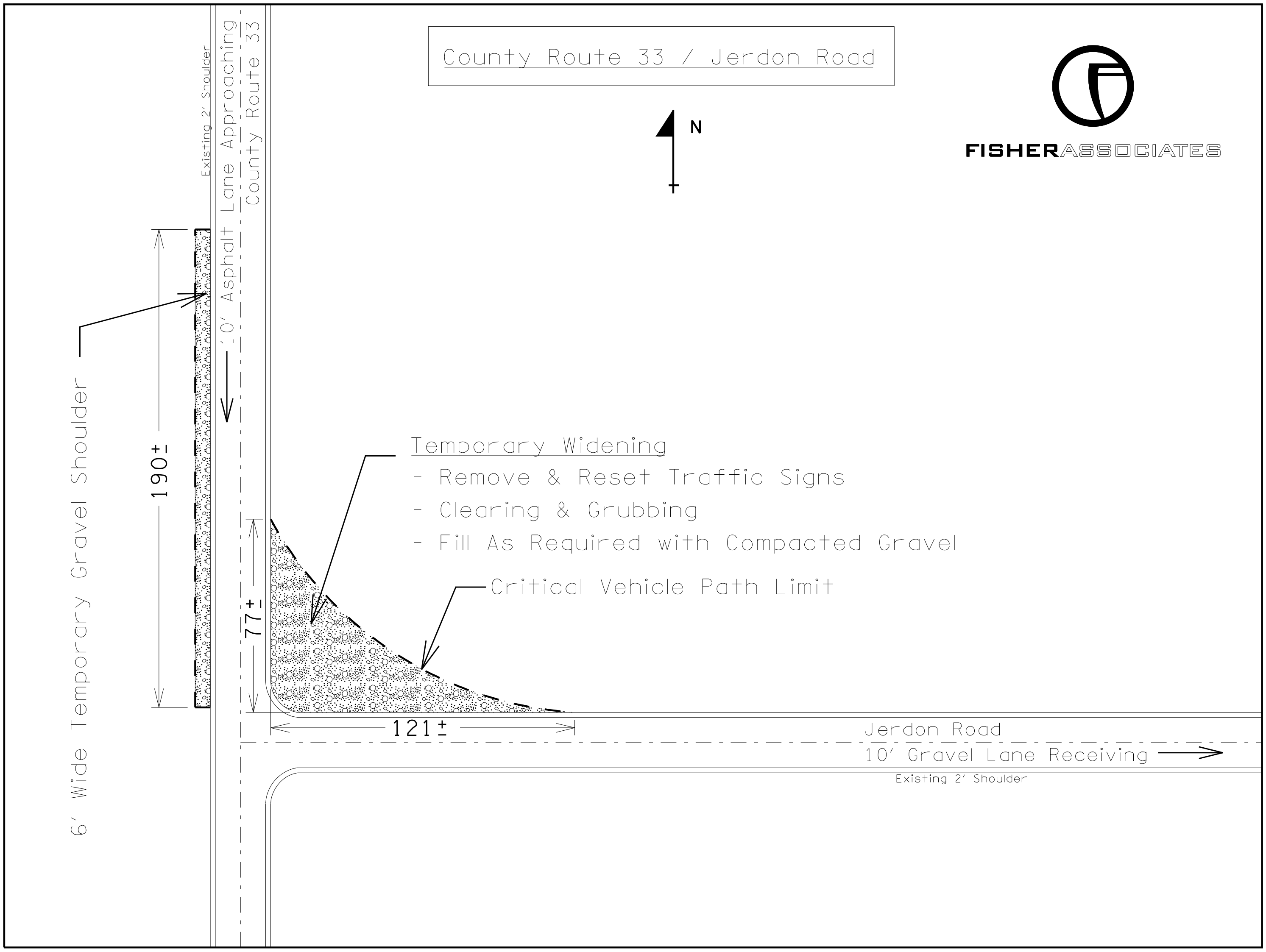


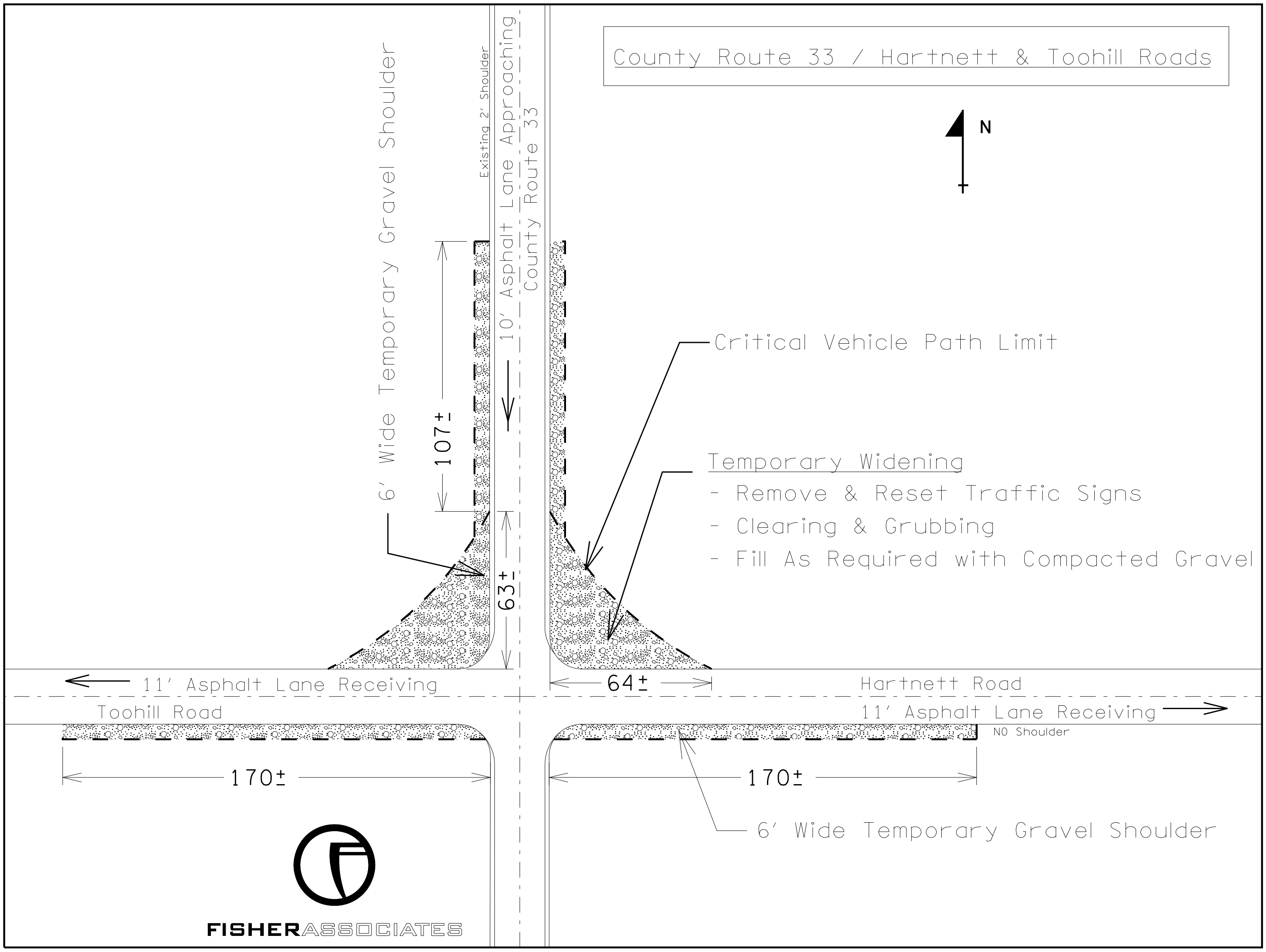
US Highway 11 / County Route 23



County Route 23 / County Route 33

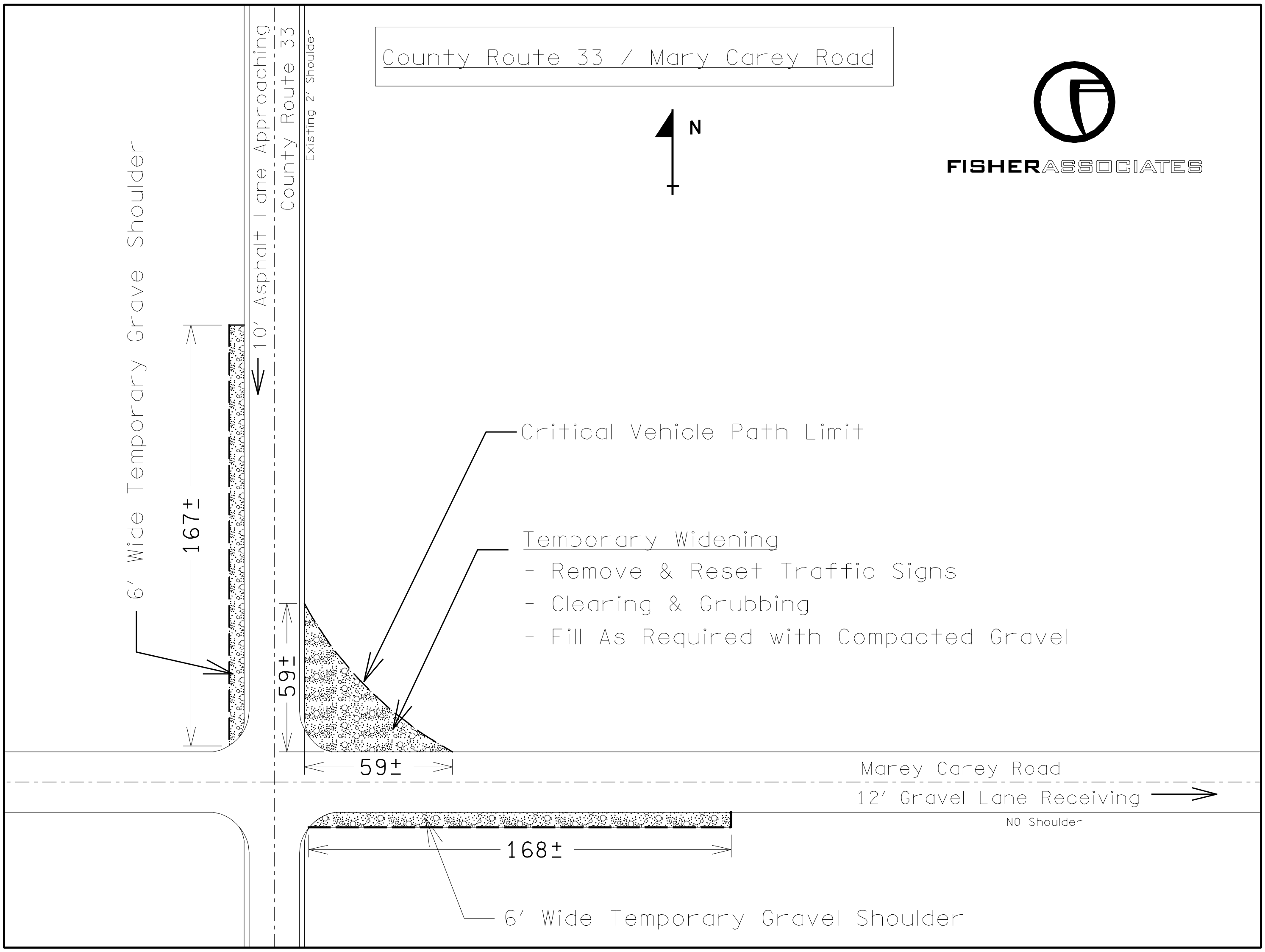
FISHERASSOCIATES


County Route 33 / Jerdon Road
N
FISHERASSOCIATES
Existing 2' Shoulder
10' Asphalt Lane Approaching
County Route 33
6' Wide Temporary Gravel Shoulder
190±
Temporary Widening
- Remove & Reset Traffic Signs
- Clearing & Grubbing
- Fill As Required with Compacted Gravel
Critical Vehicle Path Limit
77±
121±
Jerdon Road
10' Gravel Lane Receiving
Existing 2' Shoulder



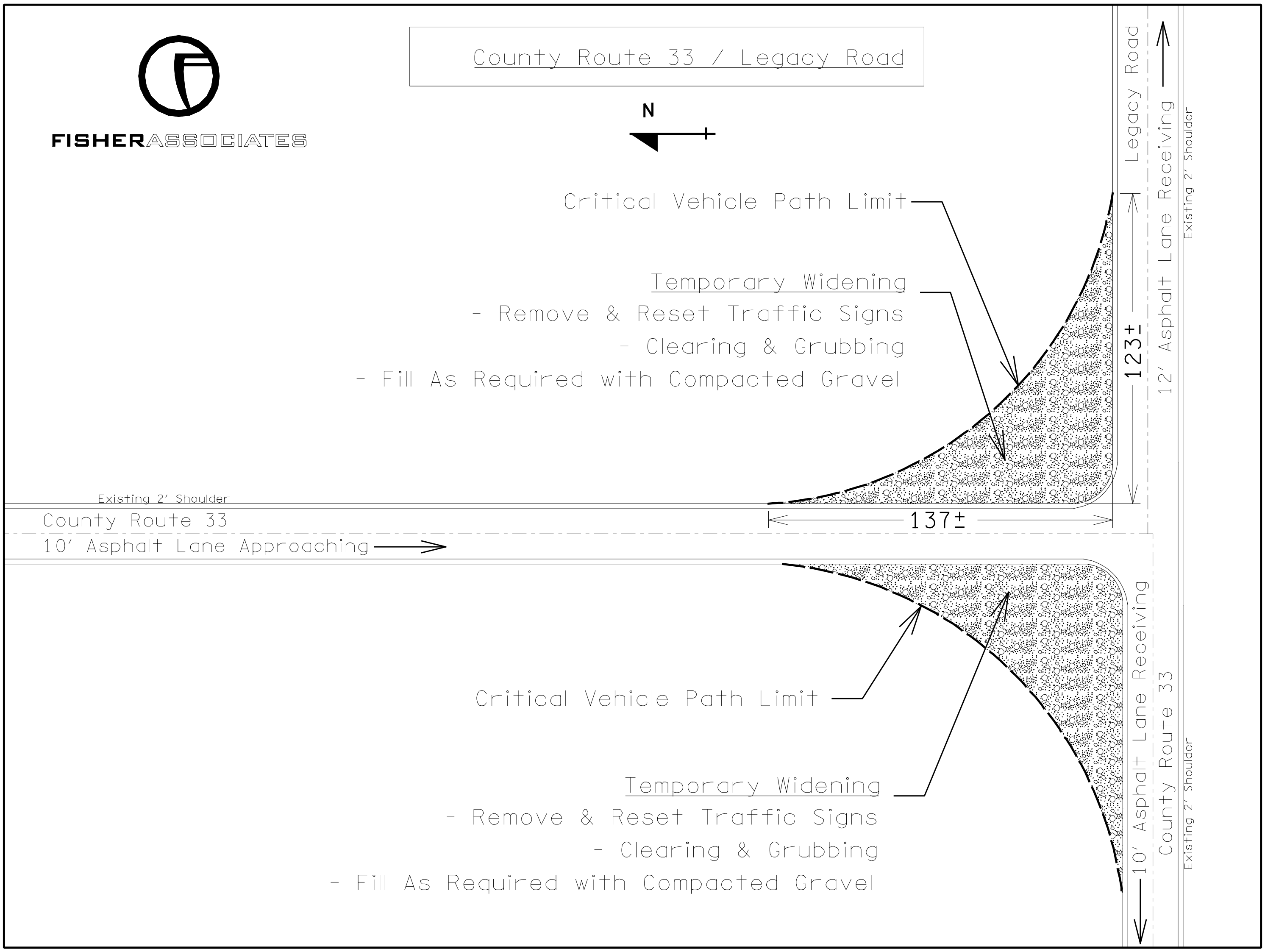
County Route 33 / Hartnett & Toohill Roads

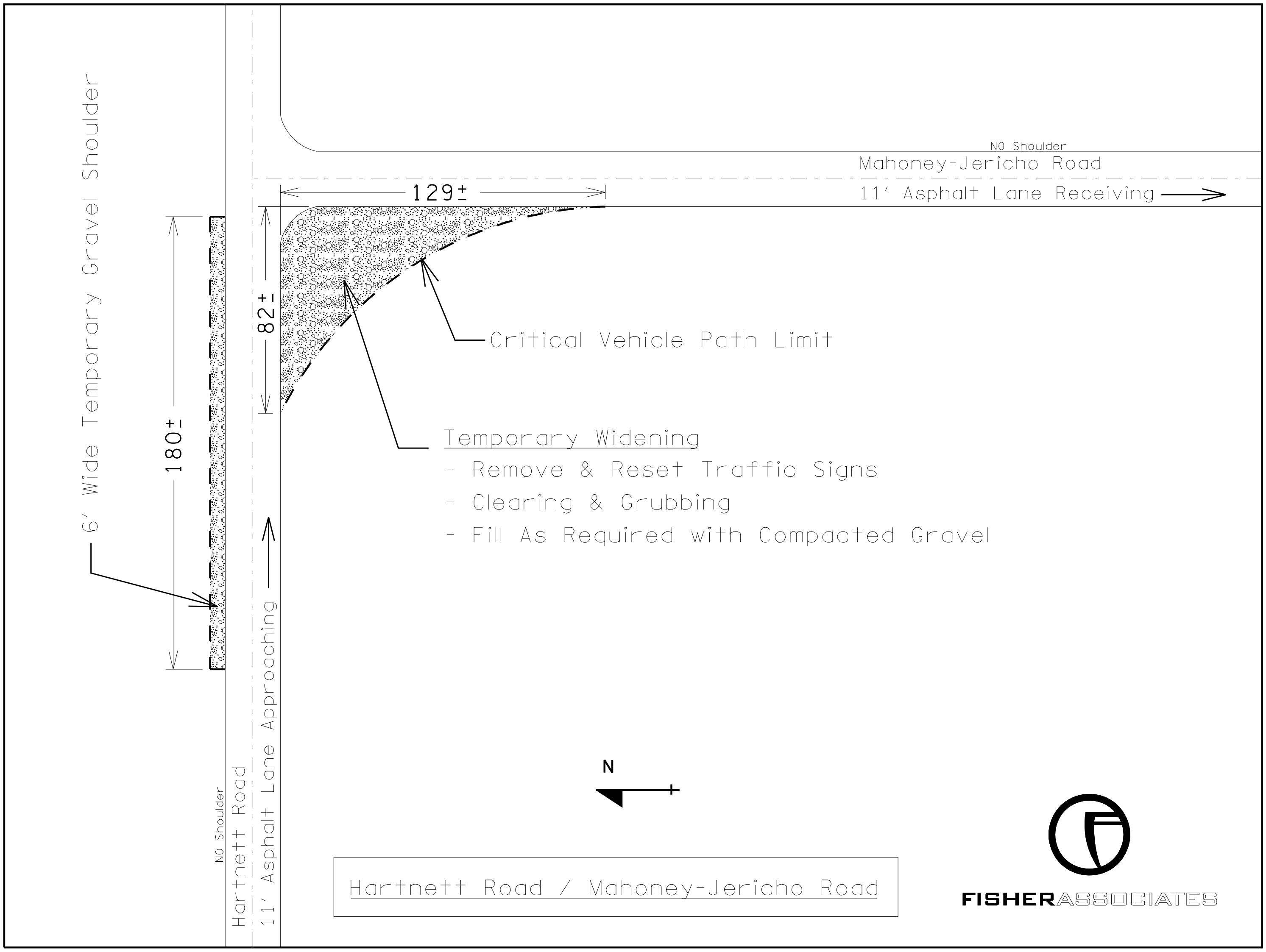
FISHERASSOCIATES


County Route 33 / Mary Carey Road
N
FISHERASSOCIATES
10' Asphalt Lane Approaching
County Route 33
Existing 2' Shoulder
6' Wide Temporary Gravel Shoulder
167±
Critical Vehicle Path Limit
Temporary Widening
- Remove & Reset Traffic Signs
- Clearing & Grubbing
- Fill As Required with Compacted Gravel
59±
59±
Marey Carey Road
12' Gravel Lane Receiving
NO Shoulder
168±
6' Wide Temporary Gravel Shoulder

FISHERASSOCIATES

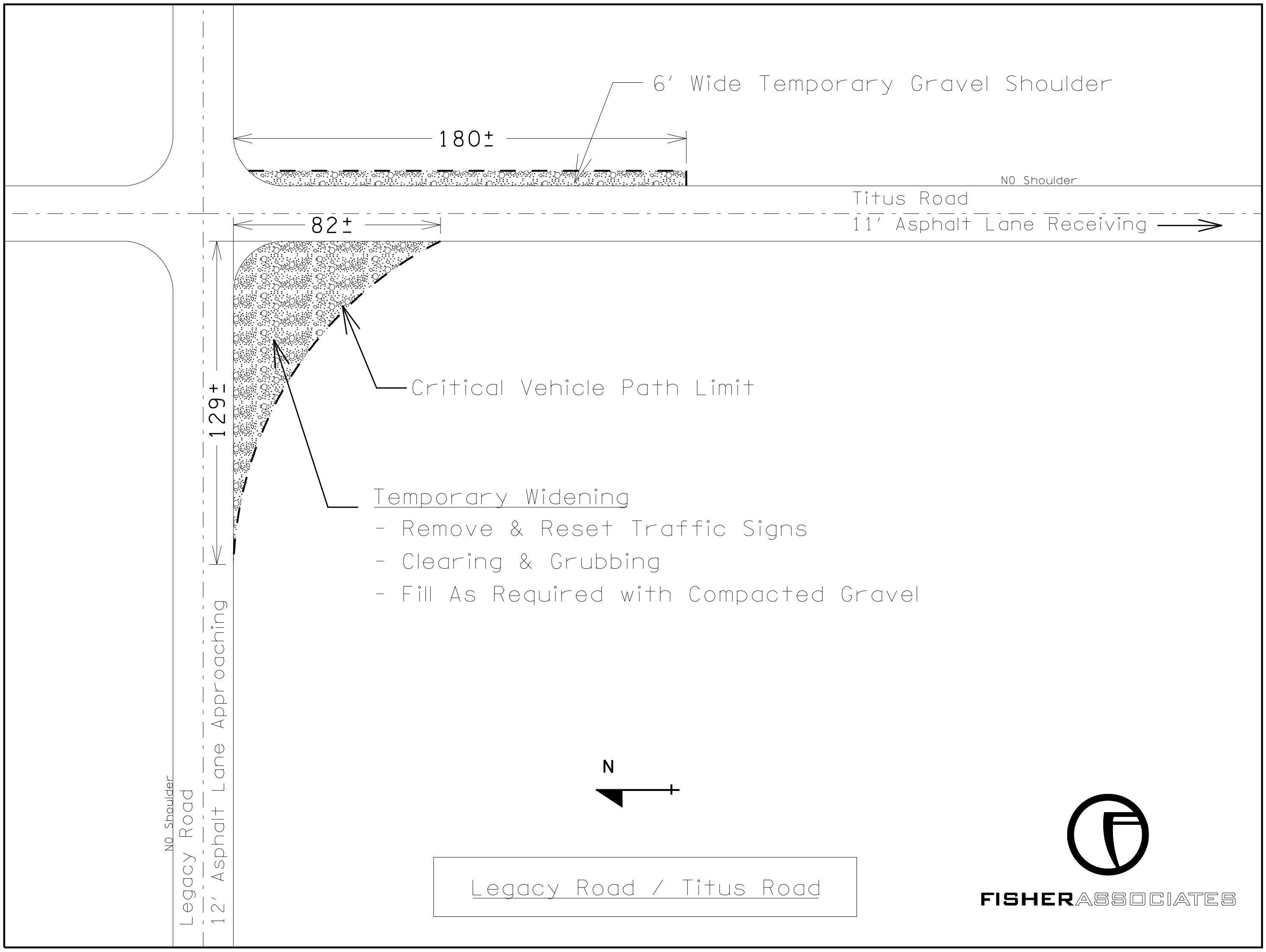
County Route 33 / Legacy Road





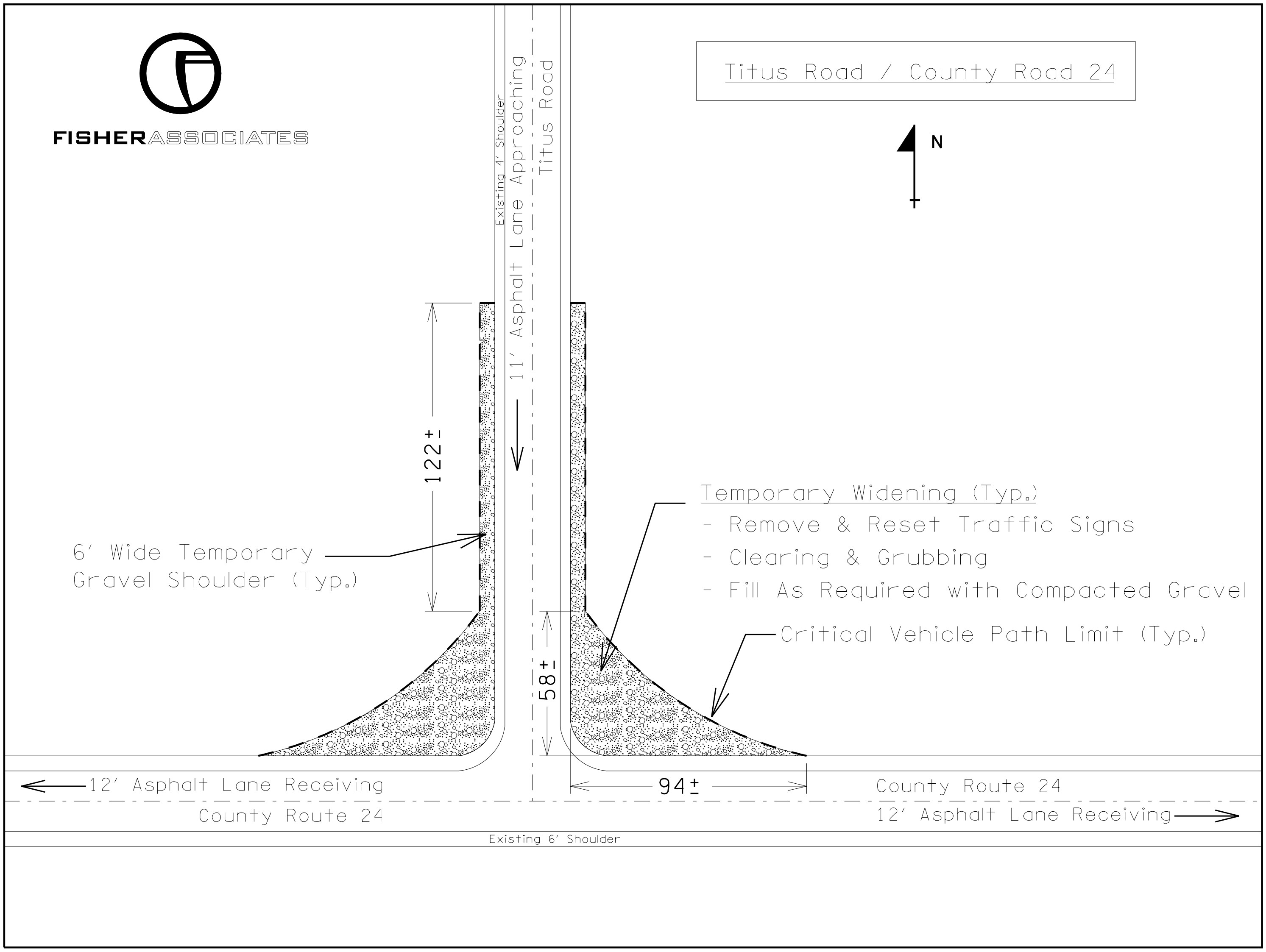
Hartnett Road / Mahoney-Jericho Road

FISHERASSOCIATES

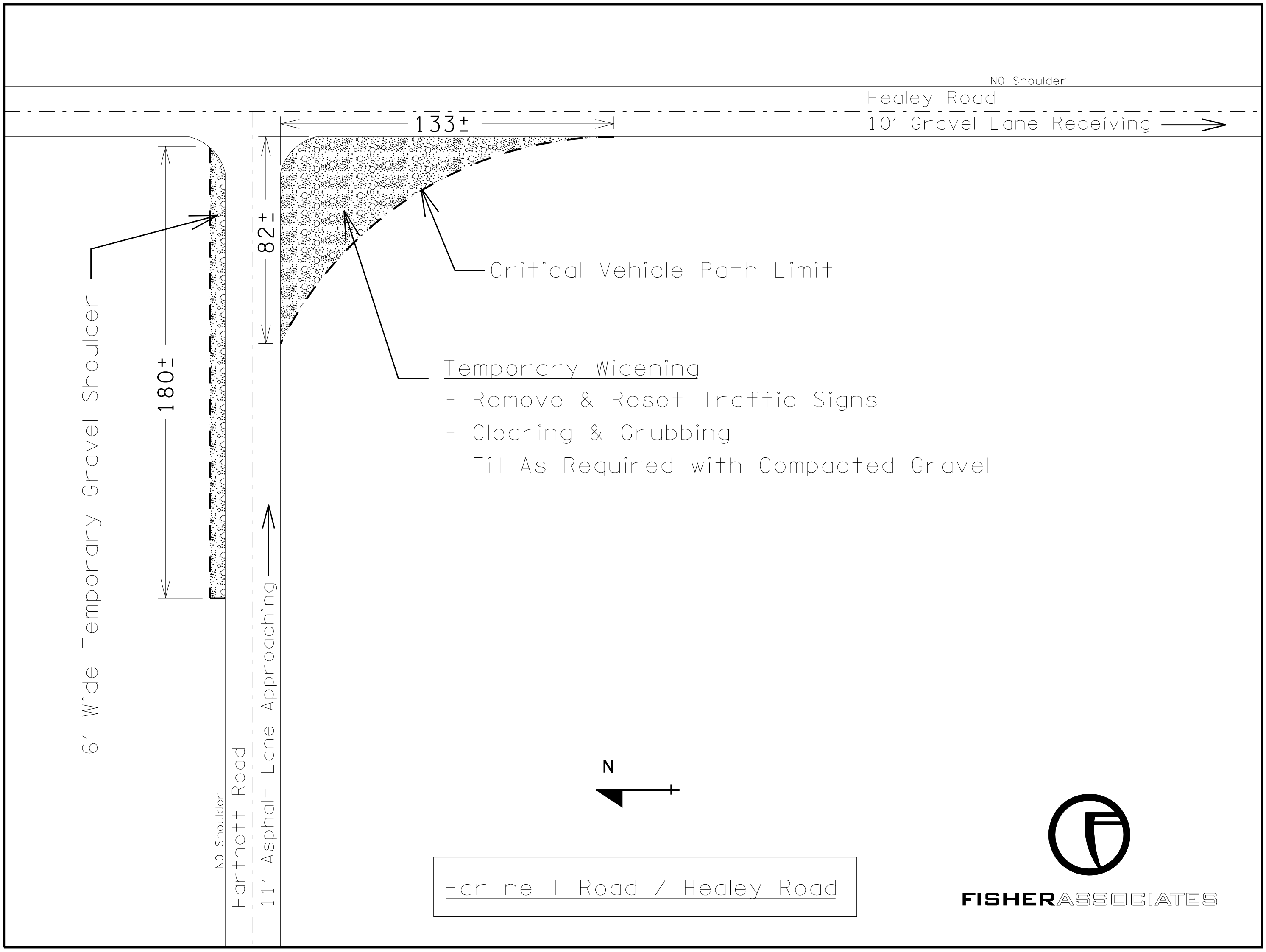


Legacy Road / Titus Road

FISHERASSOCIATES

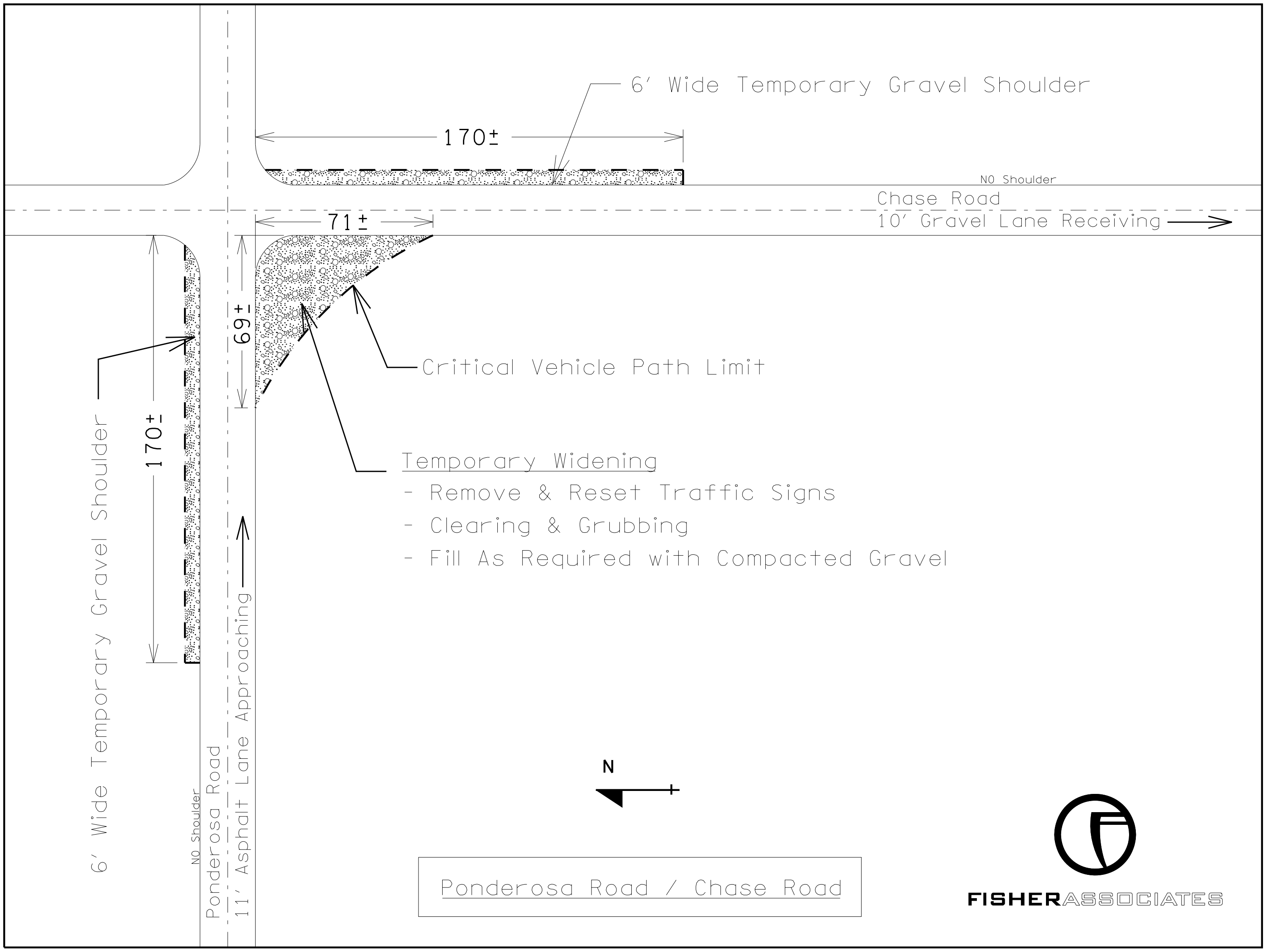


Titus Road / County Road 24



Hartnett Road / Healey Road

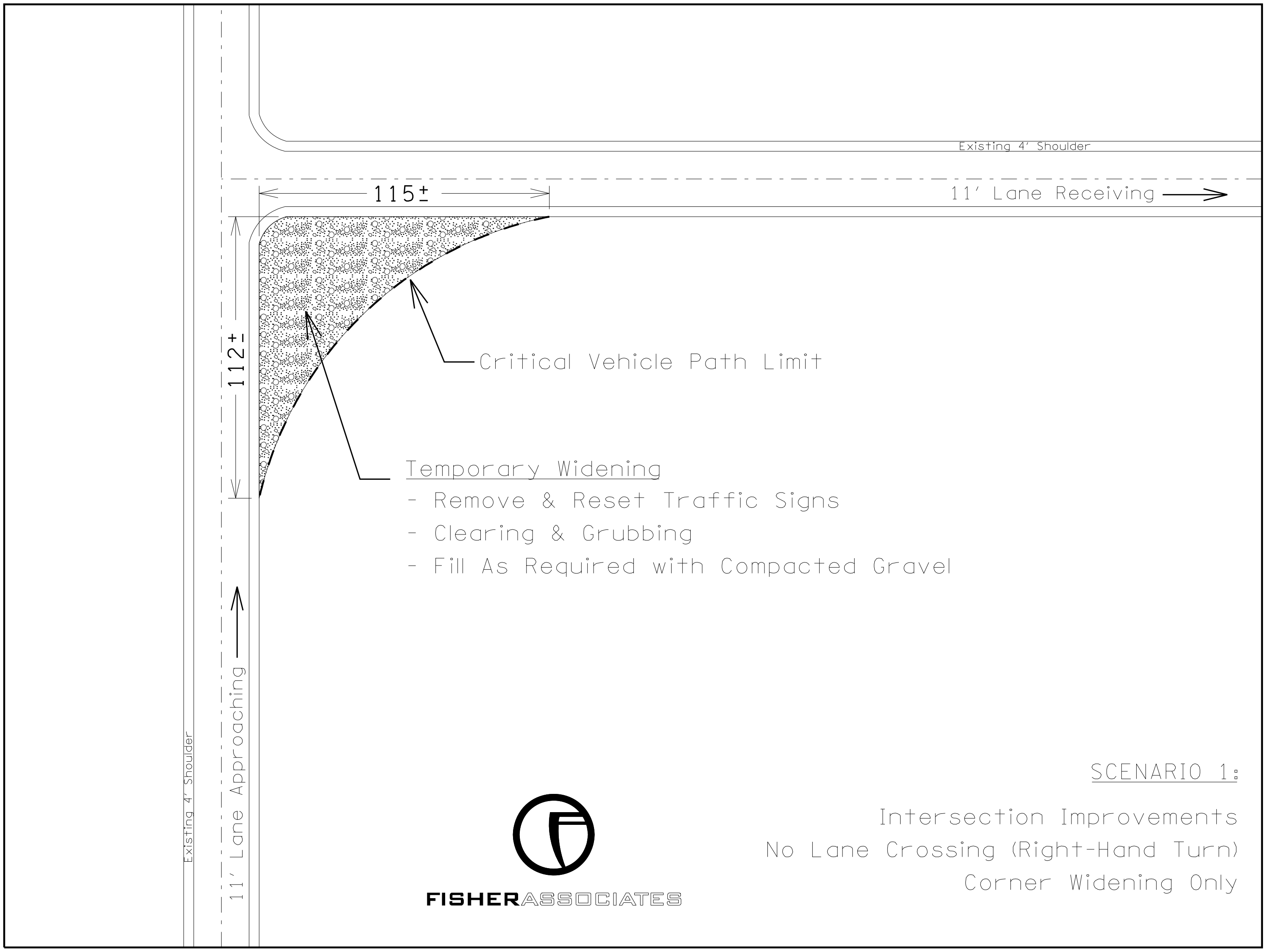
FISHERASSOCIATES



Ponderosa Road / Chase Road

FISHERASSOCIATES

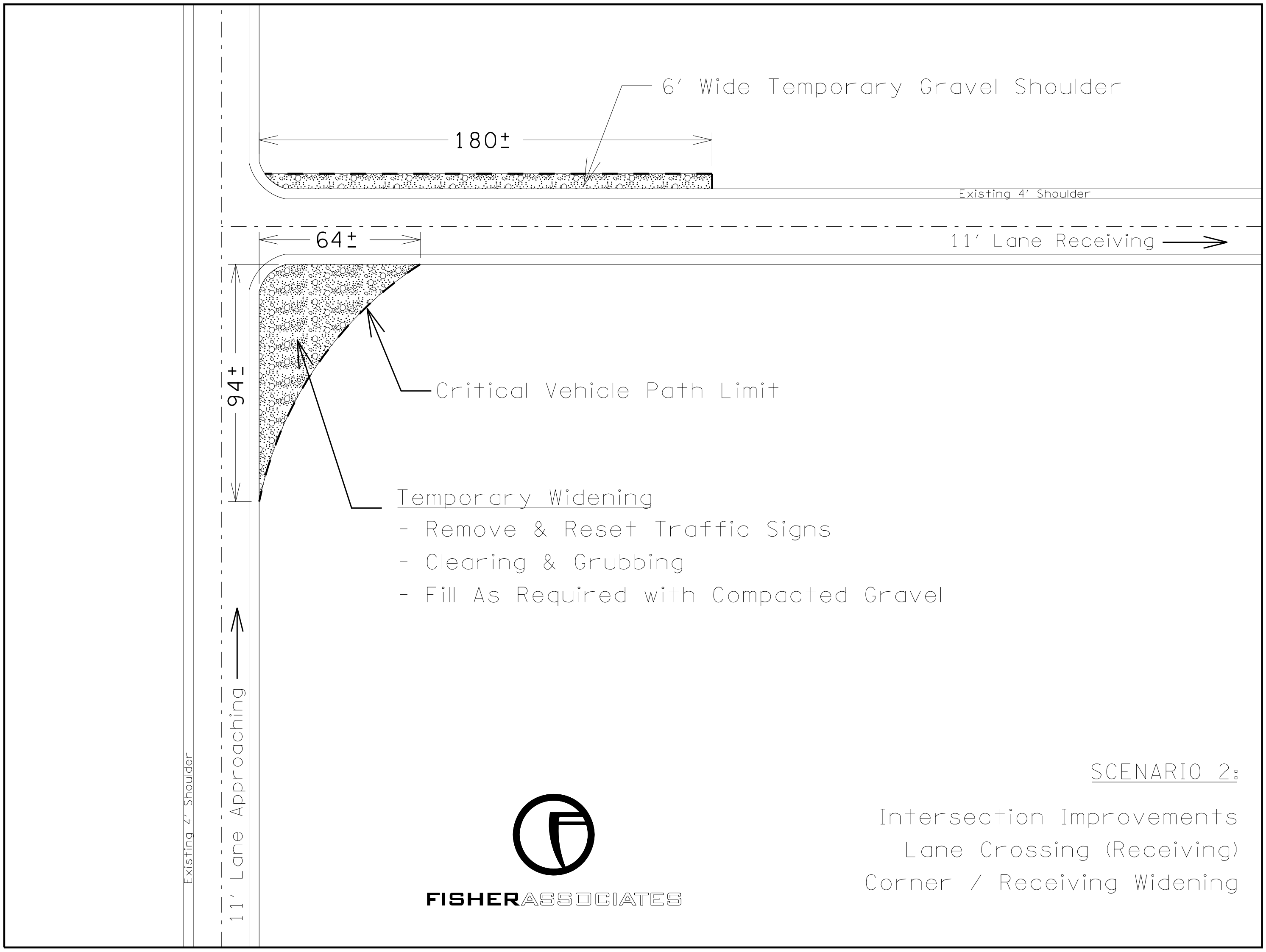
Exhibit 9: *Generic Intersection Improvements*



SCENARIO 1:

Intersection Improvements
No Lane Crossing (Right-Hand Turn)
Corner Widening Only

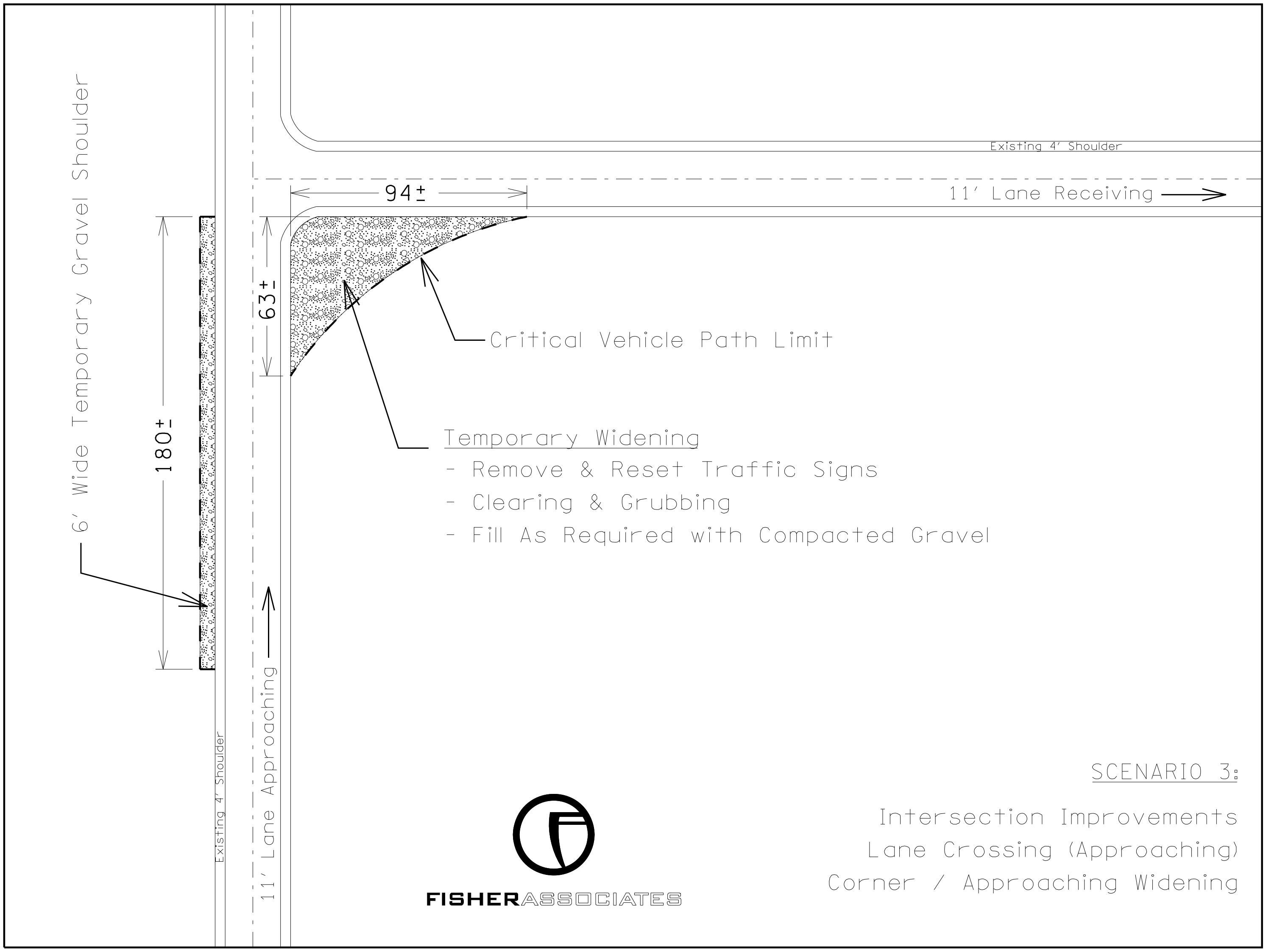
FISHERASSOCIATES



FISHERASSOCIATES

SCENARIO 2:

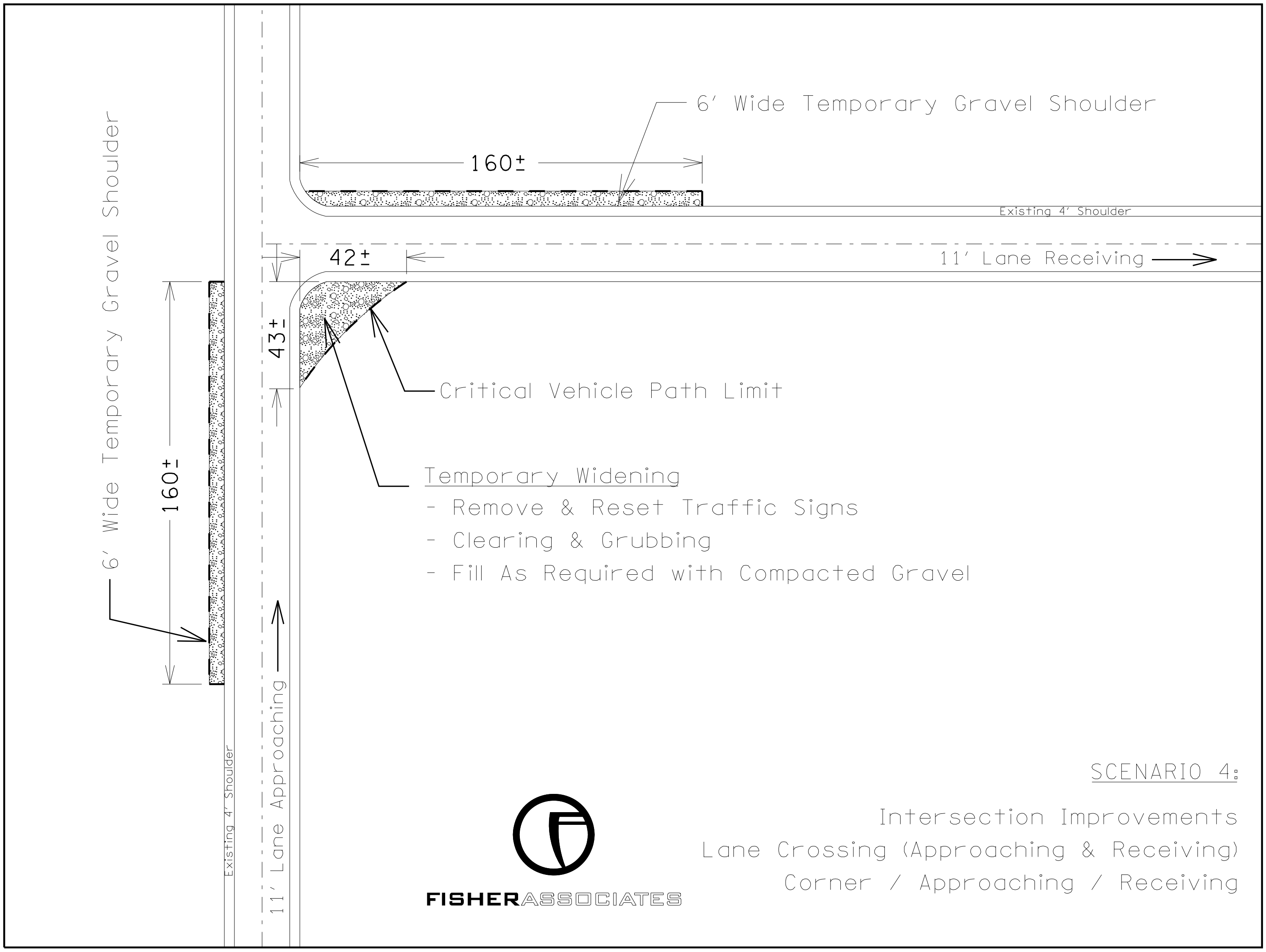
Intersection Improvements
Lane Crossing (Receiving)
Corner / Receiving Widening



FISHERASSOCIATES

SCENARIO 3:

Intersection Improvements
Lane Crossing (Approaching)
Corner / Approaching Widening

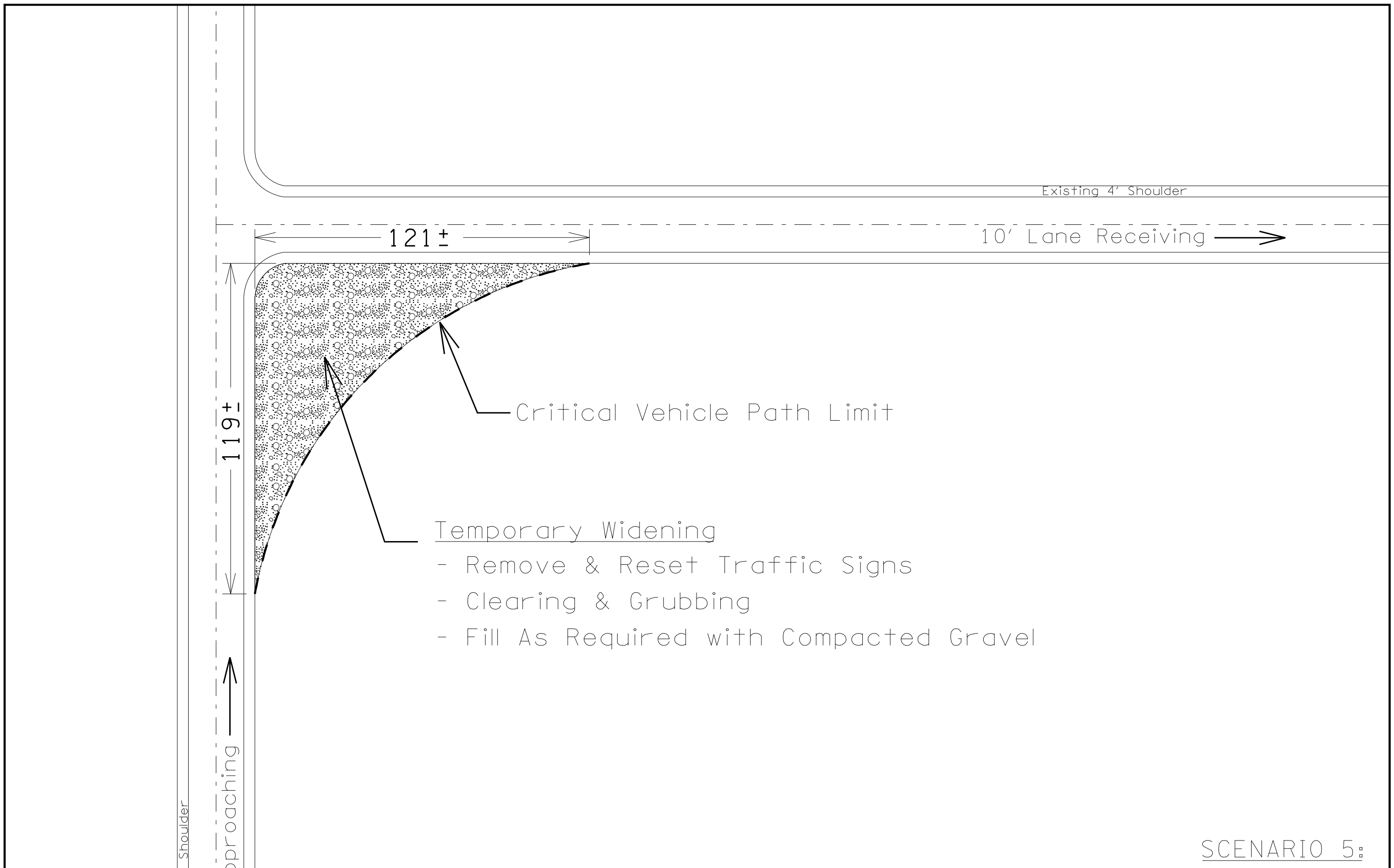


Temporary Widening
- Remove & Reset Traffic Signs
- Clearing & Grubbing
- Fill As Required with Compacted Gravel

FISHERASSOCIATES

SCENARIO 4:

Intersection Improvements
Lane Crossing (Approaching & Receiving)
Corner / Approaching / Receiving



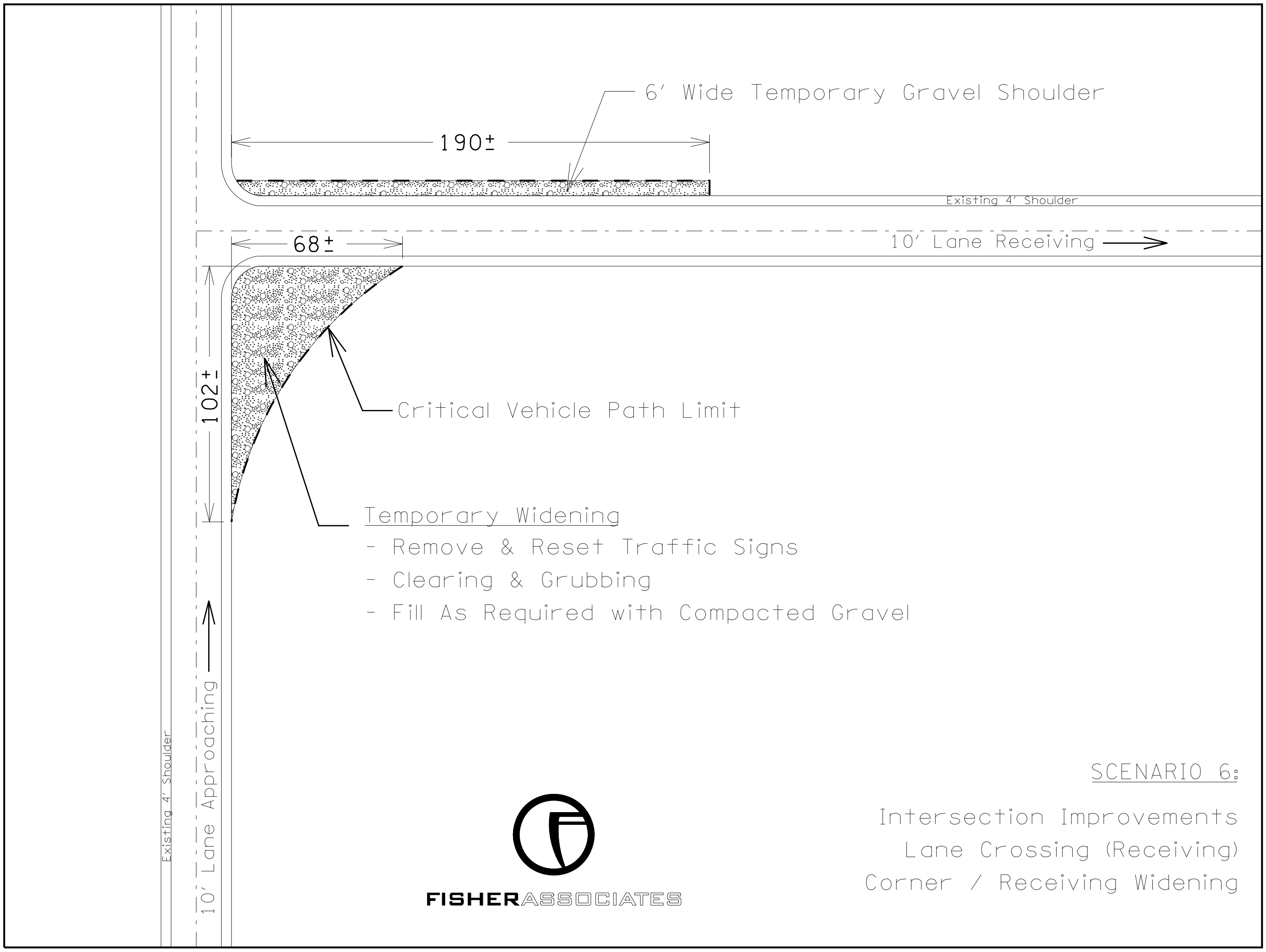
Critical Vehicle Path Limit

Temporary Widening
- Remove & Reset Traffic Signs
- Clearing & Grubbing
- Fill As Required with Compacted Gravel

SCENARIO 5:

Intersection Improvements
No Lane Crossing (Right-Hand Turn)
Corner Widening Only

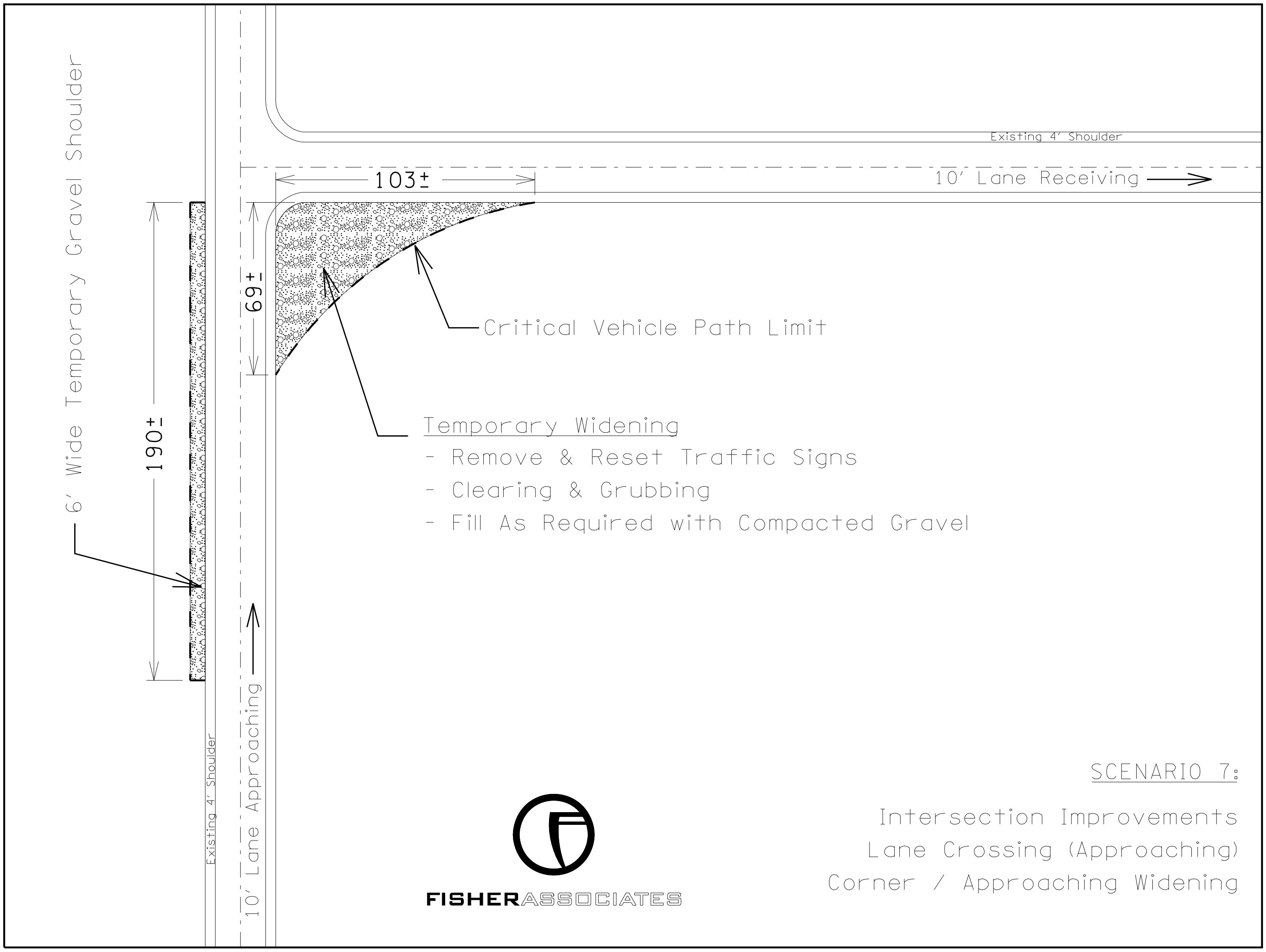
FISHERASSOCIATES



SCENARIO 6:

Intersection Improvements
Lane Crossing (Receiving)
Corner / Receiving Widening

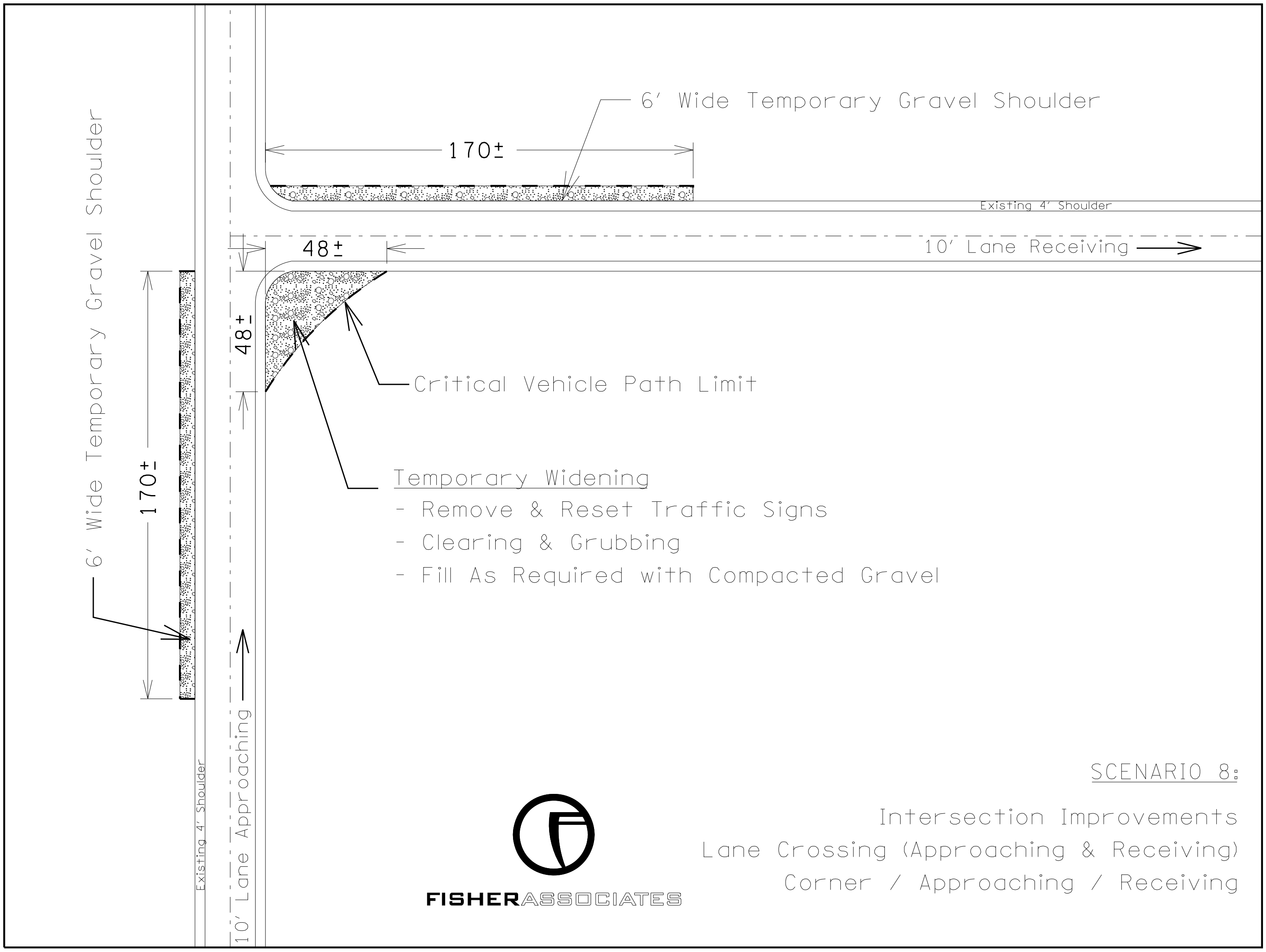
FISHERASSOCIATES



FISHERASSOCIATES

SCENARIO 7:

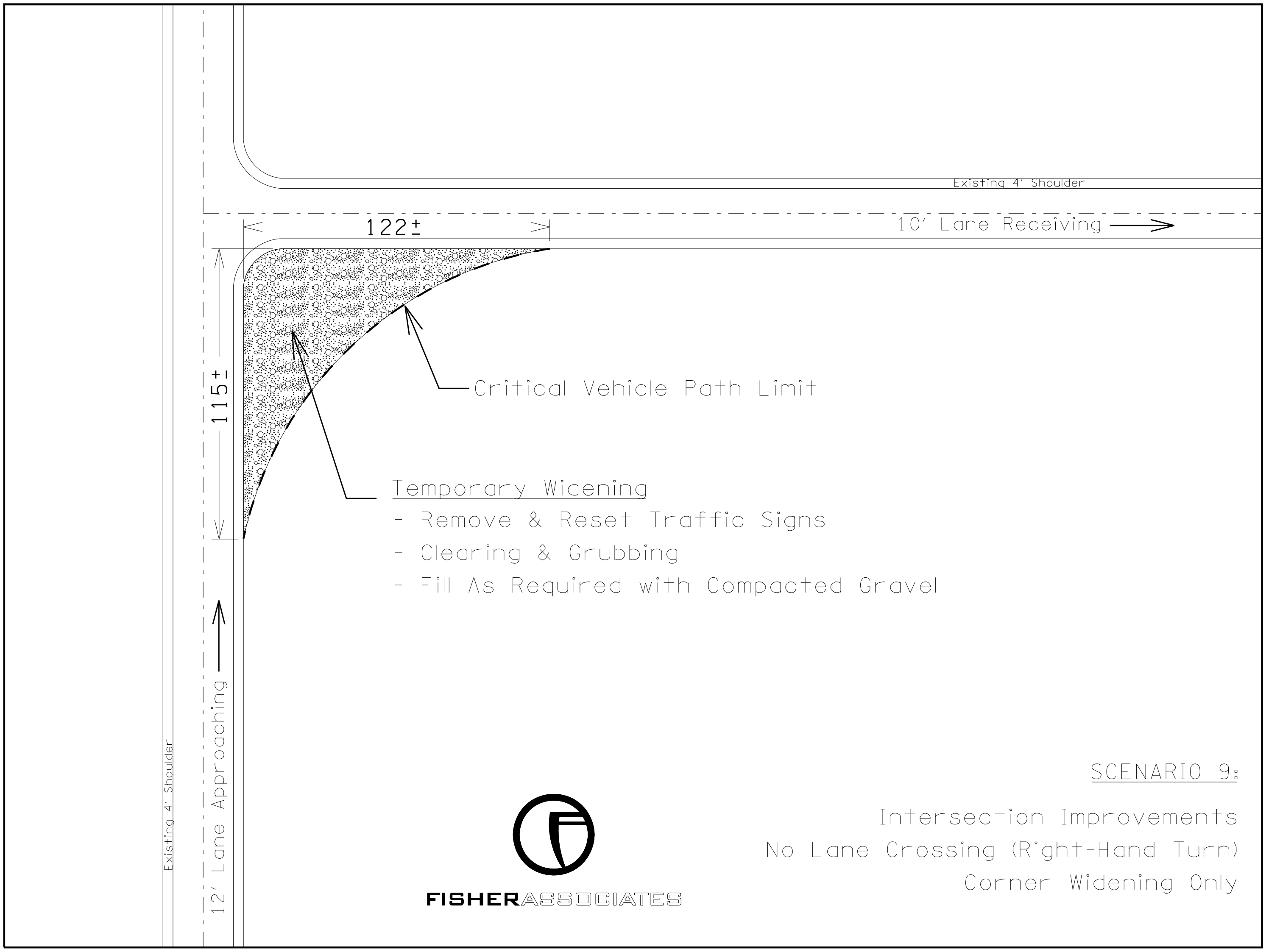
Intersection Improvements
Lane Crossing (Approaching)
Corner / Approaching Widening



SCENARIO 8:

Intersection Improvements
Lane Crossing (Approaching & Receiving)
Corner / Approaching / Receiving

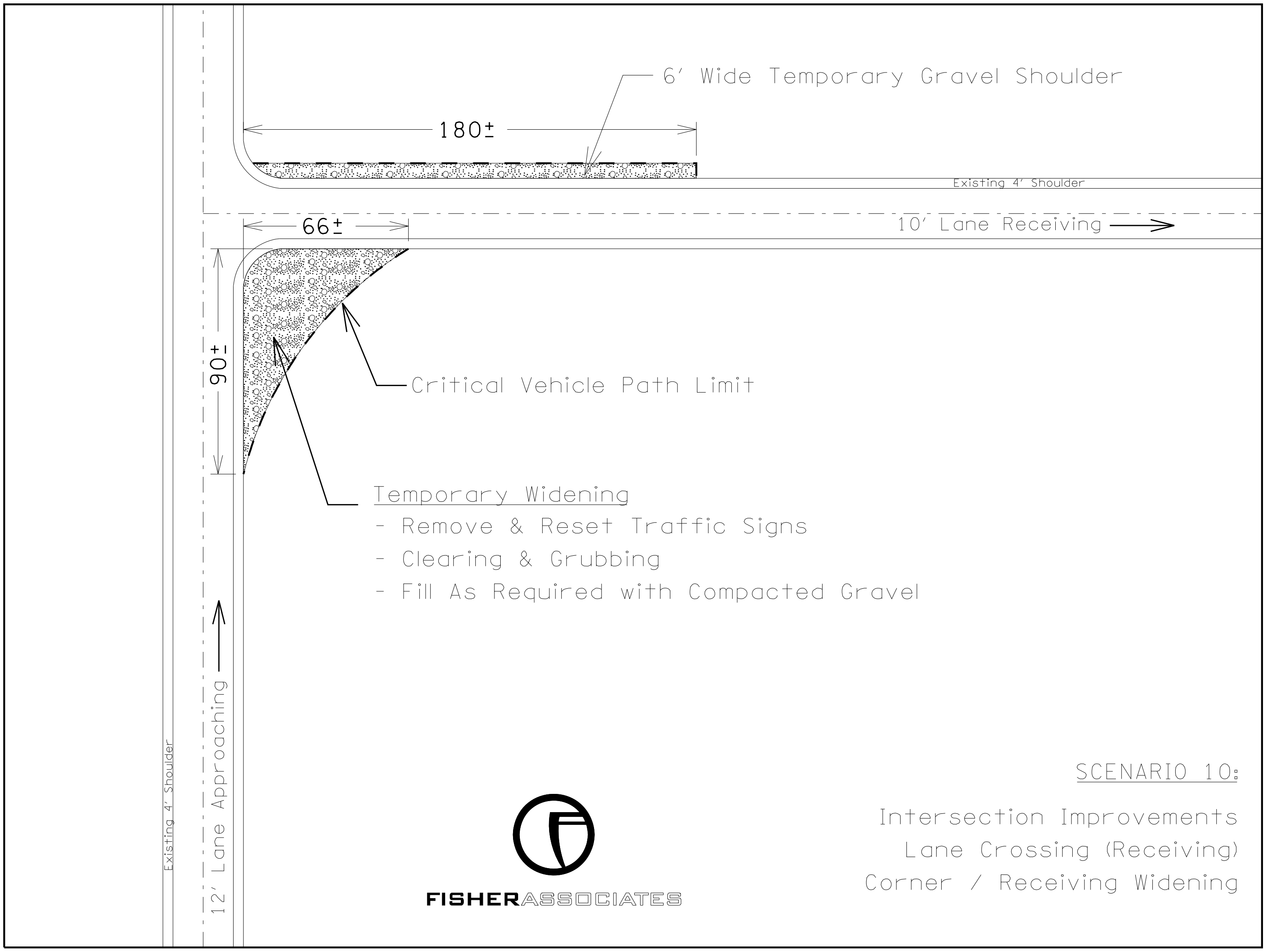
FISHERASSOCIATES



FISHERASSOCIATES

SCENARIO 9:

Intersection Improvements
No Lane Crossing (Right-Hand Turn)
Corner Widening Only

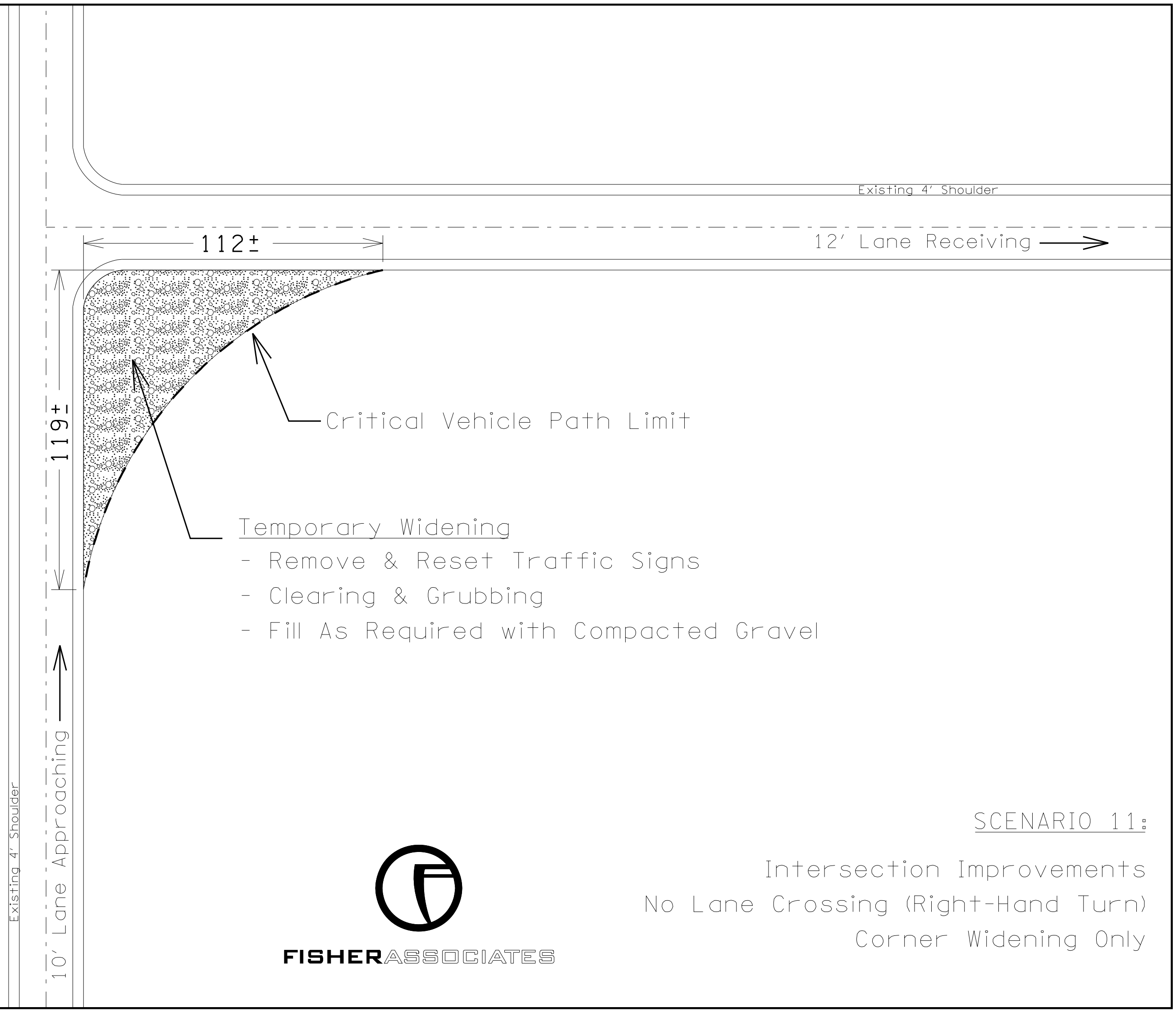


Temporary Widening
- Remove & Reset Traffic Signs
- Clearing & Grubbing
- Fill As Required with Compacted Gravel

SCENARIO 10:

Intersection Improvements
Lane Crossing (Receiving)
Corner / Receiving Widening

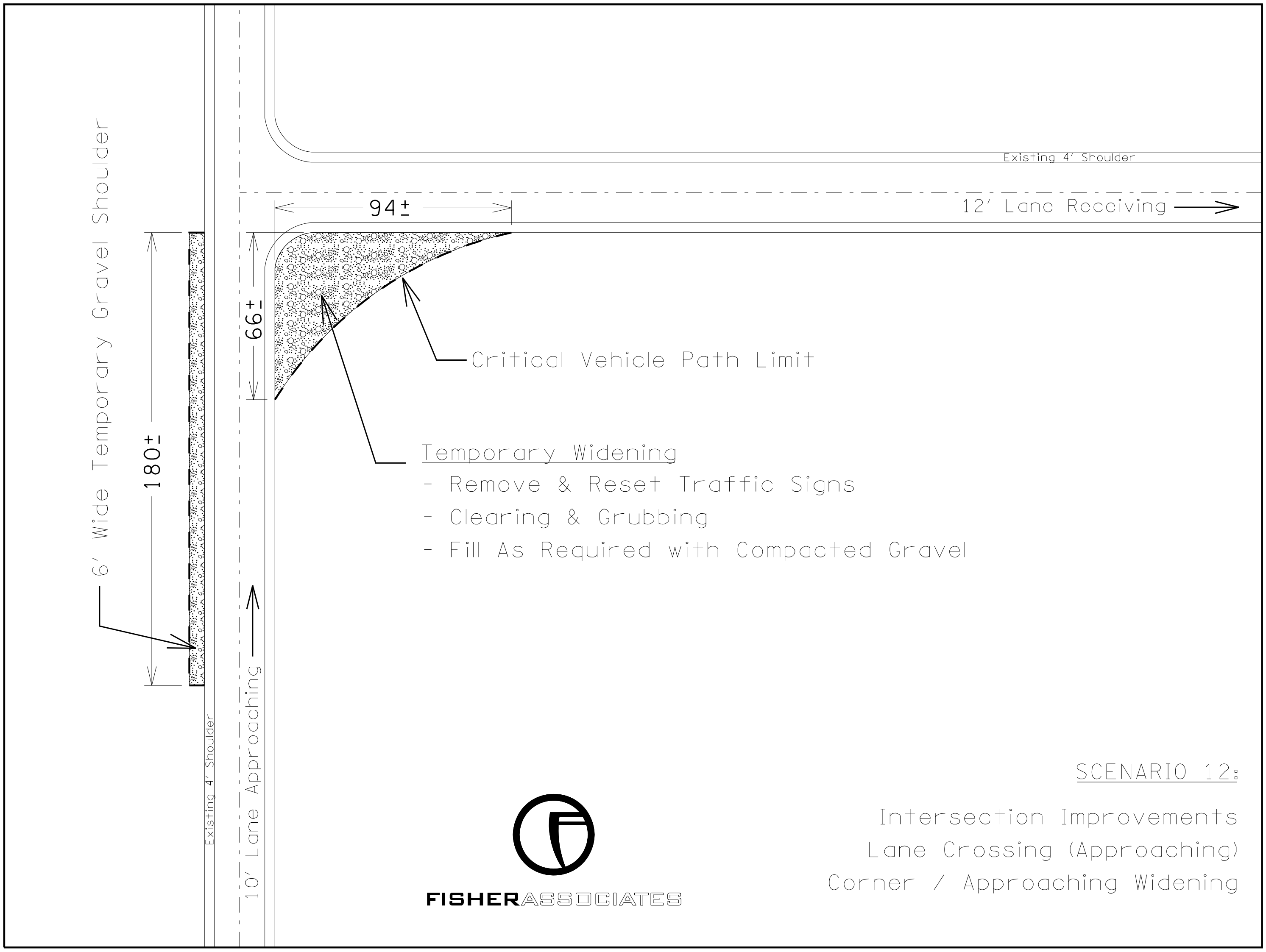
FISHERASSOCIATES



SCENARIO 11:

Intersection Improvements
No Lane Crossing (Right-Hand Turn)
Corner Widening Only

FISHERASSOCIATES



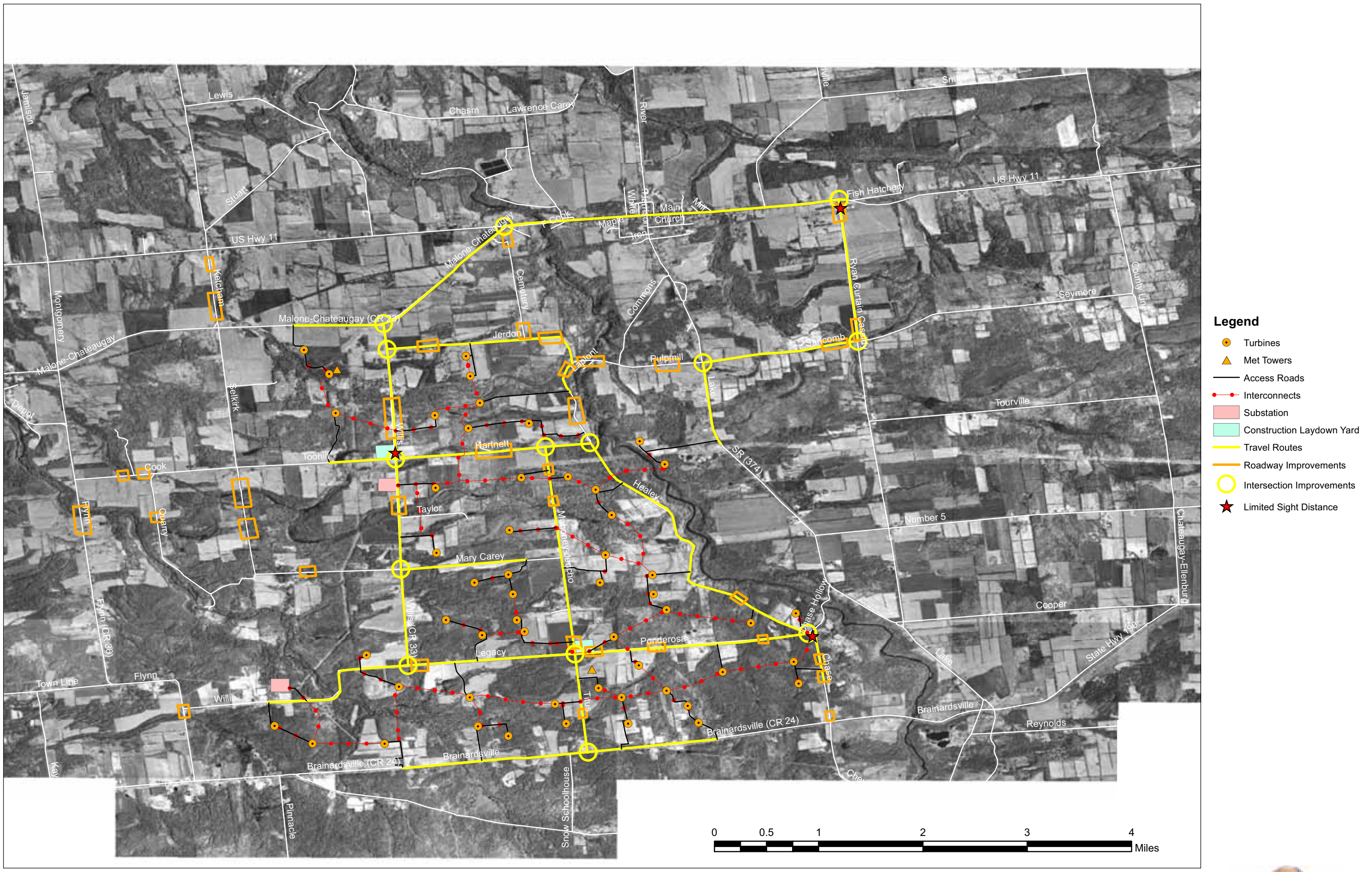
Temporary Widening
- Remove & Reset Traffic Signs
- Clearing & Grubbing
- Fill As Required with Compacted Gravel

SCENARIO 12:

Intersection Improvements
Lane Crossing (Approaching)
Corner / Approaching Widening

FISHERASSOCIATES

Exhibit 10: *Construction Traffic Routes & Roadway Improvement Locations*



Jericho Rise Wind Farm

Construction Traffic Routes & Roadway Improvement Locations

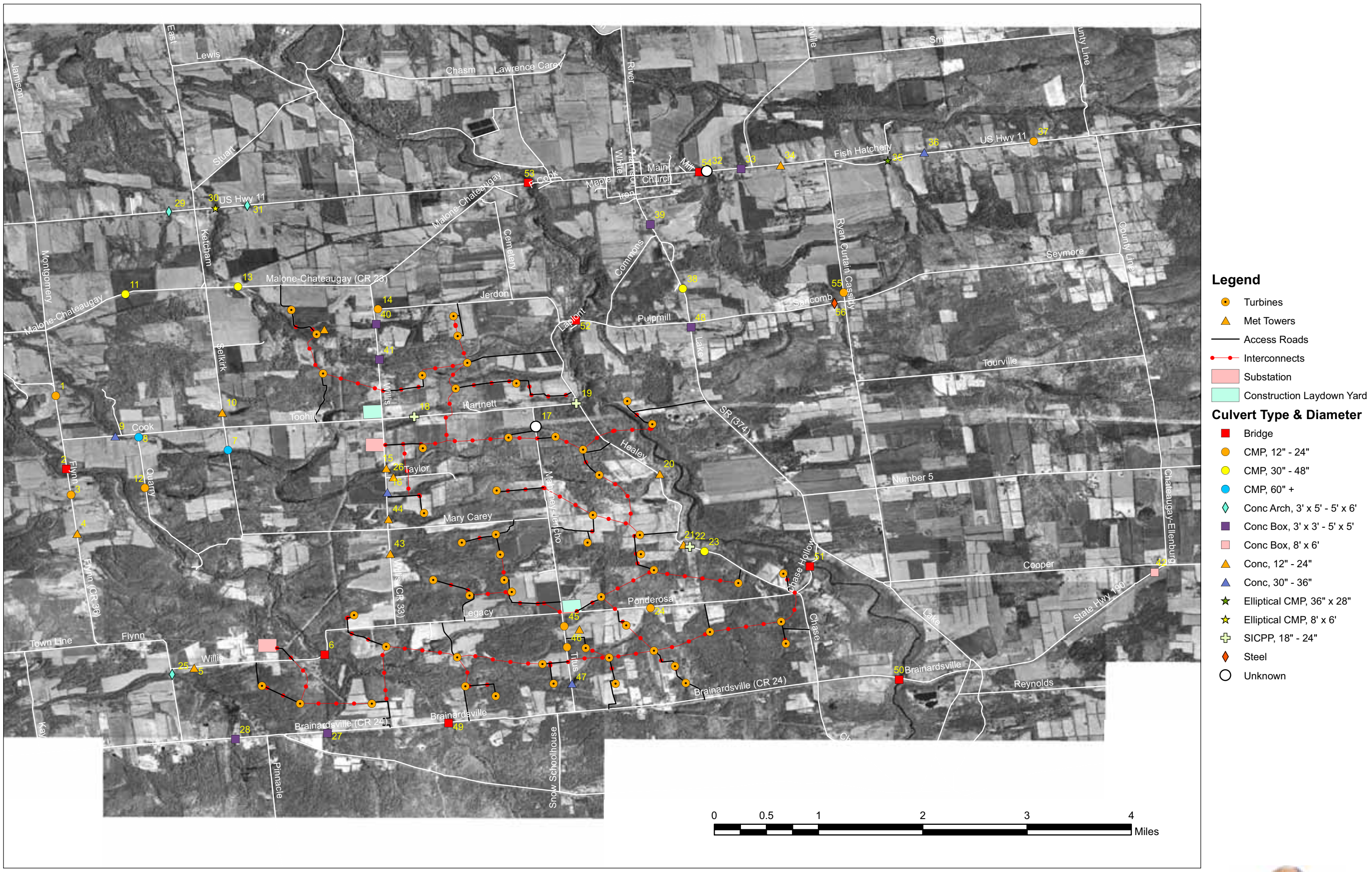
FISHER ASSOCIATES

Exhibit 11: *Overhead Wire*

Jericho Rise Wind Farm

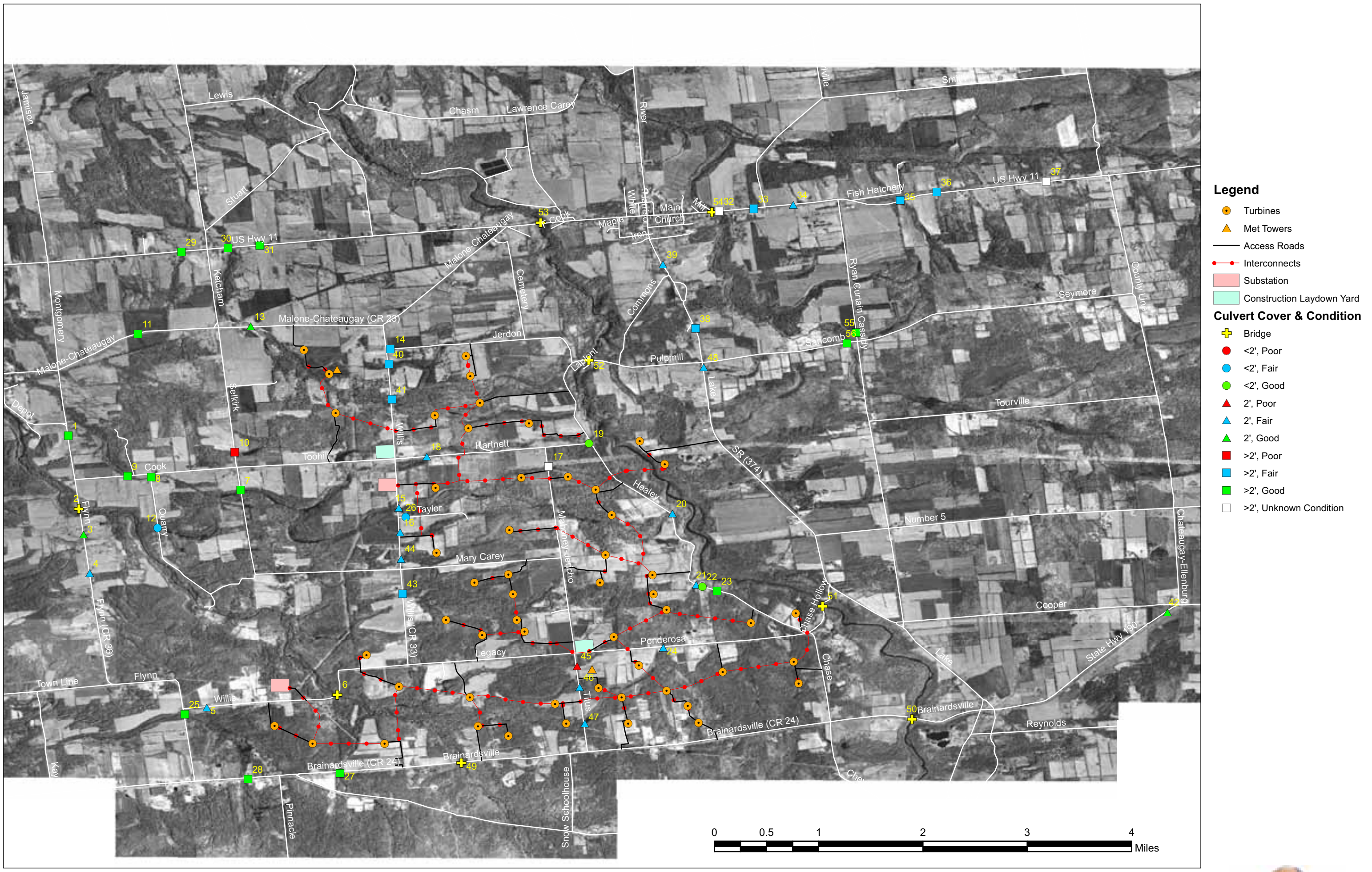
Overhead Wire

Exhibit 12: *Drainage Structure Locations*



Jericho Rise Wind Farm

Culvert Type & Diameter



Jericho Rise Wind Farm

Culvert Minimum Cover & Condition

APPENDIX B

County Route 24 (Brainardsville Rd)

190-24-374 Intersection; Facing East

190-24-374 Intersection; Facing West

190-24-374 Intersection; Facing North

190-24-374 Intersection; Facing South

County Route 24 (Brainardsville Rd)

Intersection w/ Chase Rd; Facing North

CR24 East of Chase Rd; Eastbound

Intersection w/ Titus Rd; Facing North

Intersection w/ Titus Rd; Facing South

Healey Road

Intersection w/ Ponderosa Rd; Facing East

Intersection w/ Ponderosa Rd; Facing South

River Rd North of Ponderosa Rd; Southbound

River Rd South of Hartnett Rd; Northbound

Healey Road

Intersection w/ Hartnett Rd; Facing East

Intersection w/ Hartnett Rd; Facing West

Intersection w/ Jerdon Rd; Facing North

Intersection w/ Jerdon Rd; Facing South

Mahoney Jericho Road

Intersection w/ Legacy Rd; Facing East

Intersection w/ Legacy Rd; NE Corner

Intersection w/ Mary Carey Rd; Facing East

Intersection w/ Mary Carey Rd; Facing West

Mahoney Jericho Road

Mahoney Jericho Rd South of Hartnett Rd;
Northbound

Mahoney Jericho Rd South of Hartnett Rd;
Southbound

Intersection w/ Hartnett Rd; Facing South

Intersection w/ Hartnett Rd; Facing East

County Route 33 (Willis Rd)

Sweeping 90º Curve; Eastbound

Sweeping 90º Curve; Eastbound

Sharp 90º Curve; Eastbound

Sharp 90º Curve; Eastbound

County Route 33 (Willis Rd)

Intersection w/ Legacy Rd; Facing South

Intersection w/ Legacy Rd; Facing North

CR33 South of Taylor Rd; Northbound

Intersection w/ Hartnett Rd; Facing East

County Route 33 (Willis Rd)

Intersection w/ Jerdon Rd; Facing East

Intersection w/ CR23; Facing South

Intersection w/ CR23; Facing East

Intersection w/ CR23; Facing West

County Route 23 (Malone-Chateaugay Rd)

Intersection w/ US11; Facing SW

Intersection w/ US11; Facing South

CR23 West of Selkirk Rd; Eastbound

CR23 East of Selkirk Rd; Westbound

Mary Carey Road


Mary Carey Rd West of CR33; Westbound

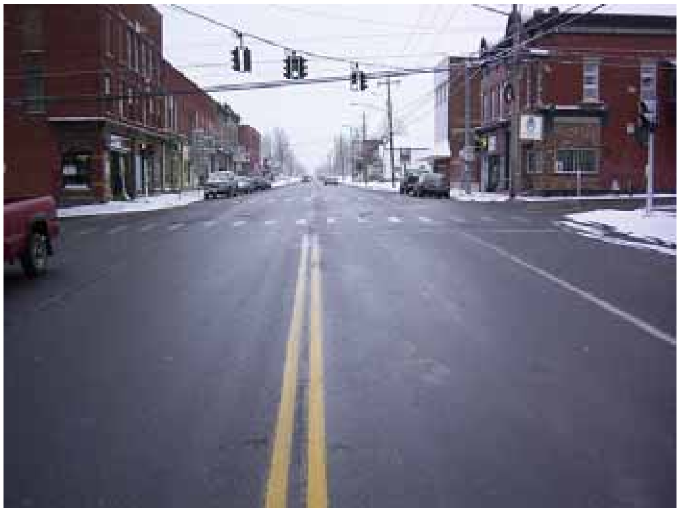

Mary Carey Rd East of CR33; Eastbound

United States Route 11

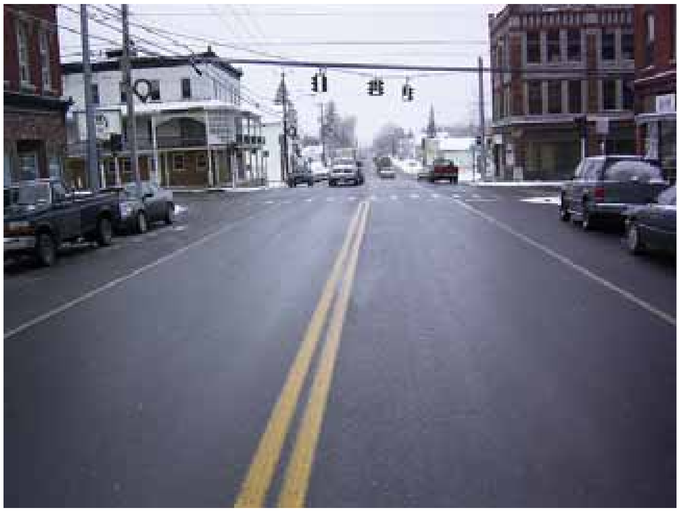
Turn in Mooers Center; Facing East

Turn in Mooers Center; Facing North

United States Route 11 (Main St)



Intersection w/ SR374; Facing East



Intersection w/ SR374; Facing West

Intersection w/ SR374; Facing North

US11 East of SR374; Westbound

United States Route 11 (Main St)

Intersection w/ Cassidy Rd; East Approach

Intersection w/ Cassidy Rd; Facing West

Intersection w/ Cassidy Rd; Facing North

US11 East of Cassidy Rd; Eastbound

Cassidy Road


Intersection w/ Sancomb Rd; Facing South


Intersection w/ Sancomb Rd; Facing North

State Route 374 (Lake St)


Intersection w/ Sancomb Rd; South Approach


SR374 South of Sancomb Rd; Northbound

APPENDIX C

PERM 39 (01/07)

Special Hauling Permit Application

New York State Department of Transportation
50 Wolf Road
Central Permit Office, 1st Floor
Albany, New York 12232
www.nypermits.org

NYS Validation Stamp

CARRIER INFORMATION

Name

Address

City State Zip Code

NYSDOT Account Number

USDOT Number

FEIN

VEHICLE INFORMATION

	MAKE	YEAR	PLATE	STATE	REG. WGT	# OF AXLES	VIN
POWER UNIT							
TRAILER							

VEHICLE AND LOAD INFORMATION

LOAD DESCRIPTION

OVERALL	FEET	INCHES
WIDTH		
HEIGHT		
LENGTH		

OVERHANG	FEET	INCHES
FRONT		
REAR		

GROSS WEIGHT

AXLE #	STEER (1)	2	3	4	5	6	7	8	9	10	11
AXLE WEIGHT											
SUM OF MFG TIRE RATING											

AXLE SPACING (FT) - (IN)	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11

TRIP INFORMATION

REQUESTED START DATE

PERMIT TYPE

SPECIFIC ADDRESS OF TRIP ORIGIN / RADIUS

SPECIFIC ADDRESS OF TRIP DESTINATION

ROUTING:

Signed By

Telephone No.

Reset Form

V.1.19

OFFICE USE ONLY

PERMIT EFFECTIVE DATES FROM : ______________ TO: ______________

DATE RECEIVED :

TIME RECEIVED :

PERMIT FEE :

Addl Trlr FEE :

INSURANCE FEE :

TOTAL FEE :

CHECK # :

REVIEWED BY INITIALS : __________

REVIEW COMPLETED : __________

D ______ C ______ W ______

PAGE ______ OF ______

PERMIT NUMBER

CONTROL NUMBER

PERM 39 (01/07)
V 1 19

INSTRUCTIONS

A. GENERAL

The form PERM39 is used in connection with Special Hauling Trip and Monthly/Annual permit applications. A valid (PERM17) may either be on file to cover the time period of the permit or an additional insurance fee ($4 00) will be charged (Trip permits only) A valid (PERM17) must be on file for Monthly/Annual permits

Permit Applications may be mailed or hand delivered to: New York State Department of Transportation,50 Wolf Road, Central Permit Office 1st Floor,Albany, New York12232or any Regional Office with the exception of the Region 1 and Region 11(New York City) offices

This permit is only valid for highways under Department of Transportation jurisdiction Permission must be obtained from appropriate authority when traveling over Thruway, Parkway, County Roads, Town Highways, and City (including New York City) or Village Roads

Permissible Hauling Days: Any normal working day, Monday through Friday, from one half-hour before sunrise to one half-hour after sunset, when weather conditions are favorable No movements are allowed at night between the hours of one half-hour after sunset to one half-hour before sunrise, on Saturdays, Sundays, or the following holidays (unless otherwise noted on the face of the permit): New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, or after 12 Noon the day preceding Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. The day preceding means any normal working day, Monday through Friday

Please refer to the PERM30 for a listing of valid permit types and general Special Hauling permit information.

B. CARRIER INFORMATION

Name and Address: The name of the individual/carrier the permit will be issued to

NYSDOT Account #: This number will be assigned by the NYSDOT Permit Office upon issuance of the first permit. If this number has been established by a prior permit, it must be supplied on the application If you do not have a NYSDOT account number please leave blank and check the; New Account box

USDOT#: This is the Number assigned by the NYSDOT Motor Carrier Registration / Licensing section for Intrastate carriers, or the Federal Motor Carrier Safety Administration (FMCSA) for Interstate carriers

FEIN #: This is the Federal Identification Number for your business Not required for private (not for hire) carriers

C. VEHICLE INFORMATION

DMV/IRP Reg. Wgt.: List the power unitsNew Yorkor IRP registered weight as shown on the DMV registration or IRP Cab Card If the Power Unit is registered as a Truck, a registration weight MUST be shown for the trailer (if applicable)

Year: List the year of manufacture of the power unit and trailer

Make: List the make of the power unit and trailer

Plate #: List the license plate number of the power unit and trailer

State: List the state or jurisdiction where the power unit and trailer is based.

# of Axles: List the number of axles on the power unit and the trailer. The steering axle counts as an axle

VIN #: List the power unit vehicle identification number Required for monthly/annual permits only

D. VEHICLE AND LOAD DIMENSIONS AND WEIGHTS

Load Description: Describe what you are transporting. Make, model, and serial/unit/piece number must be included

Overall Dimensions: List the overall length, width, and height inclusive of any load thereon

Overhang: List both front and rear overhangs. If no overhang, state 0

Axle Weights: List the actual axle weights for each axle Do not list the gross axle weight ratings. For configurations with 12 or more axles, list all axle information on aPERM39-1VC form and attach to permit.

Sum of Manuf. Tire Ratings: List the sum of the tire ratings on each axle The MANUFACTURERS TIRE RATINGS are listed on the side of each tire, and includes both the Single and Dual ratings

1. The Single rating is used when there are two tires per axle one on each side (e g steer axle). Use the Single number given on the sidewall of the tire and multiply the number given by 2 (2 tires)
2. The Dual rating is used when there are 4 tires per axle, two on each side. Use the Dual number given on the sidewall of the tire and multiply the number given by 4 (4 tires)

Axle Spacings: List the distance between each axle, as measured from the centers of each axle

Gross Weight: List the combined gross weight of the vehicle, load and trailer (if applicable) This will be totaled as you fill in the axle weights on the writeable web version of this application

E. TRIP INFORMATION

Requested Start Date: List the date for the first requested day of travel

Permit Type: List the trip or monthly/annual permit type number

Specific Address of Trip Origin/Radius and Destination: List the road and address or state line where the trip will begin and end If applying for a monthly/ annual radius permit, list the municipality from which the radius will be drawn.

Requested Routing: List the routes you would like to travel inNew YorkState. List all state, county, town, or village routes, including any routes under the jurisdiction of any other Authority for continuity. Direction of travel for each route is required (N, S, E, W)

F. SIGNATURE AND PHONE NUMBER OF APPLICANT

The applicant or representative of the Carrier must sign the application and list a phone number (including area code) where the applicant can be reached By signing this form the applicant is indicating that they have read and understand all directions provided and that all information provided is true and correct.
The Carrier as identified on the face of the permit is responsible for ensuring that all marked requirements of the approved permit are adhered to.

PERM 33 (8/01)

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
HIGHWAY WORK PERMIT APPLICATION FOR NON-UTILITY WORK

PREPARE 3 COPIES
(photocopies acceptable)

Application is hereby made for a highway work permit:

Name ________________

Address ________________

City ________________ State _____ Zip ________

Federal I D No or Social Security No ________________

Applicant Telephone No ________________

Contact person in case of emergency ________________

Telephone No of contact person ________________

For Joint application, name and address of Second Applicant below:

Name ________________

Address ________________

City ________________ State _____ Zip ________

Project Identification No ________________

Highway Work Permit No ________________

RETURN PERMIT TO (If different from above):

Name ________________

Address ________________

City ________________ State _____ Zip ________

RETURN OF DEPOSIT/BOND TO (Complete only if different from permittee):

Name ________________

Address ________________

City ________________ State _____ Zip ________

1 Estimated cost of work being performed in state highway right-of-way $ ________________

2 Anticipated duration of work: From ________ 20 _____ thru ________ 20 _____ to apply to the operation(s) checked on the reverse side

3 Protective Liability Insurance covered by Policy No ________________ ; expires on ________________ 20

4 A $20 00 fee will be charged for checks returned by the bank

PROPOSED WORK (Brief description): ________________

____

____

____

ATTACHED: Plans ________ Specifications

LOCATION: State Route ________ State Highway ________

between Reference Marker ________________ and Reference Marker

Town of: ________________

County of: ________________

SEQR REQUIREMENTS (Check appropriate item):

_____ Exempt _____ Ministerial _____ Type 11 _____ EIS or DEIS Lead Agency ________________

If project is identified to be ministerial, exempt, or TYPE 11, no further action is required.

If project is determined to be other than ministerial, exempt, or TYPE 11, refer to M.A.P.7 12-2, Appendix A SEQR REQUIREMENTS FOR HIGHWAY WORK PERMITS

Acceptance of the requested permit subjects the permittee to the restrictions, regulations and obligations stated on this application and on the permit

Applicant Signature ________________ Date ________________ 20 _____

Second Applicant Signature ________________ Date ________________ 20 _____

Approval recommended ________________ 20 _____ By Resident Engineer ________________ Residency No. ________

Approved ________________ 20 _____ By Regional Traffic Engineer ________________ Region No. ________

PERMIT IS ISSUED CONTINGENT UPON LOCAL REQUIREMENTS BEING SATISFIED

TEAR ON PERFORATION

CHECK TYPE OF OPERATION	Permit Fee	Insurance Fee	Perm 17 or Under Taking	Total Amount of Fee and/or Insurance	Guarantee Deposit and/or Bond Amount
5 ☐ Single job – Permit issued for each job					
a ☐ Driveway or roadway					
1 ☐ Residential	$ 15	$ 25			
2 ☐ Commercial – Minor	550	175			
a. ☐ Home Business	100	75			
3 ☐ Commercial – Major – (Less than 100.000 square feet Gross Building Area)	1400	N/A			
4 ☐ Commercial – Major – (100.000 square feet Gross Building Area and Greater)	Actual cost with Minimum of $2000 upon permit app	N/A			
5. ☐ Subdivision Street	900	N/A			
6 ☐ Temporary access road or street	200	150			
b ☐ Improvement					
1 ☐ Residential	15	25			
2. ☐ Commercial					
Check additional description below:					
a. ☐ Install sidewalk, curb paving, stabilized shoulder, drainage, etc	200	150			
b. ☐ Grade, seed, improve land contour, clear land of brush, etc	100	75			
c ☐ Resurface existing roadway or driveway	50	50			
d. ☐ Annual resurfacing of residential and commercial roadways or driveways.					
1. ☐ Per County	150	N/A			
2. ☐ Per Region	400	N/A			
c. ☐ Tree Work					
1 ☐ Residential	15	25			
2. ☐ Commercial (not required for pruning if utility has annual maintenance permit)	25	50			
Check additional description below:					
a ☐ Removal or planting					
b. ☐ Pruning, applying chemicals to stumps, etc					
3 ☐ Vegetation control for advertising signs	150/sign	75			
d. ☐ Miscellaneous Construction					
1. ☐ Beautifying ROW – (for Civic Groups only)	NC	25			
2 ☐ Temporary signs, banners, holiday decorations					
a. ☐ Not-for-profit organizations	NC	25			
b ☐ Organizations other than not-for-profit	25	25			
3. ☐ Traffic control signals	500	175			
4 ☐ Warning and entrance signs	25	50			
5 ☐ Miscellaneous – Requiring substantial review	400	175			
6. ☐ Miscellaneous	25	50			
6 ☐ Encroachment caused by D.O.T acquisition of property	25	50			
7 ☐ Compulsory permit required for work performed at the request of D.O.T					
a. ☐ Building demolition or moving requested by D.O.T	NC	25			
1. ☐ Demolition 2. ☐ Moving					
b. ☐ Improvement to meet Department standards	NC	25			
8 ☐ Miscellaneous	25	25			
9. ☐ Adopt a Highway	NC	N/A			

TEAR ON PERFORATION

Guarantee Deposit Check Number or Bond Number ____________________

PERM 33 (8/01)
REVERSE

PERM 61 (10/06)

NEW YORK STATE
DEPARTMENT OF TRANSPORTATION

APPLICATION FOR DIVISIBLE LOAD OVERWEIGHT PERMIT

(THIS FORM SUPERSEDES ALL PREVIOUS VERSIONS OF THE PERM 61)

To move a vehicle or combination of vehicles on highways under the jurisdiction of the N.Y.S. Department of Transportation exceeding the weight as specified in Section 385 of the N.Y.S. Vehicle and Traffic Law

NOTE: The Department makes no representation that it will issue a permit until the Commissioner is satisfied the applicant is entitled to a permit, and until all documentation required is submitted and deemed to be satisfactory. If this application is not submitted on the most recent version or found to be illegible, incorrect, incomplete or lacks required supporting documentation, a $50 administrative handling fee shall be charged and the application will be returned.

APPLICANT INFORMATION

1) NYSDOT ACCOUNT NO. ____ 2) US DOT NO. ____ 3) FEDERAL EMPLOYER I.D. NO. (FEIN) ____

4) LEGAL NAME OF BUSINESS ENTITY ____ ☐ Check if Name Change

(Name and address as it appears on PERM 17 and current Motor Vehicle Registration)

5) ADDRESS ____ (Street) ____ (City or Post Office) ____ (State) ____ (Zip Code) ☐ Check if Address Change

6) PHONE (___) ____ (Ext) ____ ATTENTION ____ (Name of person to be contacted concerning this application)

7) VEHICLE TYPE (See PERM 68a) ____ - ____ - ____

8) IS THIS A TRUCK WITH A PUP TRAILER? YES ☐ NO ☐

9) PERMIT TYPE(S) (See PERM 69) (Circle) 1 1A 2 2A 4 6A 6B 7 8 9

10A) CLASS OF PERMIT: STANDARD ☐ SANI-VAN ☐ AGRICULTURAL ☐

10B) TRACTOR TRAILER OPTION (See PERM 69): Option I ☐ Option II ☐

11) IS THIS A PERMIT TRANSFER? YES ☐ NO ☐

IF YES, PERMIT NUMBER ____ EXP DATE ____

FEES

12) BASE PERMIT FEE $ ____

13) ADDITIONAL PERMIT TYPE FEES $ ____

14) ADDITIONAL TRAILER FEE $ ____

15) TOTAL FEE ENCLOSED $ ____

16) CHECK OR M.O. NUMBER ____

POWER UNIT

17) YEAR ____ MAKE ____

18) VIN ____

19) IS THIS AN IRP REGISTERED VEHICLE? NO ☐ YES ☐

BASE STATE/PROVINCE ____

20) LICENSE PLATE NO ____

21) REGISTRATION EXPIRATION DATE ____ (DD-MMM-YY)

22) POWER UNIT GVWR (as certified) ____

23) REQUESTED PERMIT WEIGHT ____

POWER UNITS MODEL YEAR 2006 OR NEWER, (AND OLDER POWER UNITS, WHEN MARRIED TO 2006 OR NEWER TRAILERS), MUST INDICATE:

24) ARE LIFT AXLE AIR PRESSURE CONTROLS LOCATED OUTSIDE THE CAB OF THE POWER UNIT AND BEYOND THE REACH OF OCCUPANTS WHILE THE POWER UNIT IS IN MOTION? YES ☐ NO ☐

TRAILER

25) TOTAL NUMBER OF TRAILERS ____

TRAILER NO. 1

26) YEAR ____ MAKE ____

27) VIN ____

28) BASE STATE/PROVINCE ____

29) LICENSE PLATE NO. ____

30) REGISTERED WEIGHT OF PUP TRAILER (if applicable) ____

31) LESSER of GVWR or TOTAL of FAWRS (as certified) ____

32) TRAILER LENGTH (INCHES) ____

AXLE DATA

AXLE	LIFTABLE AXLE(S)*	GROSS AXLE WEIGHT RATING (GAWR)	NO. OF TIRES	SMALLEST TIRE WIDTH (INCHES)	INDIVIDUAL TIRE RATING (MAX. LOAD IN POUNDS	SPACING BETWEEN AXLES (INCHES)	
1		____	____	____	____		
2	____	____	____	____	____	____	(1-2)
3	____	____	____	____	____	____	(2-3)
4	____	____	____	____	____	____	(3-4)
5	____	____	____	____	____	____	(4-5)
6	____	____	____	____	____	____	(5-6)
7	____	____	____	____	____	____	(6-7)
8	____	____	____	____	____	____	7-8)

* Must indicate if each axle is liftable by placing an "X" on the line provided.

VEHICLES MODEL YEAR 2006 (OR NEWER), MUST INDICATE:

Are all liftable axles steerable or trackable? YES ☐ NO ☐ N/A ☐

NOTE: All vehicles, model year 2006 or newer, to be eligible for any permit type shall be equipped such that the weight on any grouping of two or more axles is distributed such that no axle in the grouping carries less than 80% of any other axle in the grouping.

See PERM 69 Reverse for additional information regarding 2006 (or newer) model year vehicle requirements.

Visit www.nypermits.org for updates.

AFFIRMATION

False information attested to in this application is punishable as a Misdemeanor pursuant to the Penal Law and/or may result in the revocation or suspension of the permit. Accordingly, and with notice of the foregoing, I hereby affirm that the foregoing statements of fact are true, under penalty of perjury. Furthermore, I affirm that prior to operating this vehicle under a permit load the vehicle's registration will be changed to the permitted weight.

By ____ (Signature of Authorized Representative) ____ (Date)

MAIL THIS APPLICATION TO:

NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
CENTRAL PERMIT OFFICE
50 WOLF ROAD, 1ST FLOOR,
ALBANY, NEW YORK 12232

NEED MORE INFORMATION?
CALL (888) 783-1685

SEE REVERSE SIDE FOR INSTRUCTIONS

PERM 61 (10/05)
REVERSE

INSTRUCTIONS

This form, PERM 61 APPLICATION FOR DIVISIBLE LOAD OVERW EIGHT PERMIT, supersedes all previous versions of this form and must be used to 1) renew or transfer an expired Downstate permit, 2) transfer a Statewide permit that has been expired less than 4 years within the same account or 3) transfer any permit from one account to another as part of the sale or transfer of a permit holder's business. To transfer a permit to another account, documentation must be submitted which clearly demonstrates that 1) the permit holder's business has been legally sold or transferred, 2) the permitted vehicles (identified by year, make and VIN) are part of the transaction and 3) the permitted vehicles actually changed hands. If documentation submitted does not completely satisfy these requirements, no transfer can be allowed. A PERM 17 CERTIFICATE OF INSURANCE must be on file with the N.Y.S. Department of Transportation before this application can be approved. This form must be legibly typed or hand printed in blue or black ink except that the signature of the authorized representative must be handwritten. Staple all supporting documentation to the application with payment firmly attached to the front of the application.

NOTE: A NYSDOT Divisible Load Overweight Permit does not authorize operation at permit weights over local roads or roadways under the jurisdiction of the New York State Thruway, MTA Bridges, Tunnels, NYS Bridge Authority and any other Bridge or Tunnel Authority or any roadway within the boundaries of New York City. The permittee is responsible for checking with these jurisdictions regarding the acceptability of this permit for use on their highways.

APPLICANT

1) NYSDOT Account Number: This number will be assigned by N Y S Department of Transportation upon issuance of first permit If this number has been established by prior permit it must be supplied on application

2) US DOT Number: This number is issued by the Federal Motor Carrier Safety Administration (Form MCS-150) for interstate carriers or N Y S Department of Transportation Passenger & Freight Safety Division (Form MCS-150 NY) for intrastate carriers.

3) Applicant's Federal I D. Number (FEIN): The Federal employer identification number (FEIN) assigned to the motor carrier operation by the Internal Revenue Service.

4) Legal Name of Business Entity: The legal name of the business entity (i.e., corporation. partnership or individual) that owns/controls the motor carrier operation. **Must match exactly the name on the PERM 17 CERTIFICATE OF INSURANCE and the vehicle's registration** (except for lessees of leased vehicles with exclusive leasing arrangement exceeding 30 days). (Note: The name on registrations for all permitted power units under this account must match exactly the name of the account established with the N Y S Department of Transportation for these permits.) If Name Change is checked. legal documentation of such change must be provided

5) Address: Address (including ZIP code) of person or company that appears on PERM 17 CERTIFICATE OF INSURANCE and the vehicle's registration indicate if this is an Address Change. A new PERM 17 CERTIFICATE OF INSURANCE must also be submitted to reflect an address change

6) Phone: Phone number. Including area code. and name of person who should be contacted concerning this application.

7) Vehicle Type: Select the type of vehicle which best depicts the vehicle to be permitted from the form PERM 68a Vehicle Types for Divisible Load Weight Permits

8) Truck with a pup trailer: This is a single unit vehicle (example: tri-axle dump truck) with a trailer attached by a pintle hook. (example: dump pup trailer or a pup trailer used for logs. etc.).

9) Permit Type(s): Select from the form PERM 69 Types of Divisible Load Weight Permits which type(s) of permit(s) you are applying for

10A) Class of Permit: Divisible Load Overweight Permits are classified into 3 groups: Standard, authorizes travel on all STATE highways. Sani-Van (rear compaction refuse trucks), authorizes travel on ALL highways, Agricultural (seasonal permit), authorizes travel on all STATE highways for 4 consecutive months STATE highways shall mean all N Y.S and Interstate highways under the jurisdiction of the N Y S Department of Transportation Commissioner

10B) Tractor Trailer Option: Option I allows a marriage of unlimited trailers of various axle spacings, GAWRs, different tire size and number of axles to one power unit. Option II allows a marriage of unlimited trailers when Axle Data is IDENTICAL for all combinations

11) Is this a permit transfer?: If yes. enter permit number and expiration date of permit **The Grandfather Rights Certificate and active permit must be submitted with this application..**

FEES

12) Base Permit Fee: Select from form PERM 69 Types of Divisible Load Weight Permits. If applying for more than one type. this fee is the highest of the permit types requested.

13) Additional Permit Type Fee(s): Add $85 for each additional Permit Type added.

14) Trailer Fee: The fee is $20 00 per trailer (excluding the first trailer) for Option I and $10.00 per trailer for Option II for all trailers

15) Total Fee Enclosed: This is the sum of lines 12 thru 14

16) Check or M.O. Number: List the check or money order number and make payable to N.Y S DEPARTMENT OF TRANSPORTATION Write on check or money order "Divisible Load" and the NYSDOT Account Number.

POWER UNIT (Truck or Tractor)

17) Year and Make: Year and make of the power unit.

18) VIN: Vehicle identification number of power unit

19) IRP Registered Vehicle?: Motor carriers having apportioned vehicles registered under the International Registration Plan (IRP) must check yes. Indicate the Base State or Province the power unit is registered in. If IRP registered, New York State must be designated as one of the jurisdictions If not IRP registered. the power unit must be registered in New York State. **A copy of the power unit's current vehicle registration cab card must be submitted.**

20) License Plate No: Vehicle license plate number. **A copy of the power unit's current vehicle registration must be submitted.**

21) Registration Expiration Date: The day, month and year the vehicle registration expires, i.e. 03 JAN 04 The power unit's vehicle registration must be in effect at the time the permit becomes effective.

22) Power Unit GVWR: The manufacturer's gross vehicle weight rating for the power unit. **Proof of the manufacturer's certification of gross axle weight ratings and gross vehicle weight rating must be submitted.** See PERM 7 for acceptable forms of certifications.

23) Requested Permit Weight - Enter weight desired or indicate "maximum allowed" Note: maximum permitted weight may be less than requested. **Prior to operating the permitted vehicle under a permit load, the vehicle registration must be changed to match the permitted weight. Failure to change the registration weight nullifies the permit, and may result in the permit's seizure. suspension or revocation.**

24) Are lift axle air pressure controls located outside cab of the power unit and beyond the reach of occupants while the power unit is in motion?: Indicate yes or no by placing an X in appropriate box. This is a requirement for Type 9 permits and model years 2006 and newer

TRAILER

25) Total Number of Trailers: The total number of trailers to be separately married to the power unit for this application. If more than one trailer, use form PERM 63 Trailer Attachment Form (Trailer Option I) for trailers of varying tire size, length, or capacity; or form PERM 93 Trailer Attachment Form (Trailer Option I or II) and form PERM 79 Additional Trailer Attachment Form (Trailer Option II) for trailers that are of the same configuration

26)Year and Make: Year and make of trailer.

27) VIN: Vehicle identification number of trailer.

28) Base State/Province: Indicate the Base State or Province the trailer is registered in and enclose a copy of the registration The Base State or Province of the trailer's registration must be either the same as the power unit's registration OR New York State.

29) License Plate No: License plate number on the trailer **A copy of the trailer's current vehicle registration must be submitted.**

30) Registered Weight of Pup Trailer: As shown on motor vehicle registration

31) Lesser of GVWR or Total of GAWRs: Enter the lesser of the trailer's GVWR or the sum of each of the gross axle weight ratings (GAWR) for the trailer **Proof of the manufacturer's certification of gross axle weight ratings and gross vehicle weight rating must be submitted.** See PERM 7 for acceptable forms of certifications

32) Trailer Length: List the length of the trailer (in inches) from front to rear face, excluding any tongue length. The maximum length allowed is 576 inches (48 feet). Exception for Type 2 or 2A permits. the maximum length allowed is 480 inches (40 feet)

AXLE DATA

- Liftable Axle(s): Indicate any liftable axles by placing an X on the appropriate line. **Are all liftable axles steerable or trackable?** When applying for a Type 9 permit with this vehicle combination or applying for a permit with a power unit model year 2008 or newer, all liftable axles must be steerable or trackable. In such instances. indicate yes or no by placing an X in the appropriate box In all other instances place an X in the N/A box.
- Gross Axle Weight Rating: List the gross axle weight rating (GAWR) for each axle, starting with the steering axle of the power unit. Proof of the manufacturer's certification of gross axle weight ratings and gross vehicle weight rating must be submitted. See PERM 7 for acceptable forms of certifications
- Number of Tires: List the number of tires on each axle
- Smallest Tire Width: List the width of the smallest tire on each axle IN INCHES. Example: an 11 00 x 24 tire would be listed as 11 INCHES
- Tire Rating: List the tire rating as the maximum load in pounds as stated by the tire manufacturer This rating is on the sidewall of the tire. If there are only 2 tires on an axle. use the single tire rating If there are 4 tires on an axle, use the dual rating.
- Spacing Between Axles: List the spacing IN INCHES from CENTER OF AXLE TO CENTER OF NEXT AXLE Example: 144 would go on the first line if from center of axle one (steering axle) to center of axle two (first drive axle of power unit) is 144 INCHES

PERM 17 (06/06)

NYS Department of Transportation
Central Permit Office
50 Wolf Road, 1st Floor
Albany, NY 12232
(518) 485-2999 or 1-888-783-1685

NYS DOT ACCOUNT NUMBER

____

CERTIFICATE OF INSURANCE FOR SPECIAL HAULING, DIVISIBLE LOAD OVERWEIGHT, AND HIGHWAY WORK PERMIT INSURANCE REQUIREMENTS

TO BE PREPARED BY INSURANCE AGENCY OR INSURANCE COMPANY

THIS CERTIFICATE OF INSURANCE WILL SUPERSEDE ALL OTHER CERTIFICATES OF INSURANCE NOW ON FILE WITH THE NYSDOT CENTRAL PERMIT OFFICE AND MUST BE IN EFFECT FOR THE FULL TERM OF THE PERMIT. EXPIRATION OF, OR LACK OF, LIABILITY INSURANCE AUTOMATICALLY INVALIDATES THE PERMIT.

1. MOTOR CARRIER ID. All permit applicants must provide a USDOT number to obtain permits, with the exception of Federal & State Agencies and municipalities, and private individuals transporting personal property. (check as appropriate – Commercial carriers must have a USDOT Number.)

☐ USDOT Number ____________ ☐ Exempt - Federal & State Agency/Municipality ☐ Private Individual

USDOT numbers are issued by the Federal Motor Carrier Safety Administration (Form MCS-150) for interstate carriers or NYSDOT Passenger & Freight Safety Division (Form MCS-150 NY) for intrastate carriers. To obtain a USDOT number:

(1) use the Internet at: http://safer.fmcsa.dot.gov to apply online;	(Interstate carriers)
(2) call toll-free 1-800-832-5660 or 518-431-4145 and press "0" for mail or fax information;	(Intrastate carriers)
(3) call toll-free 1-866-881-2630 for mail or fax information;	(Intrastate carriers)
(4) use the Internet at: http://www.dot.state.ny.us/ts/files/mcs150ny050605.pdf	(Intrastate carriers)

2. FEIN Number ________________
(Federal Employee Identification Number, also known as the IRS Tax Identification Number, is required for All For Hire Carriers, agencies and municipalities.)

3. NAME OF PERMIT APPLICANT ________________________________
(The Legal Name of the Business Entity, i.e., Corporation, Partnership or individual, that owns/controls the motor carrier operation. Name on Insurance Certificate & Permit Application must be identical - one name only. The Applicant's motor vehicle registration operator's name must also match for Divisible Load Overweight Permits. NOTE: If DBA, also provide Name of Legal Entity and Copy of "Certificate of Conducting Business under an Assumed Name" that was filed in County Clerk's Office.)

4. PHYSICAL ADDRESS OF PERMIT APPLICANT ________________________________
(Provide street address of principal place of business; may attach additional PERM 17 ATTACHMENT sheet listing physical addresses of branch offices *if application for permits will be for those locations*)
☐ PLEASE CHECK HERE IF THIS IS A CHANGE OF ADDRESS

4a. MAILING ADDRESS OF PERMIT APPLICANT ________________________________
(If different than above) ☐ PLEASE CHECK HERE IF THIS IS A CHANGE OF ADDRESS

5. TELEPHONE NUMBER OF PERMIT APPLICANT ________________________________

6. NAME OF PERMIT APPLICANT CONTACT PERSON ________________________________

7a. MOTOR VEHICLE LIABILITY POLICY NUMBER ________________________________
(See Policy requirements in B on reverse) **Binders, and unassigned policy numbers are only valid for 30 days.**

7b. EFFECTIVE DATE __________ EXPIRATION DATE __________
☐ PLEASE CHECK HERE AND SIGN BELOW IF COVERAGE IS CONTINUOUS UNTIL CANCELLED

________________________________ (Authorized Signature of Insurance Agent Required)

8a. PROTECTIVE LIABILITY POLICY NUMBER ________________________________
(See Policy requirements in A or C on reverse) **Binders, and unassigned policy numbers are only valid for 30 days.**

8b. EFFECTIVE DATE __________ EXPIRATION DATE __________
☐ PLEASE CHECK HERE AND SIGN BELOW IF COVERAGE IS CONTINUOUS UNTIL CANCELLED

________________________________ (Authorized Signature of Insurance Agent Required)

9. PERMIT TYPE. Check box for each type (Check ALL that Apply) of permit obtained from the NYS Department of Transportation.

☐ Special Hauling Permits ☐ Divisible Load Overweight
☐ Highway Work Permits ☐ Restricted Vehicle Permits

REVERSE SIDE MUST BE COMPLETED

PERM 17 (06/06) REVERSE

In accordance with NYS Department of Transportation requirements (See NYCRR, Title 17, Part 154), the subscribing insurance company hereby certifies that a protective liability insurance policy (**only option for Highway Work Permits**) or, in the alternative, a motor vehicle insurance policy and endorsement has been issued to the Permit Applicant:

A. if a protective liability insurance policy, for the protection of the people of the State of New York, all municipal subdivisions thereof, and the Commissioner and NYS Department of Transportation, the NYS Thruway Authority, the State Bridge Authority and their officials, officers, and employees as named insureds, (**and no other co-insureds**), for covering bodily injury (including death) with minimum limits of $500,000 each occurrence and covering property damage with minimum limits of $100,000 each accident and minimum aggregate annual limits of $500,000, against actions resulting from use of a Highway Permit by the Permittee or by an person acting by, through or for the Permittee, including omissions and supervisory acts of any of the named insureds; or

B if a motor vehicle insurance policy and endorsement, with the People of the State of New York, all municipal subdivisions thereof, and the Commissioner and NYS Department of Transportation, the NYS Thruway Authority, the State Bridge Authority and their officials, officers, and employees as additional insureds under the policy, covering bodily injury (including death) with minimum limits of $750,000 each occurrence and covering property damage with minimum limits of $250,000 each occurrence or $1 million combined single limit each occurrence; or

C. if extended coverage, a protective liability insurance policy, for the protection of the people of the State of New York, all municipal subdivisions thereof, and the Commissioner and NYS Department of Transportation, the NYS Thruway Authority, the State Bridge Authority and their officials, officers, and employees as named insureds, (**and no other co-insureds**), for Major Commercial Highway Work Permits – covering bodily injury (including death) with minimum limits of $1,000,000 each occurrence and covering property damage with minimum limits of $200,000 each accident and minimum aggregate annual limits of $1,000,000, against actions resulting from use of a Highway Permit by the Permittee or by an person acting by, through or for the Permittee, including omissions and supervisory acts of any of the named insureds

Any subscribing insurance company providing insurance pursuant to A, B or C above, certifies and agrees that such insurance policy shall not be cancelled until thirty (30) days written cancellation notice has been given the NYS Department of Transportation, indicating the permit applicant's name, permit account number (obtain from permit applicant), address, and policy number. Notice of reinstatement must be made by a reinstatement notice or a completed Certificate of Insurance (PERM 17) and sent to the NYS Department of Transportation to the attention of the Central Permit Office. In addition, the subscribing insurance company issuing a protective liability insurance policy (pursuant to A above) or a motor vehicle insurance policy (pursuant to B above), further certifies and agrees that the insurance policy referred to herein shall not be changed or cancelled unless:

1. All trips authorized by the Permit have been made; or
2. The effective period of the Permit has expired; or
3. In the case of a Highway Work Permit, all work authorized has been completed and accepted by the NYS Department of Transportation.

This certificate is furnished in accordance with the rules and regulations of the NYS Department of Transportation pertaining to Highway Permits. No Monthly or Annual Permits will be issued if the effective date of the Permit is not covered by the Insurance Certificate.

A Certificate of Insurance (PERM 17) is the only acceptable proof of insurance. PLEASE DO NOT SEND ACCORD FORMS, INSURANCE CARDS, COPIES OF POLICIES, ETC. Altered certificates will NOT be accepted. Certificates must be sent to the Central Permit Office at the address noted on the front of the form. If you would like to fax the certificate, the number is 518-457-0367. Updates and changes may be made by submitting a new Certificate of Insurance (PERM 17); the most recent form will supersede all previous Certificates of Insurance (PERM 17) on file with the NYS Department of Transportation

Special Hauling Permits: Used for transporting over-dimension and/or overweight non-divisible items on highways, e g. manufactured homes, heavy construction equipment, buildings, etc. *Policy provided must be in accordance with A or B above.*

Divisible Load Overweight Permits: Used for transporting overweight divisible loads on highways, e g. sand, gravel, fuel oil, milk, etc. *Policy provided must be in accordance with A or B above.*

Highway Work Permits: Used for installing and/or maintaining facilities on State right-of-way – coverage in such case shall be written only as protective liability insurance policy and shall also include completed operations liability insurance with respect to liability imposed by law arising between the date of final cessation of the work pursuant to the Highway Work Permit and the date of final acceptance of such work by the State. *Policy provided must be in accordance with A or C above*

Restricted Vehicle Permits: Necessary for vehicles registered as commercial to travel legally on restricted Parkways, and are SOLELY for the purpose of work done on the Parkways or to access areas that are only accessible via the Parkways

Name of Insurance Company (please print)

Address of Insurance Company (please print)

Telephone No. of Insurance Company

Authorized Signature of Insurance Agent

Authorized Name of Insurance Agent (please print)

Address of Insurance Agent (please print)

Telephone No of Insurance Agent

PERM 17 ATTACHMENT (06/06)

NYS Department of Transportation
Central Permit Office
50 Wolf Road, 1st Floor
Albany, NY 12232
(518) 485-2999 or 1-888-783-1685

ATTACHMENT TO
CERTIFICATE OF INSURANCE FOR SPECIAL HAULING, DIVISIBLE LOAD OVERWEIGHT, AND HIGHWAY WORK PERMIT INSURANCE REQUIREMENTS

THIS FORM MUST BE SUBMITTED WITH THE APPROPRIATE CERTIFICATE OF INSURANCE (PERM 17)
TO BE PREPARED BY INSURANCE AGENCY OR INSURANCE COMPANY

1 NAME OF PERMIT APPLICANT ______________________________

2. USDOT Number______________________ 3. FEIN Number______________________

4. Consider the Certificate of Insurance (PERM 17) as PAGE 1, this ATTACHMENT is PAGE________of________ TOTAL PAGES

5. BRANCH OFFICES - Additional locations also listed and covered by the same insurance policy indicated on page one of the Certificate of Insurance (PERM 17), in which the insured has a physical place of business and the vehicles are dispatched from while operating under a NYS Department of Transportation permit.

NAME OR DESIGNATION OF BRANCH OFFICE:______________________________

DOES THIS BRANCH HAVE A NYSDOT ACCOUNT NO.? ☐ YES ☐ NO. IF YES, PLEASE PROVIDE __________

BRANCH OFFICE PHYSICAL ADDRESS:______________________________

BRANCH OFFICE MAILING ADDRESS:______________________________

TELEPHONE NUMBER OF BRANCH OFFICE:______________________________

CONTACT PERSON:______________________________

NAME OR DESIGNATION OF BRANCH OFFICE:______________________________

DOES THIS BRANCH HAVE A NYSDOT ACCOUNT NO.? ☐ YES ☐ NO IF YES, PLEASE PROVIDE __________

BRANCH OFFICE PHYSICAL ADDRESS:______________________________

BRANCH OFFICE MAILING ADDRESS:______________________________

TELEPHONE NUMBER OF BRANCH OFFICE:______________________________

CONTACT PERSON: ______________________________

NAME OR DESIGNATION OF BRANCH OFFICE:______________________________

DOES THIS BRANCH HAVE A NYSDOT ACCOUNT NO.? ☐ YES ☐ NO. IF YES, PLEASE PROVIDE __________

BRANCH OFFICE PHYSICAL ADDRESS:______________________________

BRANCH OFFICE MAILING ADDRESS:______________________________

TELEPHONE NUMBER OF BRANCH OFFICE:______________________________

CONTACT PERSON: ______________________________

(Additional sheets may be attached if necessary)

PERM 85 (11/01)

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
BUILDING 5, ROOM 311
1220 WASHINGTON AVENUE, STATE CAMPUS
ALBANY, NEW YORK 12232-0455

SPECIAL HAULING ROUTE SURVEY FOR OVER DIMENSIONAL VEHICLES

THE ROUTES SHOWN BELOW FOR THE MOVEMENT OF A:

____
(load description)

OVERALL VEHICLE DIMENSIONS
(in feet & inches)

HEIGHT: _____ ' – _____ " LENGTH: _____ ' – _____ " WIDTH: _____ ' – _____ "

GROSS VEHICLE WEIGHT:____________________ POUNDS

FROM: ______________________________ (origin) TO: ______________________________ (destination)

HAVE BEEN PHYSICALLY SURVEYED ON: ______________ (date survey performed) FOR: ______________________________ (permittee name)

ON ROUTES: ____

____

____

____

____

AND THERE IS SAFE AND SUFFICIENT CLEARANCE TO ALL OBSTACLES AND THAT THE ROUTE SURVEYED FOR HEIGHT IS AT LEAST 3 INCHES HIGHER THAN THE OVERALL HEIGHT FOR LOADS THAT ARE 12 FEET AND UNDER IN WIDTH AND 6 INCHES HIGHER THAN THE OVERALL HEIGHT FOR LOADS THAT ARE GREATER THEN 12 FEET IN WIDTH. THE GROSS VEHICLE WEIGHT AS STATED ABOVE DOES NOT EXCEED HIGHWAY AND/OR STRUCTURAL WEIGHT POSTINGS ON ANY ROUTES, AND THAT THE SURVEY HAS BEEN PERFORMED NO EARLIER THAN ONE MONTH PRIOR TO THE MOVE. HIGHWAYS OTHER THAN THOSE UNDER THE JURISDICTION OF THE STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION WILL BE SHOWN FOR ROUTING CONTINUITY, BUT APPEARANCE OF ROUTES OTHER THAN THOSE UNDER THE JURISDICTION OF THE STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION DOES NOT CONSTITUTE PERMISSION OR AUTHORIZATION FOR THEIR USE.

CERTIFIED BY:

COMPANY NAME:____
(If a DBA, name of DBA and owner/legal entity)

COMPANY ADDRESS: ____

COMPANY PHONE NUMBER: (____)______________________

NAME: ______________________________
(name of individual signing survey)

SUBMISSION OF OR OPERATION ON A ROUTE SURVEY FOUND NOT TO BE LEGITIMATE BY ANY LAW ENFORCEMENT OFFICER OR DEPARTMENT OF TRANSPORTATION EMPLOYEE OR A SURVEY NOT ACTUALLY PERFORMED ON THE DATE SHOWN ABOVE, WILL RESULT IN REVOCATION OF THE EXISTING SPECIAL HAULING PERMIT AND MAY RESULT IN SANCTIONS AGAINST THE COMPANY THAT HAS CERTIFIED THE ROUTE. IF THE VEHICLE CANNOT OPERATE IN THE RIGHT HAND LANE, ATTACH A LIST OF LOCATIONS WHERE THE VEHICLE MUST CHANGE LANES OR GO INTO THE OPPOSING TRAFFIC LANES. IF THE VEHICLE MUST GO THE WRONG WAY ON ANY ROADWAY, NAME THE ROADWAY, PROVIDE MAP OF THE ROADWAY LOCATION AND MUNICIPALITY IN WHICH ROADWAY IS LOCATED.

TA-W6813 (08/2004)

NEW YORK STATE THRUWAY AUTHORITY
Department of Operations
Office of Transportation Management
P.O. Box 189
Albany, New York 12201-0189
Special Hauling: (518) 436-2793

SPECIAL HAULING PERMIT SURVEY FOR OVER DIMENSIONAL VEHICLES

The routes shown below are for the movement of a:

____
(Load Description)

Overall Vehicle Dimensions (in feet and inches) Height ' "	Length ' "	Width ' "	Gross Vehicle Weight Pounds
From (Origin)		To (Destination)	
Date of Travel		License Plate No. & State	

ROUTE SUMMARY

Date route physically surveyed: ____________________

And certified by: ____________________________________
(Company performing survey)

For: ____________________________________
(Permittee Name)

That there is safe and sufficient clearance to all overhead obstacles, that the gross vehicle weight as stated above does not exceed highway and/or structural weight postings on any routes, and that the survey has been performed no earlier than one (1) week prior to move. Highways other than those under the jurisdiction of the New York State Thruway Authority may be shown for routing continuity, but appearance of routes other than those under the jurisdiction of the New York State Thruway Authority does not constitute permission or authorization for their use.

Routes: (Attach additional sheets if necessary.)

Name: ____________________________________
(Print or type name of individual signing survey)

Telephone Number of Person Signing Form: ( ) __________ Authorized Signature: ____________________

Submission of or operation on a route survey found not to be legitimate by any Law Enforcement Officer or Thruway Authority Employee or a survey not actually performed on the date shown above, will result in revocation of the existing special hauling permit and may result in non-issuance of future special hauling permits.

SPECIAL HAULING PERMIT
FRANKLIN COUNTY HIGHWAY DEPARTMENT
MALONE, N.Y. 12953

Permittee: ____________________

Address: ____________________

City: ____________________

From: __________ to __________

During daylight hours only, with no movements on Saturdays, Sundays or Holidays.

	Transporting Vehicle: Make, Year, License#	Weight of load Description	Gross Weight	Overall Height	Overall Length	Overall Width
(1)						
(2)						

Movements are permitted to travel across the following County Roads:

County Road Number: ______ known as ____________________
County Road Number: ______ known as ____________________
County Road Number: ______ known as ____________________
County Road Number: ______ known as ____________________
County Road Number: ______ known as ____________________
County Road Number: ______ known as ____________________

Dated at Malone, N.Y., this ______________ day of ______________

CONDITIONS AND REGULATIONS

This permit shall not be assigned or transferred without written consent of the County Superintendent of Highways and the work authorized by this permit shall be performed under the supervision and satisfaction of the County Superintendent of Highways. A notice of at least 24 hours shall be given to the County Superintendent of Highways by the permittee of the date he intends to begin the work authorized by this permit. Such notice shall be delivered to the County Superintendent of Highways at the County Highway Office, Constable Street Road, Malone, N.Y., whose telephone number is 483-1140 in order that the loading may be approved and the movement supervised to the end that there will be full compliance with all terms and conditions upon which this permit is granted.

Operations must be conducted, insofar as it is possible, to permit safe and reasonable free travel whereby ALL SAFETY PROVISIONS FOR THE MOVEMENT OF SUCH TRAFFIC SHALL BE PROVIDED BY THE PERMITTEE, RED WARNING FLAGS, size 24" by 24", shall be carried to WARN AND PROTECT TRAFFIC, and as indication of oversize load moving.

In moving over any NARROW SECTION OF HIGHWAY OR NARROW BRIDGE, where it is impossible to keep free and clear at least one FULL LANE OF PAVEMENT FOR PASSING TRAFFIC, each MOVEMENT OVER SUCH SECTION MUST BE ACCOMPANIED BY FLAGMEN, STATIONED AT LEAST 500 FEET FOLLOWING SUCH VEHICLE so as to WARN AND PROTECT TRAFFIC. CLEARANCE MUST BE CHECKED ON BRIDGES AND WHERE THERE ARE WEAK OR POSTED BRIDGES A DETOUR MUST BE MADE.

SEE REVERSE

It is understood and provided that this permit shall not become effective as regards any highway, street, avenue or bridge over which the Franklin County Highway Department has not jurisdiction. Permission to use State Roads, Town Highways or City or Village Streets, must be obtained from the proper authorities.

OVERHEAD WIRES, CABLES, SIGNAL OR TRAFFIC LIGHTS, LIMBS OF TREES OR OVERHEAD STRUCTURES MUST NOT BE DISTURBED, WITHOUT FIRST OBTAINING PERMISSION FROM THE OWNERS THEREOF, MOVEMENTS NOT TO BE STARTED UNTIL AFTER SUCH CONSENTS HAVE BEEN OBTAINED FROM SAID OWNERS.

In the acceptance of this permit the applicant further agrees to assume all responsibility and liability for damages to persons or property that may accrue during said movements of the vehicle or combination of vehicles, through the negligence of himself, his agent or employees or from any other cause and to save the Franklin County harmless therefrom.

This permit is issued pursuant to the authority conferred upon the County Superintendent of Highways by Sub-division 15 Section 385 of the N.Y.S. Vehicle and Traffic Law, which provides among other things that all permits issued shall be revocable by the authority issuing them at the discretion of the said authority without a hearing or the necessity of showing cause either before or during the movement.

No movements are allowed at night (between the hours of sunset and sunrise) on Saturdays, Sundays or the following holidays: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas, or the day preceding or the day following Memorial Day, Independence Day, and Labor Day. The day preceding or following means any normal working day, Monday through Friday.

The permittee hereby certifies that it has secured compensation for the benefit of, and will keep insured during the performance of the above described work, such employees as are required by the provision of Chapter 41, Laws of 1914, as amended by Chapter 615, Laws of 1922, known as Workmen's Compensation Law, and acts amendatory thereof.

The permittee and the owner do severally agree that in case the building becomes stalled in its movements within the highway limits, for any unnecessary length of time, in the judgement of the County Superintendent of Highways, or his representative, the said County Superintendent of Highways, or his representative, may cause the removal of the building from the limits of the highways in any manner they seem fit, even to the extent of destroying same, and in accepting this permit, both the mover and the owner of the building do release the County of Franklin of any claim.

Said permittee shall be responsible for all damages resulting in bodily injury including death, and or property damage liability due to activities of the permittee, its contractors, subcontractors of either or both, agents or employees in connection with any act or ommission hereunder; and does hereby expressly agree to indemnify and save harmless the County of Franklin and/or the County Superintendent of Highways and his representatives and employees form claims, suits, actions, damages and costs of every name and description arising out of or resulting from any act or ommission hereunder.

In case of heavy snowfall or icy pavements, moving vehicle shall be removed from highway and movement shall not resume until pavement has been cleared full width and/or sanded.

Dated: ______________________

MALONE, NEW YORK 12953

____
COUNTY SUPERINTENDENT OF HWYS.

In consideration of the granting of the above permit, the undersigned hereby accepts the same subject to the restrictions and regulations herein described. A payment of $10.00 shall be made by the permittee to reimburse the County of Franklin for paper work.

____
Applicant's Signature

PERMIT FOR WORK AND/OR STRUCTURES ON THE COUNTY ROAD SYSTEM
SECTION 136, HIGHWAY LAW

Application has been made by______________________________

For permission to____

____

and it appears that the request can be granted without damage to County property or undue interference with traffic. Permission is therefore granted to the above application to perfor the above described work to the extent of County jurisdiction and in accordance with the conditions and regulations herein specified.

This permit shall be valid from__________to__________and only and if the applicant complies with the following conditions and regulations:

1. This permit shall not be assigned or transferred without the written consent of County Supt. of Hwys.

2. Work under the permit when commenced shall proceed without interuption or delay in an expedient, workmanlike manner until completed.

3. The work authorized by this permit or any portion of it may, under certain conditions be required to be performed under the supervision and to the satifaction of the County Supt. Of Hwys., or his representatives, and the applicant agrees to pay all of the necessary expences incidental to the supervision and inspection by reason of the granting of such permission such payment to be made within ten (10) days from his receipt of the Certified Account.

4. The applicant agrees to hold the County and Town harmless on account of any damages to persons or property which may arise during the progress of the work authorized by this permit, or by reason thereof, or in connection with any future maintenance and also agrees to relocate or reconstruct at his own expense any of the work on the highways.

5. High grade materials only may be used and substantial structures built. All structures or other work must be continuously maintained in a manner satisfactory to the Highway Authorities, and the expense of any maintenance to the highway occasioned by any manner or reason of the work authorized by this permit must be assumed and borne by the applicant.

6. Culvert pipe will meet NYS Dept. Of Transportation requirements.

Dated:___________

____
County Supt. Of Hwys.

Call 1-800-962-7962 before you dig.

By applying for this permit the applicant hereby agrees and covenants that if in the future, the safety of the public is endangered because of the installation to take place pursuant to this permit, and/or its interaction with natural elements or objects, than the applicant agrees to take such measures as the County Highway Supt. Shall direct to restore the public safety.

In consideration of the granting of the above permit, the undersigned hereby accepts the same, subject to the restrictions and regulations herein described. A payment of $5.00 shall be make by the permittee to reimburse the County of Franklin for paper work.

Dated:_____________

____
Applicant signature

DIVISIBLE LOAD PERMIT

Franklin County Highway Department
14981 State Route 30
Malone, New York 12953

Permittee:____________________

Address:____________________

City:____________________

From:______to______
During daylight hours, only, with no movements On Sat. afternoon, Sun. or Holidays.

Transporting Vehicle: Make, Year, Lic. #	Weight of load Description	Gross Weight	Overall Height	Overall Length	Overall Width

Please be advised Franklin County Highway does recommend that "Highway Use Tax" stickers should reflect weights carried by transporting vehicle.

Movements are permitted to travel across the following County Roads.

County Rd. #_____known as______________________________
County Rd. #_____known as______________________________
County Rd. #_____known as______________________________
County Rd. #_____known as______________________________
County Rd. #_____known as______________________________

Dated at Malone, NY, this ________ day of ________

CONDITIONS AND REGULATIONS

This permit shall not be assigned or transferred without written consent of the County Superintendent of Highways and the work authorized by this permit shall be performed under the supervision and satisfaction of the County Superintendent of Highways. A notice of at least 24 hours shall be given to the County Superintendent of Highways by the permittee of the date he intends to begin the work authorized by this permit. Such notice shall be delivered to the County Superintendent of Highways at the County Highway Office, 14981 State Route 30, Malone, NY 12953, whose telephone number is 483-1140 in order that the loading may be approved and the movement supervised to the end that there will be full compliance with all terms and conditions upon which this permit is granted.

Operations must be conducted, insofar as it is possible, to permit safe and reasonable free travel whereby ALL SAFETY PROVISIONS FOR THE MOVEMENT OF SUCH TRAFFIC SHALL BE PROVIDED BY THE PERMITTEE, RED WARNING FLAGS, Size 24" by 24", shall be carried to WARN AND PROTECT TRAFFIC, and as indication of oversize load moving.

In moving over any NARROW SECTION OF HIGHWAY OR NARROW BRIDGE, where it is impossible to keep free and clear at least on FULL LANE OF PAVEMENT FOR PASSING TRAFFIC, each MOVEMENT OVER SUCH SECTION MUST BE ACCOMPANIED BY FLAGMAN, STATIONED AT LEAST 500 FEET FOLLOWING SUCH VEHICLE so as to WARN AND PROTECT TRAFFIC. CLEARANCE MUST BE CHECKED ON BRIDGES AND WHERE THERE ARE WEAK OR POSTED BRIDGES A DETOUR MUST BE MADE.

It is understood and provided that this permit shall not become effective as regards any highway, street, avenue or bridge over which the Franklin County Highway Department has no jurisdiction. Permission to use State Roads, Town Highways or City or Village Streets, must be obtained from the proper authorities.

OVERHEAD WIRES, CABLES, SIGNAL OR TRAFFIC LIGHTS, LIMBS OR TREES OR OVERHEAS STRUCTURES MUST NOT BE DISTURBED, WITHOUT FIRST OBTAINING PERMISSION FROM THE OWNERS THEREOF, MOVEMENTS NOT TO BE STARTED UNTIL AFTER SUCH CONSENTS HAVE BEEN OBTAINED FROM SAID OWNERS.

In the acceptance of this permit the applicant further agrees to assume all responsibility and liability for damages to persons or property that may accrue during said movements of the vehicle or combination of vehicles, through and negligence of himself, his agent or employees or from any other cause and to save the Franklin County harmless there from.

This permit is issued pursuant to the authority conferred upon the County Superintendent of Highways by Sub-division 15 Section 385 of the NYS Vehicle and Traffic Law, which provides among other things that all permits issued shall be revocable by the authority issuing them at the discretion of the said authority without a hearing or the necessity of showing cause either before or during the movement.

No movements are allowed at night (between the hours of sunset and sunrise) on Saturday afternoon, Sundays or the following holidays: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas, or the day preceding or the day following Memorial Day, Independence Day, and Labor Day. The day preceding or following means any normal working day, Monday through Friday.

The permittee hereby certifies that it has secured compensation for the benefit of, and will keep insured during the performance of the above described work, such employees as are required by the provision of Chapter 41, Laws of 1914, as amended by Chapter 615, Laws of 1922, known as Workmen's Compensation Law, and acts amendatory thereof.

The permittee and the owner do severally agree that in case the building becomes stalled in its movements within the highway limits, for any unnecessary length of time, in the judgement of the County Superintendent of Highways, or his representative, the said County Superintendent of Highways, or his representative, may cause the removal of the building from the limits of the highways in any manner they seem fit, even to the extent of destroying same, and in accepting this permit, both the mover and the owner of the building do release the County of Franklin of any claim.

Said permittee shall be responsible for all damages resulting in bodily injury including death, and or property damage liability due to activities of the permittee, its contractors, subcontractors of either or both, agents or employees in connection with any act or omission hereunder; and does hereby expressly agree to indemnify and save harmless the County of Franklin and/or the County Superintendent of Highways and his representatives and employees form claims, suits, actions, damages and costs of every name and description arising out of or resulting from any act or omission hereunder.

In case of heavy snowfall or icy pavements, moving vehicle shall be removed from highway and movement shall not resume until pavement has been cleared full width and/or sanded.

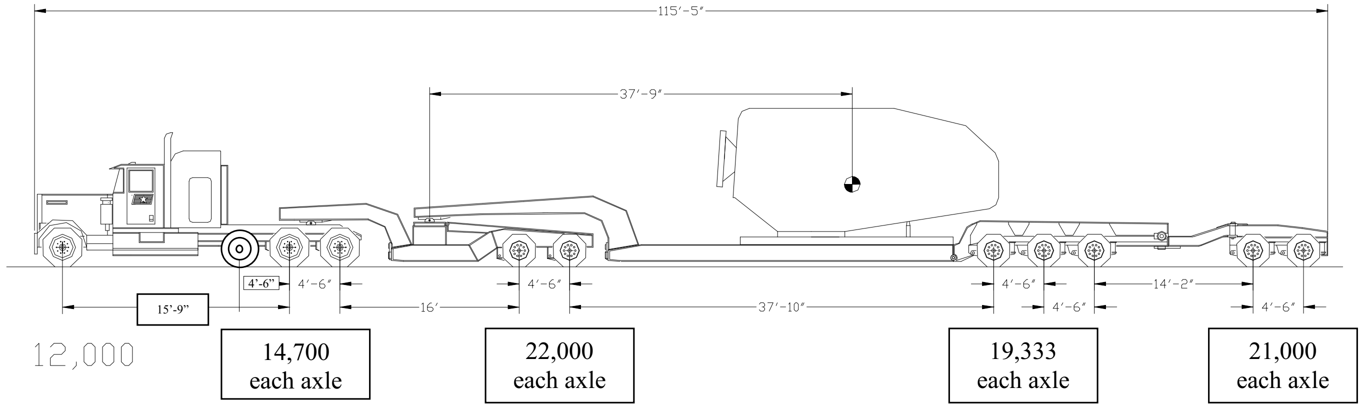
Dated:____________
Malone, NY

____
County Superintendent of Highways

In consideration of the granting of the above permit, the undersigned hereby accepts the same subject to the restrictions and regulations herein described. A payment of $10.00 shall be made by the permittee to reimburse the County of Franklin for paper work.

____
Applicant's Signature

APPENDIX D



1/07 Revised by Fisher Associates

LoneStar

1019 N MONROE
KANSAS CITY, MO 64120

816-483-7772 OFFICE
816-483-5413 FAX
800-422-2242
john.vancleave@lstinc.com

Itemref	Quantity		Layout:			
Designed by: JV	Checked by:	Approved by - date:	Sheet No:	Date: 05/06/05	Scale:	

Project's Name: PROJECTED TRANSPORT CONFIG

File's Name: N-E-G MICON

Sheet Seq: 1-1

Rating Results Summary Report

Name: 1008970
Struct-Def: Spans 3 thru 7

Bridge ID: 1008970
Member: G2

NBI: 1008970
Member Alt:G2

Live Load	Live Load Type	Design Method	Inventory Load Rating (Ton)	Operating Load Rating (Ton)	Inventory Rating Factor	Operating Rating Factor	Inventory Location (ft)	Inventory Location Span-(%)	Operating Location (ft)	Operating Location Span-(%)	Inventory Limit State	Operating Limit State	Impact	Lane
H 20-44	Design Truck	LFD	37.76	63.05	1.888	3.153	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	As Requested	As Requested
H 20-44	Design Truck	LFD	48.05	80.25	2.403	4.013	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Single Lane
H 20-44	Design Truck	LFD	57.12	95.39	2.856	4.769	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Single Lane
H 20-44	Design Truck	LFD	37.76	63.05	1.888	3.153	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Multi-Lane
H 20-44	Design Truck	LFD	44.88	74.95	2.244	3.747	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Multi-Lane
H 20-44	Design Lane	LFD	25.60	42.75	1.280	2.138	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	As Requested	As Requested
H 20-44	Design Lane	LFD	32.58	54.42	1.629	2.721	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Single Lane
H 20-44	Design Lane	LFD	38.73	64.68	1.936	3.234	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Single Lane
H 20-44	Design Lane	LFD	25.60	42.76	1.280	2.138	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Multi-Lane
H 20-44	Design Lane	LFD	30.43	50.82	1.522	2.541	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Multi-Lane
HS 20-44	Design Truck	LFD	42.18	70.43	1.172	1.957	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	As Requested	As Requested
HS 20-44	Design Truck	LFD	53.68	89.65	1.491	2.490	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Single Lane
HS 20-44	Design Truck	LFD	63.80	106.55	1.772	2.960	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Single Lane
HS 20-44	Design Truck	LFD	42.18	70.44	1.172	1.957	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Multi-Lane
HS 20-44	Design Truck	LFD	50.13	83.72	1.393	2.326	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Multi-Lane
HS 20-44	Design Lane	LFD	46.08	76.96	1.280	2.138	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	As Requested	As Requested
HS 20-44	Design Lane	LFD	58.65	97.95	1.629	2.721	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Single Lane
HS 20-44	Design Lane	LFD	69.71	116.42	1.936	3.234	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Single Lane
HS 20-44	Design Lane	LFD	46.08	76.96	1.280	2.138	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Multi-Lane
HS 20-44	Design Lane	LFD	54.78	91.47	1.522	2.541	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Multi-Lane
Nacelle Truck	Design Truck	LFD	80.06	133.70	0.800	1.336	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	As Requested	As Requested
Nacelle Truck	Design Truck	LFD	101.90	170.17	1.019	1.701	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Single Lane
Nacelle Truck	Design Truck	LFD	122.23	204.12	1.222	2.040	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Single Lane
Nacelle Truck	Design Truck	LFD	80.06	133.71	0.800	1.336	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Multi-Lane
Nacelle Truck	Design Truck	LFD	96.04	160.38	0.960	1.603	271.21	3 - (50.0)	271.21	3 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Multi-Lane

Analysis Time: 02/07/2007 10:33:25
Print Time: 02/07/2007 10:40:48

Analyzed By: BridgeWare

Rating Results Summary Report

Name: CR24/Little Trout River
Struct-Def: Loc_01

Bridge ID: 3337780
Member: G1

NBI: 3337780
Member Alt:G1

Live Load	Live Load Type	Design Method	Inventory Load Rating (Ton)	Operating Load Rating (Ton)	Inventory Rating Factor	Operating Rating Factor	Inventory Location (ft)	Inventory Location Span-(%)	Operating Location (ft)	Operating Location Span-(%)	Inventory Limit State	Operating Limit State	Impact	Lane
H 20-44	Design Truck	LFD	44.35	62.00	2.217	3.100	15.42	1 - (20.0)	15.42	1 - (20.0)	Ultimate Strength Shear	Ultimate Strength Shear	As Requested	As Requested
H 20-44	Design Truck	LFD	44.35	62.00	2.217	3.100	15.42	1 - (20.0)	15.42	1 - (20.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Single Lane
H 20-44	Design Truck	LFD	56.23	78.61	2.811	3.931	15.42	1 - (20.0)	15.42	1 - (20.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Single Lane
H 20-44	Design Truck	LFD	44.35	62.00	2.217	3.100	15.42	1 - (20.0)	15.42	1 - (20.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Multi-Lane
H 20-44	Design Truck	LFD	56.23	78.61	2.811	3.931	15.42	1 - (20.0)	15.42	1 - (20.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Multi-Lane
H 20-44	Design Lane	LFD	36.07	50.74	1.803	2.537	15.42	1 - (20.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	As Requested	As Requested
H 20-44	Design Lane	LFD	36.07	50.74	1.803	2.537	15.42	1 - (20.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Single Lane
H 20-44	Design Lane	LFD	45.73	64.32	2.286	3.216	15.42	1 - (20.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Single Lane
H 20-44	Design Lane	LFD	36.07	50.74	1.803	2.537	15.42	1 - (20.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Multi-Lane
H 20-44	Design Lane	LFD	45.73	64.32	2.286	3.216	15.42	1 - (20.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Multi-Lane
HS 20-44	Design Truck	LFD	56.03	81.84	1.556	2.273	38.55	1 - (50.0)	15.42	1 - (20.0)	Concrete Tension	Ultimate Strength Shear	As Requested	As Requested
HS 20-44	Design Truck	LFD	56.03	81.84	1.556	2.273	38.55	1 - (50.0)	15.42	1 - (20.0)	Concrete Tension	Ultimate Strength Shear	With Impact	Single Lane
HS 20-44	Design Truck	LFD	69.89	103.76	1.942	2.882	38.55	1 - (50.0)	15.42	1 - (20.0)	Concrete Tension	Ultimate Strength Shear	Without Impact	Single Lane
HS 20-44	Design Truck	LFD	56.03	81.84	1.556	2.273	38.55	1 - (50.0)	15.42	1 - (20.0)	Concrete Tension	Ultimate Strength Shear	With Impact	Multi-Lane
HS 20-44	Design Truck	LFD	69.89	103.76	1.942	2.882	38.55	1 - (50.0)	15.42	1 - (20.0)	Concrete Tension	Ultimate Strength Shear	Without Impact	Multi-Lane
HS 20-44	Design Lane	LFD	64.92	91.32	1.803	2.537	15.42	1 - (20.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	As Requested	As Requested
HS 20-44	Design Lane	LFD	64.92	91.32	1.803	2.537	15.42	1 - (20.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Single Lane
HS 20-44	Design Lane	LFD	82.31	115.78	2.286	3.216	15.42	1 - (20.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Single Lane
HS 20-44	Design Lane	LFD	64.92	91.32	1.803	2.537	15.42	1 - (20.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Multi-Lane
HS 20-44	Design Lane	LFD	82.31	115.78	2.286	3.216	15.42	1 - (20.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Multi-Lane
Nacelle Truck	Design Truck	LFD	116.49	177.98	1.164	1.779	53.97	1 - (70.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	As Requested	As Requested
Nacelle Truck	Design Truck	LFD	116.49	177.98	1.164	1.779	53.97	1 - (70.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Single Lane
Nacelle Truck	Design Truck	LFD	149.03	225.65	1.490	2.255	53.97	1 - (70.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Single Lane
Nacelle Truck	Design Truck	LFD	116.49	177.98	1.164	1.779	53.97	1 - (70.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Multi-Lane
Nacelle Truck	Design Truck	LFD	149.03	225.65	1.490	2.255	53.97	1 - (70.0)	61.68	1 - (80.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Multi-Lane

Rating Results Summary Report

Name: 3337790
Struct-Def: Location 001

Bridge ID: 3337790
Member: G2

NBI: 3337790
Member Alt:G2

Live Load	Live Load Type	Design Method	Inventory Load Rating (Ton)	Operating Load Rating (Ton)	Inventory Rating Factor	Operating Rating Factor	Inventory Location (ft)	Inventory Location Span-(%)	Operating Location (ft)	Operating Location Span-(%)	Inventory Limit State	Operating Limit State	Impact	Lane
H 20-44	Design Truck	LFD	24.56	40.01	1.228	2.001	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	As Requested	As Requested
H 20-44	Design Truck	LFD	31.26	50.92	1.563	2.546	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Single Lane
H 20-44	Design Truck	LFD	38.53	62.76	1.926	3.138	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Single Lane
H 20-44	Design Truck	LFD	24.56	40.01	1.228	2.000	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Multi-Lane
H 20-44	Design Truck	LFD	30.27	49.31	1.514	2.466	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Multi-Lane
H 20-44	Design Lane	LFD	24.87	35.78	1.244	1.789	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	As Requested	As Requested
H 20-44	Design Lane	LFD	31.65	45.53	1.583	2.277	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Single Lane
H 20-44	Design Lane	LFD	39.05	56.17	1.952	2.809	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Single Lane
H 20-44	Design Lane	LFD	24.87	35.78	1.243	1.789	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Multi-Lane
H 20-44	Design Lane	LFD	30.68	44.13	1.534	2.207	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Multi-Lane
HS 20-44	Design Truck	LFD	39.68	56.40	1.102	1.567	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	As Requested	As Requested
HS 20-44	Design Truck	LFD	50.50	71.78	1.403	1.994	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Single Lane
HS 20-44	Design Truck	LFD	62.24	88.46	1.729	2.457	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Single Lane
HS 20-44	Design Truck	LFD	39.68	56.39	1.102	1.567	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Multi-Lane
HS 20-44	Design Truck	LFD	48.91	69.51	1.359	1.931	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Multi-Lane
HS 20-44	Design Lane	LFD	44.77	64.40	1.244	1.789	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	As Requested	As Requested
HS 20-44	Design Lane	LFD	56.97	81.96	1.583	2.277	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Single Lane
HS 20-44	Design Lane	LFD	70.28	101.11	1.952	2.809	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Single Lane
HS 20-44	Design Lane	LFD	44.76	64.40	1.243	1.789	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Multi-Lane
HS 20-44	Design Lane	LFD	55.22	79.44	1.534	2.207	10.01	1 - (10.0)	10.01	1 - (10.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Multi-Lane
Nacelle Truck	Design Truck	LFD	90.20	150.63	0.902	1.506	90.06	1 - (90.0)	90.06	1 - (90.0)	Ultimate Strength Shear	Ultimate Strength Shear	As Requested	As Requested
Nacelle Truck	Design Truck	LFD	114.79	191.71	1.147	1.916	90.06	1 - (90.0)	90.06	1 - (90.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Single Lane
Nacelle Truck	Design Truck	LFD	141.49	236.28	1.414	2.362	90.06	1 - (90.0)	90.06	1 - (90.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Single Lane
Nacelle Truck	Design Truck	LFD	90.20	150.63	0.902	1.506	90.06	1 - (90.0)	90.06	1 - (90.0)	Ultimate Strength Shear	Ultimate Strength Shear	With Impact	Multi-Lane
Nacelle Truck	Design Truck	LFD	111.17	185.65	1.111	1.856	90.06	1 - (90.0)	90.06	1 - (90.0)	Ultimate Strength Shear	Ultimate Strength Shear	Without Impact	Multi-Lane

Analysis Time: 02/07/2007 14:08:39
Print Time: 02/07/2007 14:09:21

Analyzed By: BridgeWare

Rating Results Summary Report

Name: 3337800
Struct-Def: Steel Multi-Girder Superstructure

Bridge ID: 3337800
Member: G1

NBI: 3337800
Member Alt:Fascia

Live Load	Live Load Type	Design Method	Inventory Load Rating (Ton)	Operating Load Rating (Ton)	Inventory Rating Factor	Operating Rating Factor	Inventory Location (ft)	Inventory Location Span-(%)	Operating Location (ft)	Operating Location Span-(%)	Inventory Limit State	Operating Limit State	Impact	Lane
H 20-44	Design Truck	LFD	56.98	95.16	2.849	4.758	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	As Requested	As Requested
H 20-44	Design Truck	LFD	56.99	95.17	2.849	4.758	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Single Lane
H 20-44	Design Truck	LFD	74.08	123.72	3.704	6.186	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Single Lane
H 20-44	Design Truck	LFD	56.99	95.17	2.849	4.758	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Multi-Lane
H 20-44	Design Truck	LFD	74.08	123.72	3.704	6.186	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Multi-Lane
H 20-44	Design Lane	LFD	71.91	120.09	3.596	6.005	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	As Requested	As Requested
H 20-44	Design Lane	LFD	71.92	120.10	3.596	6.005	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Single Lane
H 20-44	Design Lane	LFD	93.49	156.13	4.674	7.806	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Single Lane
H 20-44	Design Lane	LFD	71.92	120.10	3.596	6.005	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Multi-Lane
H 20-44	Design Lane	LFD	93.49	156.13	4.674	7.806	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Multi-Lane
HS 20-44	Design Truck	LFD	102.57	171.29	2.849	4.758	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	As Requested	As Requested
HS 20-44	Design Truck	LFD	102.58	171.30	2.849	4.758	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Single Lane
HS 20-44	Design Truck	LFD	133.35	222.69	3.704	6.186	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Single Lane
HS 20-44	Design Truck	LFD	102.58	171.30	2.849	4.758	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Multi-Lane
HS 20-44	Design Truck	LFD	133.35	222.69	3.704	6.186	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Multi-Lane
HS 20-44	Design Lane	LFD	129.44	216.17	3.596	6.005	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	As Requested	As Requested
HS 20-44	Design Lane	LFD	129.45	216.18	3.596	6.005	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Single Lane
HS 20-44	Design Lane	LFD	168.28	281.03	4.674	7.806	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Single Lane
HS 20-44	Design Lane	LFD	129.45	216.18	3.596	6.005	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Multi-Lane
HS 20-44	Design Lane	LFD	168.28	281.03	4.674	7.806	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Multi-Lane
Nacelle Truck	Design Truck	LFD	212.56	354.97	2.125	3.548	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	As Requested	As Requested
Nacelle Truck	Design Truck	LFD	212.57	354.99	2.125	3.548	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Single Lane
Nacelle Truck	Design Truck	LFD	276.34	461.49	2.762	4.613	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Single Lane
Nacelle Truck	Design Truck	LFD	212.57	354.99	2.125	3.548	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	With Impact	Multi-Lane
Nacelle Truck	Design Truck	LFD	276.34	461.49	2.762	4.613	11.50	1 - (50.0)	11.50	1 - (50.0)	FLEXURAL - STEEL STR	FLEXURAL - STEEL STR	Without Impact	Multi-Lane

Analysis Time: 02/13/2007 10:34:31
Print Time: 02/13/2007 10:36:50

Analyzed By: BridgeWare

Rating Results Summary Report

Name: 3337900
Struct-Def: Steel Multi-Girder Superstructure

Bridge ID: 3337900
Member: G4

NBI: 3337900
Member Alt:Interior

Live Load	Live Load Type	Design Method	Inventory Load Rating (Ton)	Operating Load Rating (Ton)	Inventory Rating Factor	Operating Rating Factor	Inventory Location (ft)	Inventory Location Span-(%)	Operating Location (ft)	Operating Location Span-(%)	Inventory Limit State	Operating Limit State	Impact	Lane
H 20-44	Design Truck	LFD	74.67	124.70	3.734	6.235	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	As Requested	As Requested
H 20-44	Design Truck	LFD	74.67	124.70	3.734	6.235	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	With Impact	Single Lane
H 20-44	Design Truck	LFD	97.07	162.11	4.854	8.106	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	Without Impact	Single Lane
H 20-44	Design Truck	LFD	74.67	124.70	3.734	6.235	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	With Impact	Multi-Lane
H 20-44	Design Truck	LFD	97.07	162.11	4.854	8.106	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	Without Impact	Multi-Lane
H 20-44	Design Lane	LFD	92.05	153.73	4.603	7.687	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	As Requested	As Requested
H 20-44	Design Lane	LFD	92.05	153.73	4.603	7.687	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	With Impact	Single Lane
H 20-44	Design Lane	LFD	119.67	199.85	5.984	9.993	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	Without Impact	Single Lane
H 20-44	Design Lane	LFD	92.05	153.73	4.603	7.687	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	With Impact	Multi-Lane
H 20-44	Design Lane	LFD	119.67	199.85	5.984	9.993	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	Without Impact	Multi-Lane
HS 20-44	Design Truck	LFD	105.61	176.36	2.934	4.899	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	As Requested	As Requested
HS 20-44	Design Truck	LFD	105.61	176.36	2.934	4.899	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	With Impact	Single Lane
HS 20-44	Design Truck	LFD	137.29	229.27	3.814	6.369	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	Without Impact	Single Lane
HS 20-44	Design Truck	LFD	105.61	176.36	2.934	4.899	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	With Impact	Multi-Lane
HS 20-44	Design Truck	LFD	137.29	229.27	3.814	6.369	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	Without Impact	Multi-Lane
HS 20-44	Design Lane	LFD	165.70	276.72	4.603	7.687	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	As Requested	As Requested
HS 20-44	Design Lane	LFD	165.70	276.72	4.603	7.687	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	With Impact	Single Lane
HS 20-44	Design Lane	LFD	215.41	359.73	5.984	9.993	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	Without Impact	Single Lane
HS 20-44	Design Lane	LFD	165.70	276.72	4.603	7.687	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	With Impact	Multi-Lane
HS 20-44	Design Lane	LFD	215.41	359.73	5.984	9.993	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	Without Impact	Multi-Lane
Nacelle Truck	Design Truck	LFD	264.83	442.26	2.647	4.421	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	As Requested	As Requested
Nacelle Truck	Design Truck	LFD	264.83	442.26	2.647	4.421	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	With Impact	Single Lane
Nacelle Truck	Design Truck	LFD	344.28	574.94	3.441	5.747	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	Without Impact	Single Lane
Nacelle Truck	Design Truck	LFD	264.83	442.26	2.647	4.421	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	With Impact	Multi-Lane
Nacelle Truck	Design Truck	LFD	344.28	574.94	3.441	5.747	23.10	1 - (70.0)	23.10	1 - (70.0)	SERVICEABILITY - STEE	SERVICEABILITY - STEE	Without Impact	Multi-Lane

Analysis Time: 04/11/2007 13:56:59
Print Time: 04/11/2007 14:04:32

Analyzed By: BridgeWare

BIN 1008970 – Rte. 11 over the Chateaugay River

Left Elevation

Top of Bridge

BIN 3337780 – CR 24 over the Little Trout River

Right Elevation

Top of Bridge

BIN 3337790 – CR 24 over the Chateaugay River

Left Elevation

Top of Bridge

BIN 3337800 – CR 33 (Willis Road) over the Little Trout River

Left Elevation

Top of Bridge

BIN 3337900 – CR 36 (Flynn Road) over the Little Trout River

Right Elevation

Top of Bridge

BIN 1008980 – Rte. 11 over Boardman Brook

Left Elevation

Top of Bridge

BIN 3337650 – Pulp Mill Road over the Chateaugay River

Vertical clearance limitation

BIN 3337610 – Chase Hollow Road over the Chateaugay River

Closed to traffic

FISHERASSOCIATES

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Appendix K
Property Value Analysis

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Technical Memorandum

Impacts of The Jericho Rise Wind Farm Project on Local Property Values

Prepared for: Jericho Rise Wind Farm, LLC and the Towns of Chateaugay and Bellmont

Prepared by: P. Barton DeLacy, MURP, MAI, CRE, FRICS

Date: November 27, 2007

File No.: 06-34001-9638

This property value analysis addresses the potential impact of the proposed 53 turbine Jericho Rise Wind Farm (the Project) to be located at the northeast corner of Franklin County, New York, across approximately 12 square miles on leased land near the Towns of Chateaugay and Bellmont. Most of this land is in farm use with some areas in wetlands or ponds. Farms and rural residences occur along the public roads within the projected area.

We have inspected many of the individual tracts where turbines will be placed as well as considered the functional and esthetic impacts of the project on individual property values. We have reviewed literature and consulted with local experts regarding the area's economic condition. We have reviewed academic and professional literature for guidance in crafting this analysis. Based on these expert recommendations, we conducted a statistical analysis of property value trends within the project area as well as other comparable communities that already host wind farms.

Our evaluation of area properties and existing conditions suggests that the economic impact of the wind farm will be positive. The construction and ongoing maintenance and operation of the Jericho Rise Wind Farm will generate revenue for local contractors and well paying temporary and permanent jobs. Similarly, royalty payments to project participants will increase local spending that multiplies the benefits beyond individual recipients. Host Community and Mitigation payments to the host communities should facilitate investment in local infrastructure and/or improve local services, potentially attracting new business to the area.

At the household level, we found most of the Project will be situated on large tracts of agricultural acreage where turbine placement will be designed to minimize interference with ongoing farming activities, whether it be row crops or dairy stock. The incremental rental income from the land leases will diversify the revenue streams for participating farms, providing a hedge against ever-increasing agricultural production costs and cyclical commodity prices. In fact, visual impacts cannot be said to have any impact on farm properties where value is in the productivity of the land.

We also found that the main area of concern regarding turbine placement is from the affected viewshed for strictly residential properties in the vicinity. There is no question that wind turbines are significant structures, yet the reasonable setbacks required to prevent excessive noise and shadow impacts on such properties can significantly diminish the visual impact, particularly given the topography of the area and the significant tree cover. In assessing existing studies and newly collected data from communities where wind farms have been built and coexisted with residential development, we found that wind farms have no demonstrable impact on property values, even near high end or executive home development.

Our scope of work includes a review of the Project with the developer and a site inspection. We have also reviewed topographical overlays and a viewshed analysis as well as other tools to understand linkage and settlement patterns in the area.

We have considered the functional and esthetic impacts wind projects of this size will have on properties in a predominantly rural, as opposed to an urban landscape. We have reviewed literature and consulted with local experts regarding the area's economic condition. We have reviewed academic and professional literature for guidance in crafting this analysis.

The most significant ongoing studies have been undertaken by the Lawrence Berkeley National Laboratory Team of Ben Hoen and Ryan Wiser, PhD who have studied the impacts of wind turbines on property values at 6 sites, including Madison County, New York at Fenner.[1]

Hoen and Wiser have concluded that "There is no statistical evidence that homes with a view of wind turbines have different values than homes without such views." These analyses could not uncover any statistically significant relationship between either proximity to or visibility of the wind farm and the sale price of homes. We have found that the quality of housing stock in the vicinity of the town of Fenner in Madison County, as well as the general pattern of land use, is very similar to the Franklin County area as are the concerns of residents.

As we will note later, the hedonic pricing model can rigorously predict changes in residential transaction values based on home characteristics. This makes it a reliable tool when there is sufficient data to apply it.

Statement of Qualifications

I am presently Managing Director of Valuation Services at Cushman & Wakefield of Oregon, Inc. I am a Certified General Real Estate Appraiser (No. 46000046642) by the State of New York, Department of State. I perform and review fee engagements relating to the evaluation of real property. I also prepare analyses to support litigation regarding real estate values, land uses impacts and for eminent domain proceedings. Attached to this report as **Exhibit A** is a résumé of my educational background and employment experience.

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[1] Hoen, Ben, "Impacts of Windmill Visibility on Property Values in Madison County, New York," Bard Center for Environmental Policy, Bard College, Annandale on the Hudson, New York, 2006; updated at AWEA Wind Energy Fall Symposium, November 2, 2007 at Carlsbad, CA

I have recently prepared similar property impact analyses for two proposed farms near Cohocton in Steuben County (with 52 total turbines), a 109 turbine wind farm, Marble River, in Clinton County, a proposed 60 turbine project (Dairy Hills) in Wyoming County and a proposed 52 turbine project in Genesee County (Alabama Ledge). We have also studied property impacts around the operating 195 turbine wind farm at Maple Ridge, near Martinsburg, New York, in Lewis County.

On one occasion, I was hired by windfarm opponents regarding the proposed Jordanville Windfarm in Herkimer County. There, we found the presence of two significant scenic "preservation districts" on the north shore of Otsego Lake would be impaired if turbines were erected. That impact might adversely affect high-valued homes oriented to that particular view, although, even there, no direct proof could be demonstrated.

My personal experience with the siting of controversial structures and land uses in rural areas spans over 25 years. This experience includes evaluations of property value impacts for the placement of transmission towers, power lines, substations, underground pipelines, the extension of gravel mines, siting of prisons, power plants, land fills and evaluation of air emission property impacts from a cement kiln.

In 2004, a peer-reviewed article I authored, "A LULU of a Case: Gauging Property Value Impacts in Rural Areas" was published in *Real Estate Issues* by the Counselors of Real Estate.

I have been a licensed or certified appraiser since 1979 and am also certified in the States of Washington, Oregon, Alaska, Montana, Idaho, California, Colorado, Illinois, Missouri and Kansas. My professional credentials include the MAI designation (Appraisal Institute), the CRE designation (awarded by the Counselors of Real Estate) and a Masters Degree in Urban and Regional Planning. I have also been elected a Fellow in the Royal Institution of Chartered Surveyors, an international professional society of valuers and real estate professionals who advise governments and global organizations. One of their studies is reviewed here.

I previously served five years on a city planning commission and was appointed to a statewide emergency siting authority in Oregon to site four youth prisons.

I have qualified as an expert witness before the State of Washington Energy Facility Site Evaluation Council ("EFSEC"), giving written and oral testimony. I have also qualified as an expert witness for real estate valuation and land use impact studies in both State and Federal Courts in Oregon, Idaho, Montana and California.

Purpose of Report

This report has been prepared as a summary of my analysis addressing whether the proposed Jericho Rise Wind Farm Project might affect property values in the vicinity of the wind turbine generators.

The contents of this analysis are based upon my own knowledge and field experience, or upon evidence from studies and reports which persons in my field of expertise are accustomed to rely on in conducting the type of analysis included in this report.

We recognize that understanding the long-term land use impacts of certain energy facilities is an emerging area of study. We also recognize that new approaches to evaluating these impacts may further inform our perspective. This study represents our best efforts to use available data and acceptable methodology.

Methodology

The scope of our work included analyzing aggregate statistics from the subject and comparable areas in order to derive suitable benchmarks and valuation trends. We did not appraise individual properties but did consider the types of dwellings that might be most impacted by a change in their viewshed. Our focus concentrated on discerning what types of factors cause changes in value.

Our research included field inspections of the affected areas in Franklin County. These occurred the week of November 13, 2006. We also investigated property impacts near the Fenner project (which came on line in 1999) in Madison County and the new Maple Ridge project (2005) in Lewis County (near West Martinsburg). We have investigated impacts from small projects in Wethersfield in Wyoming County, New York and in Searsburg in Bennington County, Vermont. These came on line in 2000 and 1997, respectively.

This report also draws from extensive experience on two different wind farm projects in Kittitas County, Washington. Both were approved and one is built and operating. In Kittitas County, we have been monitoring land, farm and residential subdivision activity for over four years during the permitting process.

Kittitas Valley is planned to be larger than Jericho Rise, while Fenner, Wethersfield and Searsburg are smaller. The Jericho Rise Wind Farm is much smaller than Maple Ridge with respect to the number of turbines (53 proposed turbines at Jericho Rise versus 195 in operation at Maple Ridge). Analyzing these other projects helps shed light on the correlation between wind turbines and property values. When considering Jericho Rise we cannot ignore the cumulative impacts of the adjacent Noble Chateaugay/Bellmont projects which if constructed would add 86 turbines to the Towns of Bellmont and Chateaugay.

We have analyzed a comprehensive compilation of properties which abut, or may be in sight of, the proposed Jericho Rise Wind Farm project. We have collected assessor sale data from Franklin County, going back 5 years to establish baseline trends. We further examined sales and sales trends within the Towns of Chateaugay and Bellmont. We have collected and studied current Franklin County Multiple Listing Records for properties now on the market in the general area.

We carefully examined sales activity within the project area. We then attempted to collect and analyze similar data from affected areas near established wind projects, as well as data from otherwise similar areas, not affected by a wind project. Significant deviations from long-term patterns of value may, or may not be attributable to the impact of the wind project. However, where we find normal or above normal sale and development activity near a project, or near a proposed project, this suggests that negative impacts cannot be proven, or that impacts may even be positive.

We considered demographic profiles for each of the New York State study areas (Fenner and Maple Ridge) and found high correlations in terms of population density, growth, average household incomes and average housing values.

To augment statistics from multiple listing and county assessor records on property sales in the area, we have interviewed local real estate brokers, appraisers and town assessors regarding specific transactions and the anticipated effect of the Project on the area.

We have reviewed additional technical memoranda prepared by independent outside consultants and examined computer generated visual impact exhibits that accompany the application. Not all information has been positive.

Our analysis of changes in local real estate values, attributable to the proposed project, is more limited because of the relatively recent date of announcement of the Jericho Rise Wind Farm and of other wind farms proposed for the area. Therefore we have relied, by analogy, on the observed real estate experience at the more mature wind farms in New York State.

Review of Literature

Property value impacts created from siting industrial facilities or power plants have long been studied (see attached bibliography) because of concerns voiced by neighbors, particularly residential homeowners. However, the scope of alleged impact can be vast while the body of relevant observable market transactions supporting such alleged impacts is non-existent. This lack of market data is most acute in rural areas where environmental concerns about encroaching infrastructure can be strongest.

Most of the studies focus on that most sensitive of real estate types, the single-family dwelling. Commercial properties can also be adversely affected by externalities but the nature of their investment value (i. e. passive rent collection) allows for capitalization of diminution affects through rent reductions and vacancy increases. The value of residential property is much more susceptible to consumer preferences.

The predominant activity stimulating academic and industry research over the past 30 years has been the emergence of large scale and public environmental clean ups. Much of the available literature deals with the consequences of discovery and clean up of Superfund sites. Once remediated, a second question regarding the prospects of recovery back to some pre-event equilibrium raises concerns of long term “stigma.” A follow-on question is whether such stigma is compensable as a consequential damage when government sanctions are involved.

It should be noted here that the coal plant, smelter, nuclear plant and even cell tower studies all involved health concerns whereas opposition to wind turbines by property owners focuses on aesthetics; chiefly viewsheds. The former, however, demonstrate the breadth of a continuum across which property value concerns from nearby land uses can extend.

The case studies reviewed here include a University of Wisconsin paper measuring the impacts on suburban housing values from a coal burning power plant[2], a report on housing values in the aftermath of the Three Mile Island nuclear power plant failure[3], a series of studies on value and stigma impacts of a closed lead smelting plant in Dallas, Texas[4], a study on the effects of wind

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[2] Blomquist, Glenn, “The Effect of Electric Utility Power Plant Location on Area Property Value”, *Land Economics*, Vol.50, pp 97-101 (1974)

[3] Gamble, H. B., Downing, R. H., *Effects of the Accident at Three Mile Island on Residential Property Values and Sales*, Pennsylvania State University for Division of Safeguards, Fuel Cycle and Environmental Research, Office of Nuclear Regulatory Research, U. S. Nuclear regulatory Commission, April 1981

[4] McCluskey, Jill J. and Gordon C. Rausser, 2001. “Estimation of Perceived Risk and Its Effect on Property Values," *Land Economics*, Vol. 77(2001):42-55

turbine development on local property values[5] and a comprehensive analysis on effects of overhead transmission lines on property values.[6] The latter two cases do address rural property concerns, but without resolution. Finally, a New Zealand academic, Sandy Bond, conducted an hedonic study in central Florida that found a 2% drop in residential property values within 500 feet of a cell tower placement; but no affects further out.[7]

These studies all relied on some form of statistical analysis using multiple regressions. The urban-area studies were able to construct hedonic models to predict outcomes.

A residential hedonic pricing model regresses a series of descriptive statistics regarding a population of observations. When data is available, this is clearly the preferred tool. For housing models, typical characteristics include house size, lot size, bathroom number, age, fireplaces, and distance from some node of value such as a downtown. The models are used to predict outcomes, testing variables for significance. Thus a researcher may take into account other variations in property characteristics in determining the impact of projects like a wind farm on property value.

The key to any reliable statistical model is a sufficiently large data pool, or population, to allow random sampling. In general, these studies have proven most effective in urban or suburban residential areas where a high number of transactions involving fairly homogeneous properties can be observed. Given a significant sample size, fairly conclusive outcomes can be predicted using this method.

Even in urban areas, statistical studies attempting to predict value impacts on residential properties lack consistency in model design and applications of uniform adjustments to the data.[8]

Sparsely populated rural areas are much more difficult to study because the population of transactions available for observation is so limited. More indirect methods must be used instead.[9]

While so-called “sensory cues” are key to impacts, (i. e. what can be seen, smelled or heard) the concept of stigma has much more to do with reputation and the intangible components of human desire that influence “marketability.” Marketability is defined by appraisers as the state of being salable.[10] Thus anticipating the future impact of a wind farm has as much to do with attendant publicity as with the event or source of concern.

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[5] Sterzinger, George, et al., “The Effect of Wind Development on Local Property Values”, Renewable Energy Policy Project, Washington, D. C., 2003

[6] Kroll, Cynthia A., and Priestley, Thomas. “The Effects of Overhead Transmission Lines on Property Values. A Review and Analysis of the Literature.” Prepared for Edison Electric Institute Siting and Environmental Task Force. July 1992

[7] Bond, Sandy. “The Effect of Distance to Cell Phone Towers on House Prices in Florida,” *The Appraisal Journal,* (Fall 2007):362-9

[8] Kroll, Cynthia A., and Priestley, Thomas. “The Effects of Overhead Transmission Lines on Property Values. A Review and Analysis of the Literature.” Prepared for Edison Electric Institute Siting and Environmental Task Force. July 1992, p. iii-iv

[9] Ibid., p. 10

[10] *The Dictionary of Real Estate Appraisal*, Appraisal Institute, Chicago, Third Edition, 1993, p. 219

The breadth of the studies reviewed suggests that a continuum would be useful along which obtrusive projects or sights might be arrayed. At one end would be undisputed undesirable land uses, like a Superfund site, at the other end positive amenities like lake frontage or a panoramic view of a mountain.

Aside from the recent studies by Hoen and Wiser in the US, Dr. Sally Sims and Peter Dent of the Oxford Brookes University, UK have published a case study on the impacts of onshore wind farms in the north Cornwall area of Great Britain for the Royal Institution of Chartered Surveyors ("RICS"). To date, wind farms are proportionately more developed in the UK than in the US with 1,733 turbines producing approximately 2,000 MW of electricity on 131 different projects. Another 30 are under construction with 88 projects having received planning board approval.

The study sought to explain home price variations by analyzing the planning application objections and by interviewing local estate agents. Nearly 1,000 transactions were researched within 5 miles of a windfarm in the communities of St. Broeck and St. Eval dating back to April 2000. Affects seemed noticeable on semi-detached (duplex) homes within one-mile of a turbine, but had no effect on detached homes (equivalent to single family residences in the US). However, in spite of some statistical evidence that close proximity to wind turbine views affected values adversely at close distances, Dent's interviews with local estate agents suggested other factors had been involved and that views of wind farms were not at issue.

When reviewing the local planning board records, Dr. Sims was struck by the fact that objections to wind farms came not so much from local people but from outside the area. "People from Scotland are objecting to windfarms in Cornwall."[11] Sims and Dent conclude that the "threat" of a wind farm may have a more significant impact than the actual presence of one.

While increasingly common place in Europe, wind farm projects have only begun to punctuate skylines and rural vistas in the United States for the past 10-15 years. A renewed energy crisis, coupled with Federal and State incentives encouraging energy companies to invest in renewable energy, has triggered the siting and expansion of projects throughout the country. Further, new designs allow for building fewer but more efficient turbines, planted in so-called wind farms where natural wind energy can be found. Installed capacity, nationwide, has grown at a compound rate of 26% since 1998. In 2006, wind farms made up 19% of all new electricity generating capacity added in the United States. By the end of 2007 the American Wind Energy Association projects 15,000 MW serving 3.5 million households will be in service in the US.

However, while surveys show general support for wind as a green alternative to burning fossil fuels, opponents continue to question whether property values will be lowered when in view of the turbines. Research continues to seek evidence as basis for the claims.

The Renewable Energy Policy Project (REPP) (Sterzinger et al 2003) reviewed data on property sales in the vicinity of wind projects and used statistical analysis to determine whether and to what

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[11] RICS Property World, Issue 1, 2007 pp. 32-33

extent the visual presence of turbines has had influence on prices of properties which have been sold.[12]

The REPP report hypothesized that if wind development can reasonably be claimed to hurt property values, then review of sales data should show a negative effect on property values within view sheds of the projects. The study found no significant empirical support that property values were diminished in any of 10 test cases from around the country.

In fact, three of the projects studied (Madison, Fenner and Searsburg) were investigated for purposes of this report and will be discussed further, below.

In the REPP study view sheds or visual impacts were defined as areas within 5 miles of a wind farm where the turbine clusters can be seen. The limitations of the study involved the fact that most of these wind projects have been sited in remote rural locations where numerous homogenous sales were unavailable, compared with the urban areas referenced above. The simple regression model cannot explain all influences on property values. The REPP study authors suggested that future studies might expand variables. Refinements might include consideration of relative distances.

The REPP regression analysis used monthly average change in price for all aggregate sales in the defined view shed areas and a control community unaffected by the view. Comparable communities were selected based on comparable demographics and discussions with local assessors and was admittedly subjective.

Most of the weaknesses in the REPP study were addressed and corrected by Hoen and Wiser in their study of six sites, including the Fenner project in Madison County. The Fenner study area is located about 15 miles southeast of Syracuse on the eastern edge of the Finger Lakes Region. The Fenner project, comprising 20 turbines perched on high ridges of rolling hills, was completed in 2001 and is placed over 2,000 acres.

The purpose of the study was to test if views within 5 miles of the turbines had affected transaction values of homes which had sold. The study looked at distance and time relative to home values.[13] Hoen collected sales data from the assessors' offices for a period before and after the project, then ground-truthed the data by inspecting each sale property to rate and grade the relative view of the turbines from the house. Aside from statistical tools, Hoen was able to use a geographic information system ("GIS"), in essence a computerized map that is able to display select layers of data, to model distance and confirm what was apparent in the field. Hoen developed viewshed variables involving distance and the level that the turbines intruded.[14]

The descriptive statistics of the homes were found to be highly similar to those in Franklin County. Hoen's conclusions are significant:

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[12] Sterzinger, George, et al., "The Effect of Wind Development on Local Property Values", Renewable Energy Policy Project, Washington, D. C., 2000

[13] Hoen, op. cit., p. 20

[14] Ibid. p. 25-28

> Our analysis of 280 home sales within 5 miles of the Fenner wind farm…failed to uncover any statistically significant relationship between either proximity to or visibility of the wind farm and the sale price of homes.[15]

A subsequent study was undertaken in 2007 and the preliminary results were presented at the AWEA Fall Symposium in Carlsbad, CA on November 2, 2007. The six sites studied included:

- 2 projects in Madison County (of 7 and 20 turbines, respectively), New York
- 43 turbine project in Wayne County, Pennsylvania
- 34 turbines in Somerset County, Pennsylvania
- Mendota Hills project in Lee County, Illinois (63 turbines)
- 379 turbines in Buena Vista County, Iowa

Each study area provides sales data of 350- 1,000 transactions since turbines became operational. This population of sale data was large enough to apply a hedonic regression model where variables of interest such as view of turbines, distance from turbines and number of turbines visible could be tested for significance. These studies conclude that while buyers and sellers care about scenic vistas, there is "no statistically significant evidence that they care about views of wind turbines."[16]

It should be noted that few of Wiser and Hoen's sales were closer than ¾ of a mile of a turbine, but their emphasis on actual sales rather than mere preferences is powerful. This is because the transaction, i.e. the sale of a property, is the only factual event that, when aggregated with similar transactions, can demonstrate a trend or bracket a value range. A transaction price represents the meeting of the minds, ultimately so critical to any concept of market value.

Some of the other studies are also helpful for understanding when an impact *does* occur.

Overhead transmission lines have received the most scrutiny from the standpoint of their visual impact in rural areas. A 1992 study by Cynthia Kroll and Thomas Priestley concluded that fee appraisal offices have the longest history of evaluating line-of sight impacts, but lack any in-depth statistical analysis to verify obtained results. Interviews and personal opinions can produce dramatically varying results (and do not have the finality of actual transaction data).[17]

The Kroll-Priestley study found that the presence of a transmission line may not affect some individuals' perceptions of a property's value at all. Some people tend to view transmission lines as necessary infrastructure on the landscape, similar to roads, water towers, or antennae.

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[15] Ibid., p. 34

[16] Wiser, Ryan, "The Impact of Wind Facilities on Residential Property Values- What do We Know, and What Don't We Know?" AWEA Wind Energy Fall Symposium, Carlsbad, CA, November 2, 2007.

[17] Kroll, op. cit. pp 17-24

The most sensitive rural properties were found to be those located in areas of recreational or second homes. Thus, more remote farming communities will be less impacted than those near recreation or scenic destinations. Effects are most likely to occur to property crossed by or immediately next to the line.

This overview on transmission lines suggests that the most serious impact is physical impairments of views for higher valued residences or vacation homes.

In conclusion, the academic literature tells us:

- That residential values are most sensitive to aesthetic impact and that high-end residential development is more sensitive than low-end housing;
- That urban concentration and homogenous properties with high volumes of sale transactions are necessary to do appropriate statistical analysis;
- That such analysis cannot be performed in sparsely populated rural areas;
- That caution must be taken when considering opinion surveys since personal preference is no substitute for transactional evidence;
- And that the Wiser- Hoen study can be applied to the Jericho Rise Wind Power project. Their project studied value impacts in a highly similar rural Central New York area where the effects of a mature project could be studied over time.

Local Analysis

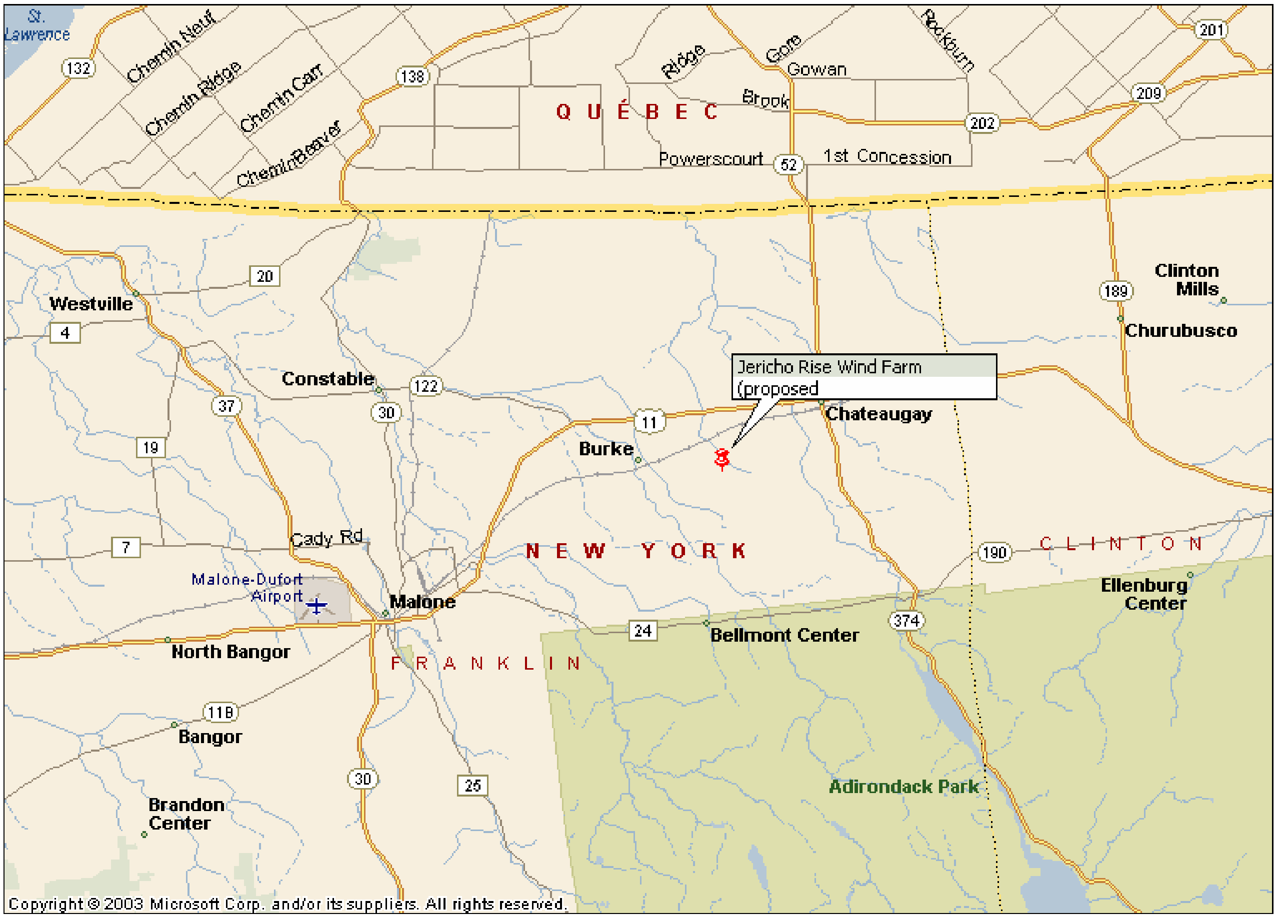
The proposed 53 turbine project will be located in northeastern Franklin County, just east of the Town of Burke, 5 miles east of Malone and 2 miles south west of the Village of Chateaugay. Malone is the main commercial center and county seat.

The Town and Village of Malone are situated in Franklin County in Northern New York, the aptly named “North Country.” Malone is located 12 miles from the Canadian Border, 35 miles from Massena, NY, on the Northwest, and 52 miles from Plattsburgh, NY on the east. South of Malone is the Adirondack State Park, Saranac Lake, NY (50 miles away), and 63 miles south is Lake Placid.

The project area generally lies in the Malone Plain of the St. Lawrence Hills subdivision of the St. Lawrence-Champlain Lowlands. The topography of the area offers rolling plains and low hills, with elevation changes in the tens of feet except near the Salmon River, where steep slopes can be found. The soils in the southern portion of the area are derived from glacial lake sediments, while the western portion of the region has coarse textured soils derived from glacial sands and gravel.

As with many communities in the North County, the local economy has seen a decline in the dairy industry over the years, compensated for to some degree with a modest rise in public sector employment (e.g. Correctional Facilities and Homeland Security). Population within a five mile radius of the project hovers around 3,500 and is projected to remain stable, although county-wide, population has declined somewhat, stabilizing around 51,000. New York is a home rule state whereby the Town is the controlling body for administering and paying for many municipal services, especially road maintenance.

Home values averaged between $85,000 and $90,000 within a 5-mile radius of the project area, slightly below the County average and only 34% of the statewide average.



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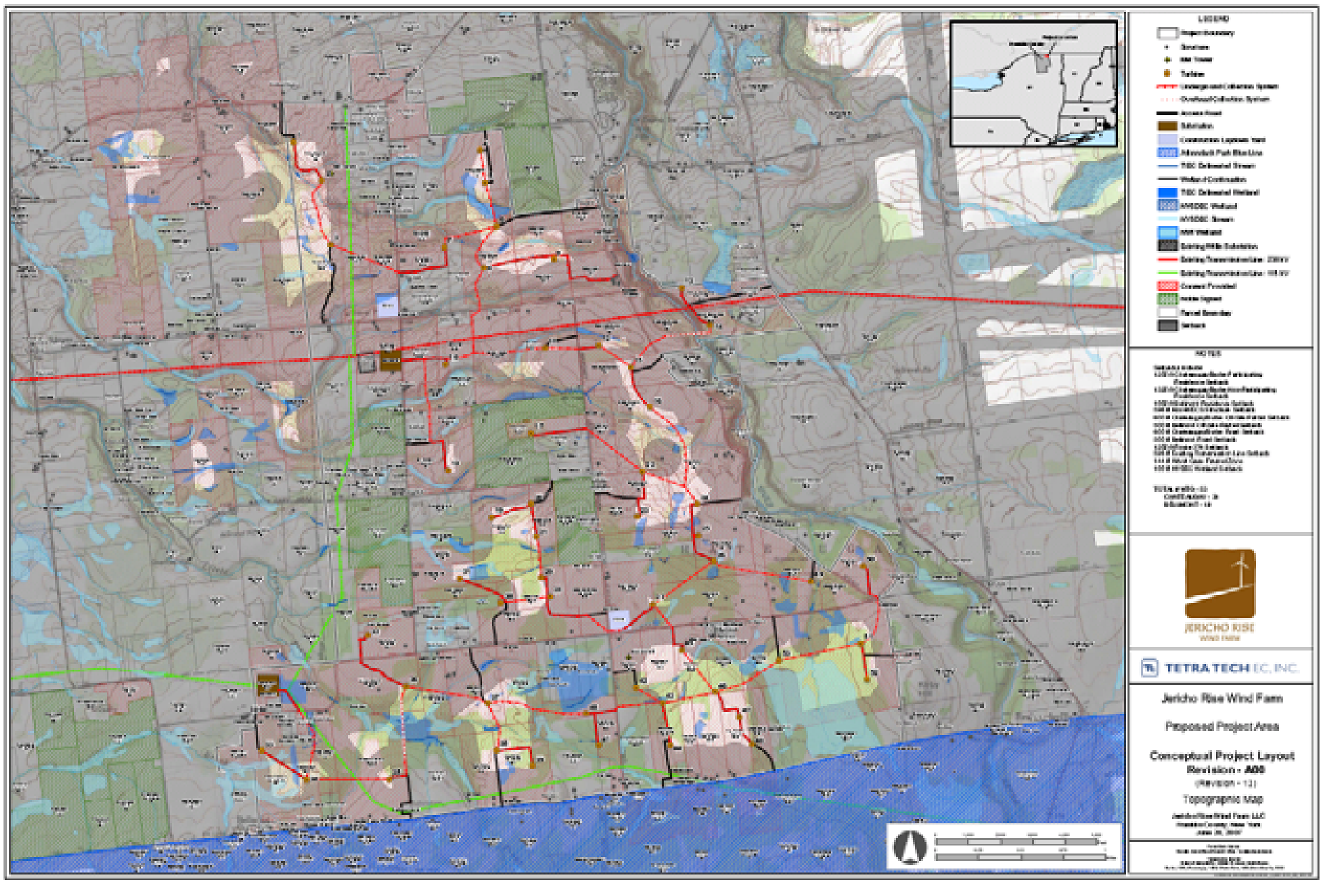
As with other projects completed in New York state, the actual area to be used to site and access improvements will total no more than one or two percent of the area; in this case maybe 100 acres. Those landowners directly impacted with turbine placements have agreed to long term annual leases. Once turbines are in place and restoration work completed, agricultural use (pasture or even row crops) can be resumed in the staging and construction areas right up to the turbines.

The map following depicts the project area along with surrounding parcels.


Jericho Rise Wind Farm
Proposed Project Area
Conceptual Project Layout
Revision - A08
(Revision - 12)
Topographic Map
TETRA TECH EC, INC.
JERICHO RISE

Demographics and an overview of the local economy are integral to assessing value impacts on specific properties. Land use in the vicinity of the project is dominated by small family-owned dairies and larger commercial agricultural operations, interspersed with rural residential tracts that tend to line public roads and highways.

Aside from agriculture, economic drivers for the area are limited to the public sector and a declining manufacturing base.

The Jericho Rise Wind Farm was announced in late 2006 the Applicant has decided to include this land use impact study as part of the application process. The discussion below reports on local property value trends and compares them to county-wide averages. Given the limited time since announcement and the lack of many post-announcement transactions to analyze, we have also examined real estate activity surrounding the recently completed 195-turbine Maple Ridge project in Martinsburg, Harrisburg and Lowville in Lewis County, New York.

Further we have studied real estate markets near two smaller projects in Fenner in Madison County and near Bennington, Vermont which have now been operating for at least five years. We will report our findings based on this research.

Real Property Market Activity- Vicinity of Jericho Rise Project

There has not been sufficient time since project announcement to observe any impacts on property values within the vicinity of the proposed Jericho Rise Wind Farm. However, we can attempt to characterize the local real estate market by studying recent statistics. These can help us forecast to what extent, if any, neighboring properties may be impacted once turbines have been erected.

New York is a full disclosure state in that all real property transactions are of public record and may be accessed through county and town assessors. This information is particularly useful in plotting long term trends. Further, we have been able to track and trend related data in other counties where wind farms have been built, or as a test to help benchmark market performance in comparable areas unaffected by pending wind projects.

In the tables and charts below we have arrayed year by year statistics reporting the number and average sale price for various categories uniformly accounted for by the Town and County Assessors. This data can then be enhanced with some commentary on current sales and listings we have researched within the project area.

These values were tracked for seven years, 2000 through 2006. We calculated the percent change from year to year. The problem with this indicator, when there are relatively few observations, is that trending can be distorted by outlier transactions, either way high or way low. A larger population would smooth these variances out.

With each category we tracked the following data:

- number of sales per year,
- average sale price per year
- average acreage of parcels that sold
- average sale price per acre per year

We selected four categories of property sales because they exhibited higher volumes year in and year out and because they represented the types of property that are proximate to the wind project. We did not consider sales of commercial properties, since none are really impacted by the project. We also excluded pure wood lot or wetland sales since those parcels were likely not buildable or found particularly sensitive to viewshed considerations.

The first tables below shows the average price of single family residences in Burke, Chateauguay and Bellmont, the towns most directly affected by the Jericho Rise wind project. The next table shows the same indicator county wide. Burke is adjacent to Bellmont and Chateauguay and reported sufficient transactions to indicate a trend and averages. These statistics show a generally positive trend, but also show that single family residence values in all three towns lag behind the county in terms of average sale price. While more of the affected properties will be farms and rural residences, county-wide sale trends are much more consistent over time.

Town of Bellmont

Property Type	Sale Year	# of Sales	Average $SP	Average Acres**	% change
All SFR	2000	26	$ 65,154	1.65	n/a
All SFR	2001	16	$ 60,966	3.61	-6.4%
All SFR	2002	35	$ 80,643	4.66	32.3%
All SFR	2003	22	$ 88,757	5.74	10.1%
All SFR	2004	32	$ 89,288	4.34	0.6%
All SFR	2005	24	$ 109,275	4.14	22.4%
All SFR	2006*	15	$ 121,910	2.82	11.6%
Averages		24.3	$ 87,999	3.85	

Town of Chateaugay

Property Type	Sale Year	# of Sales	Average $SP	Average Acres**	% change
All SFR	2000	8	$ 53,025	3.49	n/a
All SFR	2001	8	$ 54,738	3.40	3.2%
All SFR	2002	7	$ 57,486	0.96	5.0%
All SFR	2003	6	$ 50,167	0.58	-12.7%
All SFR	2004	12	$ 56,350	3.31	12.3%
All SFR	2005	12	$ 80,058	2.01	42.1%
All SFR	2006*	9	$ 90,333	20.81	12.8%
Average			$ 63,165		

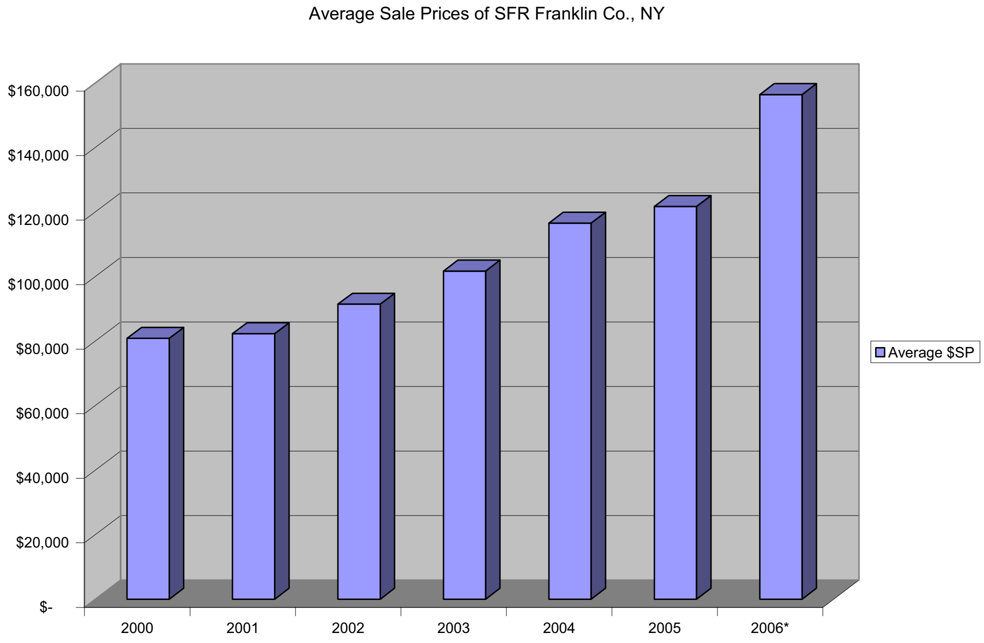
Town of Burke

Property Type	Sale Year	Average $SP	Average Acres	% change
All SFR	2000	$ 38,500	5.47	n/a
All SFR	2001	$ 68,143	3.60	77.0%
All SFR	2002	$ 41,980	4.13	-38.4%
All SFR	2003	$ 61,200	2.78	45.8%
All SFR	2004	$ 60,483	4.65	-1.2%
All SFR	2005	$ 67,461	2.86	11.5%
All SFR	2006*	$ 95,700	13.56	41.9%
Average		$ 61,924		

The Town tables shows that over 7 years (2000-2006) the average price of homes sold went mostly up, but there are too few transactions to map a reliable trend. We find it difficult to gauge adverse impacts created by land use changes when property values already seem low.

Franklin County

Property Type	Sale Year	# of Sales	Average $SP	Average Acres**	% change
SFR	2000	247	$ 80,844	3.23	n/a
SFR	2001	243	$ 82,274	2.57	1.8%
SFR	2002	240	$ 91,424	3.15	11.1%
SFR	2003	256	$ 101,708	2.93	11.2%
SFR	2004	284	$ 116,545	2.60	14.6%
SFR	2005	173	$ 121,721	3.33	4.4%
SFR	2006*	168	$ 156,387	2.11	28.5%
Averages		230	$ 107,272		



The same category and time frame are reported county wide, above. This shows the average price of homes sold in the County now averaging over $156,000 and trending upward year after year.

Another table is also helpful for review. Vacant farm land for the county shows average acreage going up and down between $400 and $700 per acre, averaging $543 per acre over seven years. This suggests fair soil productivity yet fairly stable values, county-wide.

Franklin County

Property Type	Sale Year	# of Sales	Average $SP	Average Acres**	Average $SP/Acre	% change
Farm Vacant	2000	38	$ 86,255	135.77	$ 635	n/a
Farm Vacant	2001	28	$ 49,960	88.13	$ 567	-10.8%
Farm Vacant	2002	36	$ 51,732	105.76	$ 489	-13.7%
Farm Vacant	2003	39	$ 41,198	102.30	$ 403	-17.7%
Farm Vacant	2004	45	$ 82,425	117.28	$ 703	74.5%
Farm Vacant	2005	23	$ 67,022	125.85	$ 533	-24.2%
Farm Vacant	2006*	15	$ 41,519	87.74	$ 473	-11.1%
Averages		32		108.98	$ 543	

Some demographic statistics are also helpful here. Median owner-occupied home values according to Claritas Projections range from $73,000 to $75,000 for the towns of Bellmont, Chateauguay and Burke. This may be compared with a corresponding value of over $97,000 for homes in Franklin County, and average values of $250,000, statewide.

These county assessor observations tell us a couple things. First, they support the Claritas-U.S. Census projections relating to average home prices in the Bellmont, Chateauguay and Burke area, versus the County as a whole. Second, these statistics show that Franklin County has a very stable real estate market where average farmland prices of properties that have sold varies within a wide range, but cannot be said to be consistently appreciating.

Home values may or may not be going up, but the average home prices in the three Towns seem well below county and statewide averages. Our research tends to indicate that rural properties with these value characteristics are much less vulnerable to impacts to their view sheds than recreational or high-end executive dwellings.

In such a real estate market with a low-growth local economy, some of the benefits to be conferred by wind development, including so called PILOT (payments in lieu of taxes) and Host Community/Mitigation, payments might actually bolster demand for housing by improving schools and other community facilities.

Discussion of Comparable Wind Projects

In this section we will focus on a large project commissioned in two phases in 2005 and 2006 near Lowville, New York and the mature, but smaller Fenner project in Madison County, New York, about 50 miles east of Syracuse. We will then discuss our experience at some other projects from around the country.

Maple Ridge, Lewis County, New York

The 195 turbine Maple Ridge Wind Farm has just become operational in Martinsburg (population 1,249), Harrisburg (population – 423) and Lowville (combined Town and Village population of ~ 8,000), in Lewis County, New York, to the west of the Adirondack Park. Lowville has an historic area, where turbines are barely visible. The wind project is located west of Lowville on Tug Hill, an elevated plateau known for its strong wind resource. The wind farm was constructed in 2005 and 2006 and has permanently altered the landscape along the northeastern edge of Tug Hill. The turbines are visible in some instances from over 5 miles away and easily in sight of many residential developments in the Village of Lowville.

The Village of Lowville population, according to the 2000 census, was 3,476, while all of Lewis County is 26,944. This is comparable to the North Country. Most of Lowville, Harrisburg and Martinsburg lie within a five mile radius of the Maple Ridge project, which is centered around Eagle Factory Road and US 177, west of Lowville Village. Population surrounding the wind project is very similar to the vicinity of Chateaugay and Bellmont. Local Realtors and the Maple Ridge manager argue that an expansion of nearby Fort Drum, to the north, triggered both a housing shortage and marginal population growth in 2005-2006.

Average historic housing values range from $80,000 to $90,000 within a five mile radius of the Maple Ridge Wind Farm, at least 10% higher than the area of Franklin County where the Jericho Rise Wind Farm is planned.

Sales statistics from the assessor's office in Lewis County corroborate the trends suggested by Claritas and local anecdotes.

Lewis County Home Sale Statistics

Property Type	Sale Year	# of Sales	Average $SP	Average Acres	% change
SFR	2000	76	$ 68,018	4.18	n/a
SFR	2001	75	$ 61,796	5.41	-9.1%
SFR	2002	93	$ 69,960	4.68	13.2%
SFR	2003	78	$ 69,744	5.79	-0.3%
SFR	2004	99	$ 79,024	6.91	13.3%
SFR	2005	112	$ 88,981	5.17	12.6%
SFR	2006	148	$ 98,722	2.95	10.9%
SFR	2007*	69	$ 102,421	4.07	3.7%
		94	$ 79,833	4.89	
Average annual increase 2000-2007					6.3%

A reduction in the pace of growth in 2007 may have more to do with rising interest rates than other factors.

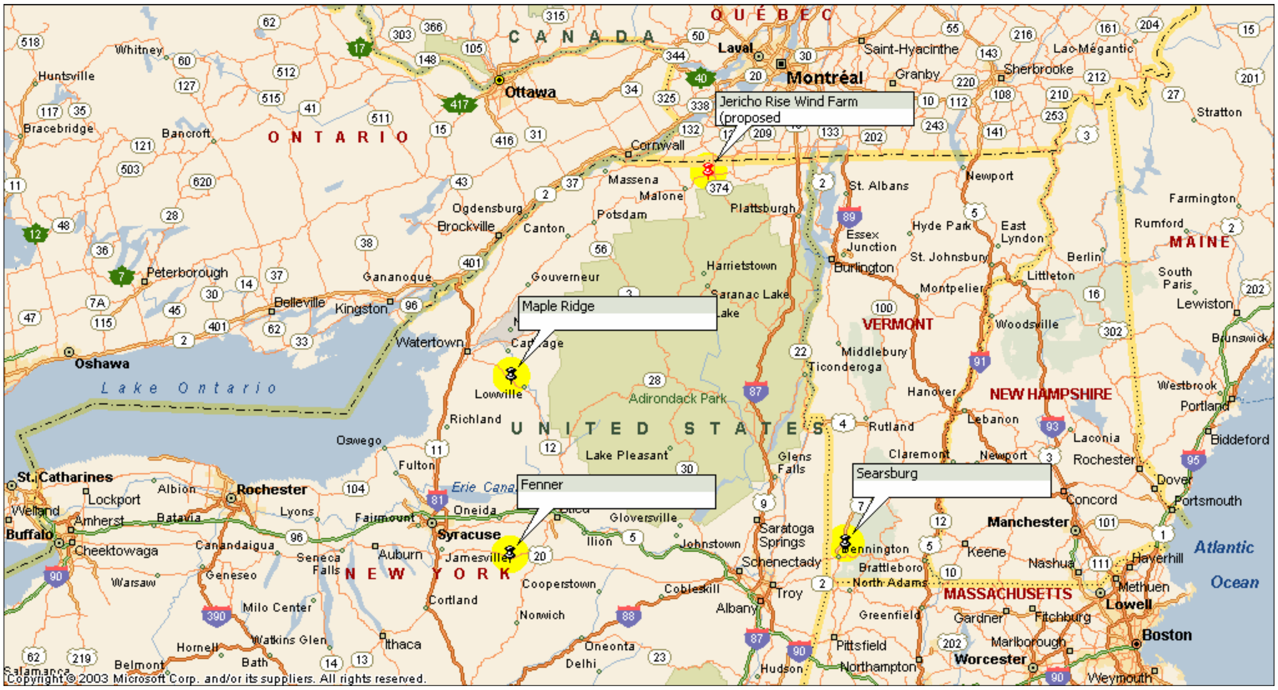
The picture below is of a custom residence under construction on Swernicki Road amidst the Maple Ridge project in Lewis County. The site has a commanding view of Lowville and the fields below this ridge. It demonstrates that, at least for some, the turbines are just part of the rural landscape.

Ken Erb, a Lowville Realtor and appraiser, bought his home in the exclusive Hillcrest neighborhood where wind turbines are clearly visible 3-5 miles to the west. Home prices there, for popular raised ranch style homes, range from $110,000 to $125,000, well above city and county averages.

Arleigh Rice, Lowville Supervisor, reported at a town meeting in Perry, New York (October 3, 2007), that, on balance the Maple Ridge project had proven an unqualified economic boon to the area, helping with road maintenance costs (Lowville purchased a new $160,000 snowplow in 2006 partially using proceeds from the wind farm) and leading to the neighborhood looking “all cleaned up”. He too, observed that demand for housing remained strong while local farmers appreciated the supplement to income that turbine leases provided. At the same meeting, the Town Supervisor of Eagle in Wyoming County stated that property prices in his town had increased substantially while Town taxes had been reduced to zero due to a new Wind Farm in that town.

The experience observed and reported at the Maple Ridge project suggests that in a market where average home values are at a roughly similar level and where recreational uses (e.g. snowmobiling) are similar if perhaps more prevalent, demand and property appreciation have kept pace with elsewhere in Lewis County where there is no a wind farm. Further the experience around the Maple Ridge Wind Farm underscores the influence of exogenous influence (like the

Fort Drum expansion) which can swamp demand in local markets, notwithstanding any concerns about wind farm impacts.



Fenner, Madison County, New York

The Fenner project in Madison County was constructed on a ridge where Oneida Lake and Syracuse can be seen to the north on a clear day. Fenner is a 30 MW project with 20 turbines and was opened in 1999. The REPP study (2003) found no evidence of adverse impacts at Fenner, or its vicinity. The Hoen study (2006) corrected some of the weaknesses in the REPP study with a hedonic model, but reached the same conclusion. We found that the Fenner project is both smaller in scope and somewhat more difficult to observe, except from neighboring ridge tops in this much hillier terrain.

However, while residential values appear generally higher in Madison County than Franklin County, some very positive trends since the project opened (now over 6 years ago) would belie concerns about adverse impacts.

First, household incomes within a 3-mile radius of Fenner exceed $60,000, 50% higher than Bellmont, Chateauguay and Burke. Average dwelling values, reported below $75,000 near Bellmont, Chateauguay and Burke, average $115,000 near Fenner. The average sale prices on rural residential properties tracks with typical single family dwellings.

Searsburg, Vermont

A small 11 turbine project opened in Searsburg, Vermont at the juncture of State Roads 8 and 9, between Bennington and Wilmington in 1997. The REPP study showed that area sales before and after indicated no adverse impacts before and after operations began, as of 2003. We interviewed local brokers and tracked sales activity of the nearby resort at Chimney Hill. There, we found sales of rather modest recreational cabins in the $225,000 to $300,000 price range.

This wind project sits on a ridge line where the turbines tower over the canopy and can be seen from several vantage points from Route 8. A feature story in the Cape Cod Times (May 12, 2002) noted that a parking lot had been created to accommodate sightseers. While Searsburg is a much smaller project, it was sited on a very visible Green Mountain Ridge in the heart of scenic Vermont where tourism and recreational uses abound. Our studies have shown that such areas are much more sensitive to esthetic concerns than would be the case in more traditional farming communities.

Kittitas Valley, Ellensburg, Washington

In Central Washington State, near the University-town of Ellensburg, the Kittitas Valley Project ("KV") has been in the planning stages for nearly four years. The valley is traversed by Interstate 90 where 65 2-MW turbines will be erected. The view shed in this area is rimmed with windswept, treeless mountains, yet has long been compromised by multiple electric transmission towers and overhead lines, so characteristic of the power corridors that extend from the hydro-electric dams to large Northwest cities. However, some of the affected property on the eastern slope of the Cascades still enjoyed pristine views. Yet even though turbines were planned for these limited view sheds, speculative land sale activity and recreational housing continues, because of strong demand spilling over from a nearby resort, Suncadia.

The Washington Governor, Christine Gregoire approved this project, although the local county commissioners have appealed, as of the date of this report.

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What was remarkable about the Kittitas County study area was the relative high number of paired sales which were reported since announcement of the Project. We confirmed 12 transactions, or nearly 20% of the parcel inventory, a very high rate for a rural area. In virtually every case, robust appreciation rates were indicated. This suggests that the marketability of the sites was unaffected by the proposed project and that land values were unaffected as indicated by the rates of value appreciation.

We found that paired sales in the area surrounding the KV Project were appreciating at rates well above that of the county in general and the city of Ellensburg. This holds true for the four-year pre-announcement period and the 2-year post-announcement period with rates above the 10% range in the vicinity of the Project versus rates below 10% in Ellensburg and Lower Kittitas County.

General Findings

- Given the relatively low median incomes, slow growth and limited base economy near the Towns of Bellmont, Chateauguay and Burke, the proposed Jericho Rise Wind Farm may yield net economic benefits, which could in turn, spur demand for housing and increase property values over time.
- Having reviewed the inventory of affected parcels, we find that they include a mix of rural residential tracts interspersed with commercial dairies and small farming operations. Our studies show that the most sensitive of these properties will be the rural homesites.
- We find that dairy farms, hay fields and vacant land are unlikely to be negatively affected since value of such lies in the relative productivity of the soil and the age and functional utility of farm and dairy related structures. Residences are incidental to the business not located for the view shed.
- We have reviewed the age, quality and values of housing stock in the area and extensively surveyed property sale records going back to 2000. We have found that property values in the affected area are as low as anywhere in New York State. This is due to slow growth, depressed economies in the North Country and a cyclical dairy industry. We did not find any new development and little executive type housing near the revised project area where view considerations would be significant.
- The general characteristics of the area around the proposed Jericho Rise Wind Power Project suggest that adverse property value impacts may be negligible, if measurable at all. This observation is based on our study of property values at Maple Ridge near Lowville and the Wiser-Hoen study at Fenner in Madison County. In fact, there is yet to be demonstrable evidence that wind power projects have any adverse impact on property values anywhere. Further, there is anecdotal evidence that the presence of a wind farm may even have improved values of some types of recreation or seasonal properties.

Summary of Property Value Impacts

The Jericho Rise Wind Farm Project should have no impact upon property values for undeveloped properties or existing farms. There appear to be no premium-priced executive or second homes located in the project area or viewshed, which would derive such a premium from their views. The value of the existing stock of rural residential housing is fundamentally based on its utility in terms of access to employment and services, and the quality of such. The data shows that the existing stock of rural residential housing in the study area does not trade at a premium versus other comparable communities in Franklin County and is significantly lower valued compared with otherwise comparable communities in the Northern New York.

Local property values will be much more susceptible to the local economy than to changes in the view shed created by the Project. To the extent that the wind project brings in jobs, reduces local property taxes and its PILOT (payments in lieu of taxes) contributions benefit local schools and infrastructure, then property values should be supported in the participating jurisdiction. We find that the Project should have no impact upon the future sales or values of developed properties given these prevailing conditions.

CERTIFICATION OF CONSULTING ENGAGEMENT

I certify that, to the best of my knowledge and belief:

1. The statements of fact contained in this report are true and correct.
2. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.
3. I have no present or prospective interest in the property that is the subject of this report, and no personal interest with respect to the parties involved.
4. I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
5. My engagement in this assignment was not contingent upon developing or reporting predetermined results.
6. My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
7. The reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of professional Ethics and Standards of Professional Practice of the Appraisal Institute which include the *Uniform Standards of Professional Appraisal Practice.*
8. I have made a personal inspection of the property that is the subject of this report. No one provided significant consulting assistance to the persons signing this report.
9. The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.
10. As of the date of this report, I have completed the continuing education program for the Appraisal Institute.

P Barton deLacy

P. Barton DeLacy, MAI, CRE
Managing Director
Certified General Real Estate Appraiser
New York ID No. 46000046642

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Parties Interviewed

Amy B. Mattoon, licensed real estate broker, 7570 Route 20A, Perry, NY, (716) 237-2549

Joe Gozelski, County Supervisor, Town of Castile, NY (March 10, 2006)

Jill McCluskey, PhD, Associate Professor, School of Economic Sciences, Washington State University, Pullman, WA (509) 335-2835; mccluskey@wsu.edu

James Strathman, PhD, Director, Center for Urban Studies, College of Urban and Public Affairs, Portland State University, PO Box 751, Portland, OR (503) 725-4069; strathmanj@pdx.edu

Thomas Priestley, PhD, CH2M Hill, 155 Grand Avenue, Oakland, CA 94612, (510) 587-7653; Analysis of the Visual Resources Impacts of the Revised KV Wind Power Project, internal technical memorandum prepared for Horizon Energy, November 7, 2005.

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Martine Gonyo, Assessor, Town of Clinton, Churubusco, NY 518-297-2482

Laura Burns, Clinton County MLS; 518-561-8777

Eric Rohver, Coldwell banker Whitbeck Associates, Plattsburgh, NY; 518-562-9999 eric@coldwellbankerwhitbeck.com

Roger Abbey, Ken Erb, with Good Morning Realty, Inc. and Abbey Appraisal; 7613 N. State St., Lowville, NY; 315-376-8600

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David Domm, Cohocton Town Assessor; 585-534-5102

Ryan H. Wiser, PhD, Ernest Orlando Lawrence Berkeley National Laboratory, One Cyclotron Rd., Berkeley, CA; rhwiser@lbl.gov; 510-486-5474

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Appendix L
Licensed Microwave Search and Worst Case Fresnel Zone

COMSEARCH®

Tetra Tech EC Inc.
Jericho Rise Wind Farm LLC

Executive Summary – Wind Power GeoPlanner™

Licensed Microwave Search & Worst Case Fresnel Zone

Comsearch performed an analysis to evaluate the potential effects of the planned Jericho Rise Wind Farm project area in Franklin County, New York on existing non-federal government microwave telecom systems.

Microwave Search Results: Comsearch's Wind Power GeoPlanner™ provides a graphical representation of affected microwave paths and provides supporting technical parameters. The microwave path data is overlaid on topographic basemaps. Comsearch identified 6 microwave paths that intersect the project area (see Figure 1 and Table 1 below).

Comsearch then calculated a Worst Case Fresnel Zone (WCFZ) for each microwave path in the project area. The mid-point of a full microwave path is the location where the widest (or worst case) Fresnel zone occurs. Fresnel zones are calculated for each path using the following formula.

$$Rn \cong 17.3\sqrt{\frac{n}{F_{GHz}}\left(\frac{d_1 d_2}{d_1 + d_2}\right)}$$

The calculated WCFZ radius, giving the linear path an area or swath, buffers each microwave path in the project area. The distance unit is in meters and can be found in the column attribute "WCFZ." In general, this is the XY area where the planned wind turbines should be avoided, if possible. These areas are shown in Figures 2 through 5.

Four microwave paths were identified (see Figures 3 through 5 and Table 2) to have a potential XY conflict with respect to five turbine: 18, 58, 69, 72 and 116 (see Table 3).

When wind turbines need to be located inside a WCFZ, Comsearch offers and recommends a detailed clearance study, which considers the vertical Z-height clearance objectives. Please contact Denise Finney at (703) 726 – 5650 for assistance.

Turbines: 80 turbines were considered in the analysis, each with a blade diameter of 88 meters. The coordinates provided were in NAD83.

Map Projection: The ESRI® Shapefiles contained in the enclosed GeoPlanner CD are in NAD 83 UTM Zone 18 projected coordinate system.

Comsearch Contact:
Denise Finney, Account Manager
Phone: (703) 726-5650 Fax: (703) 726-5599
Email: dfinney@comsearch.com

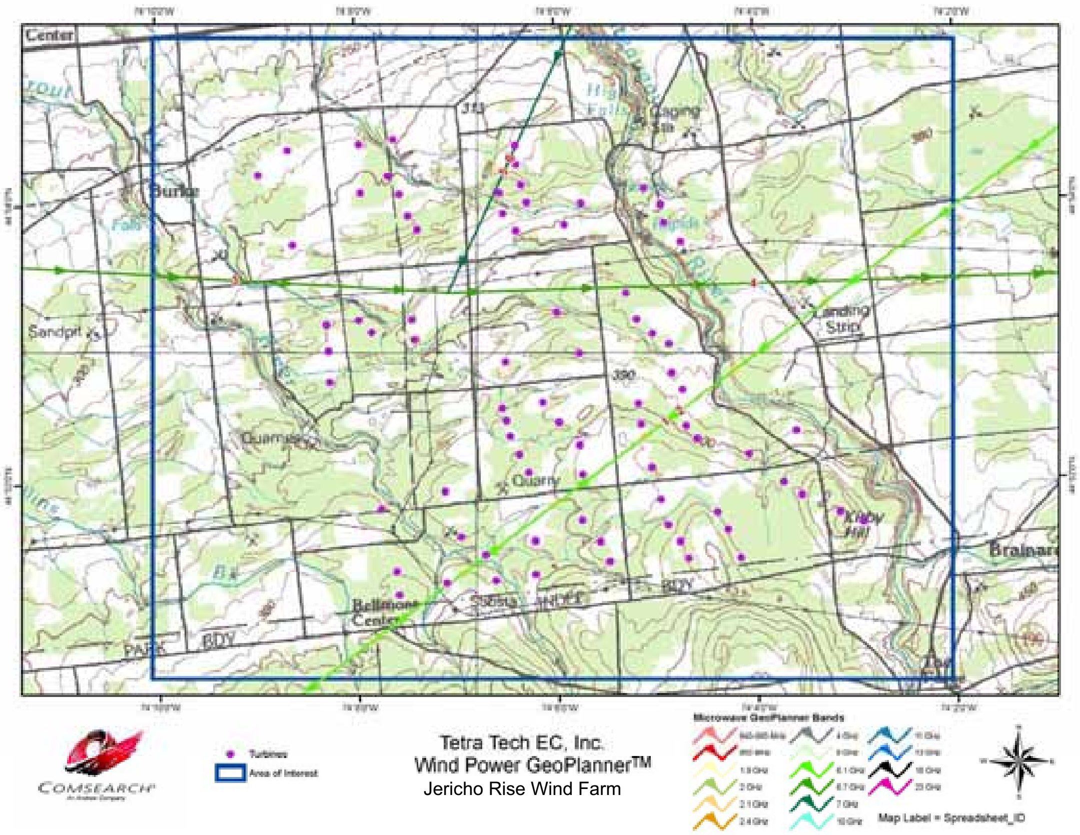


Figure 1 – Wind Power GeoPlanner™

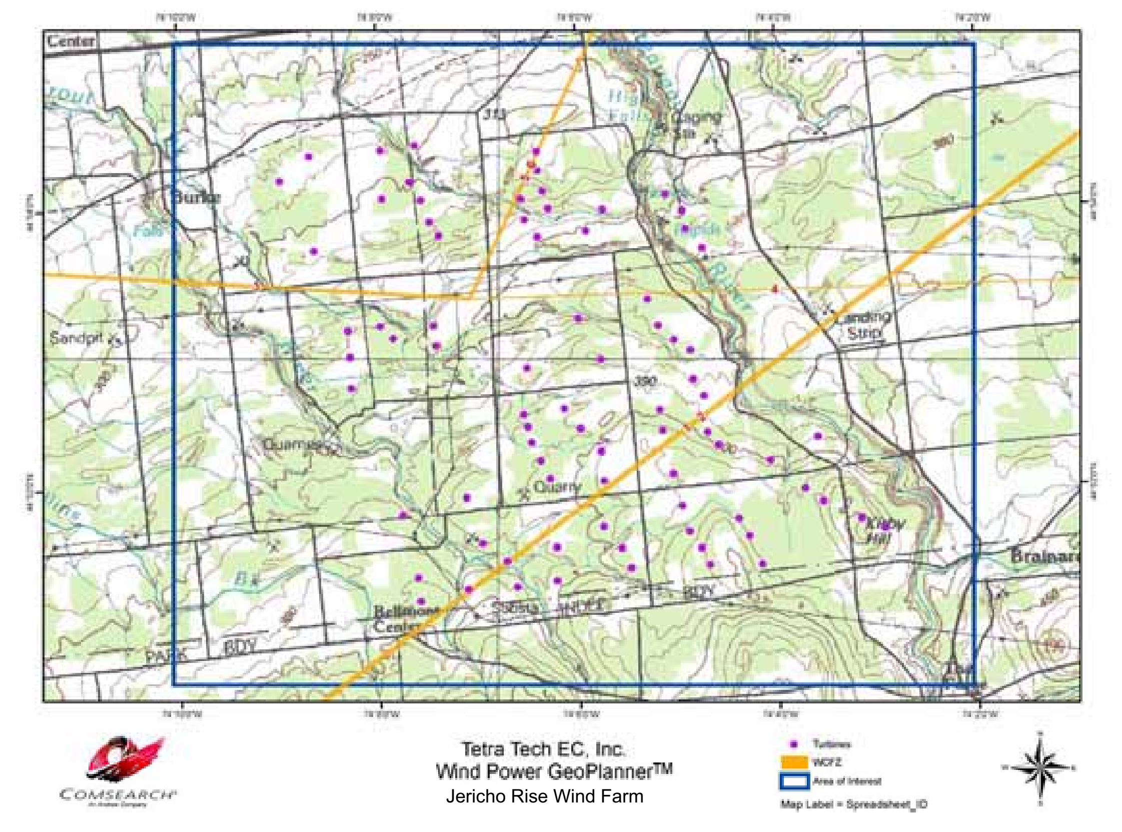


Figure 2 – Wind Power GeoPlanner™ & WCFZ

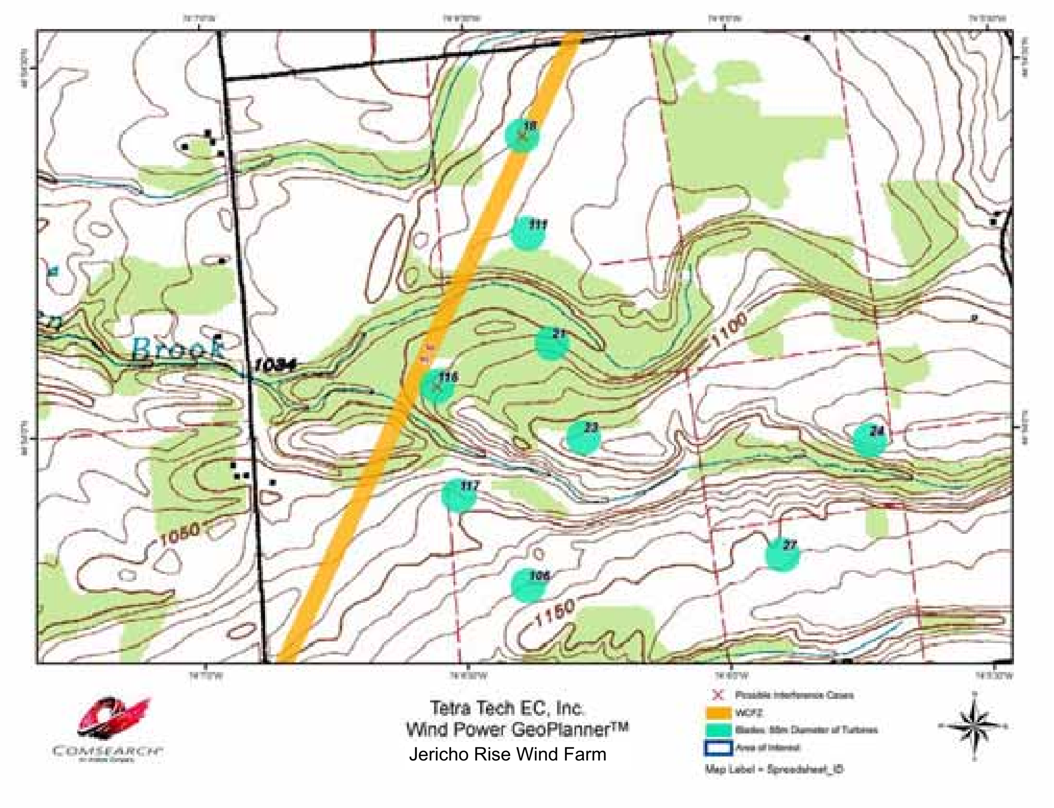


Figure 3 – Potential Interference Cases
(Turbines 18 & 116)

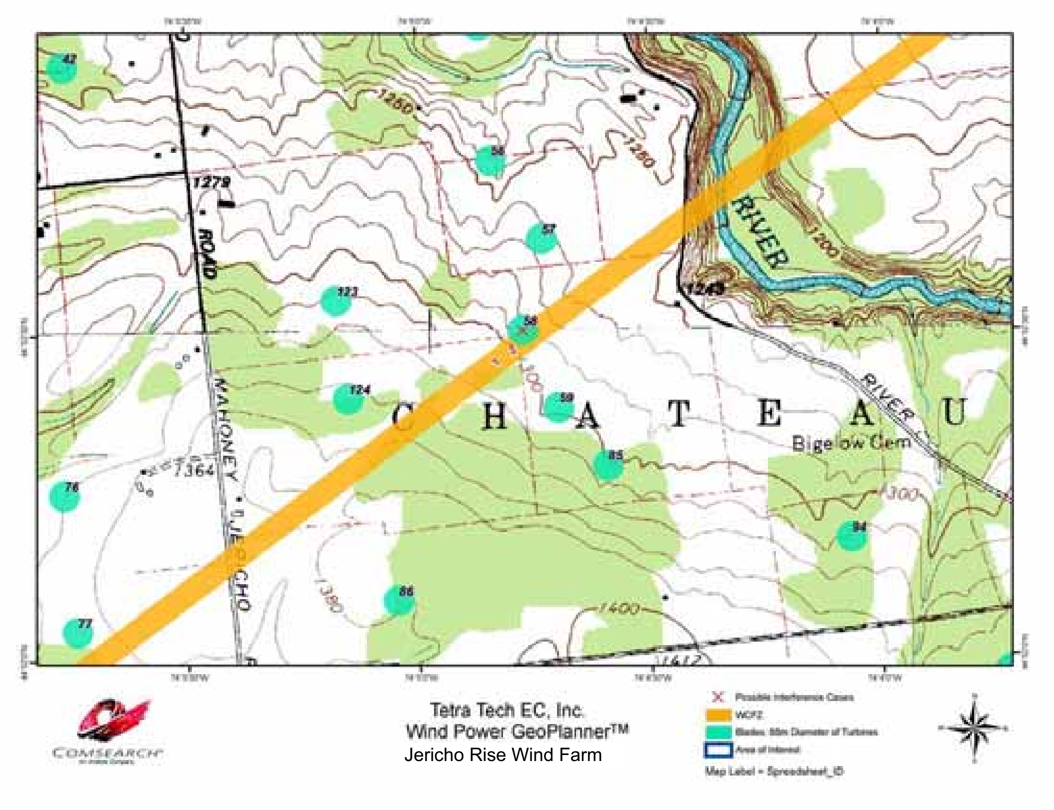


Figure 4 – Potential Interference Case
(Turbine 58)

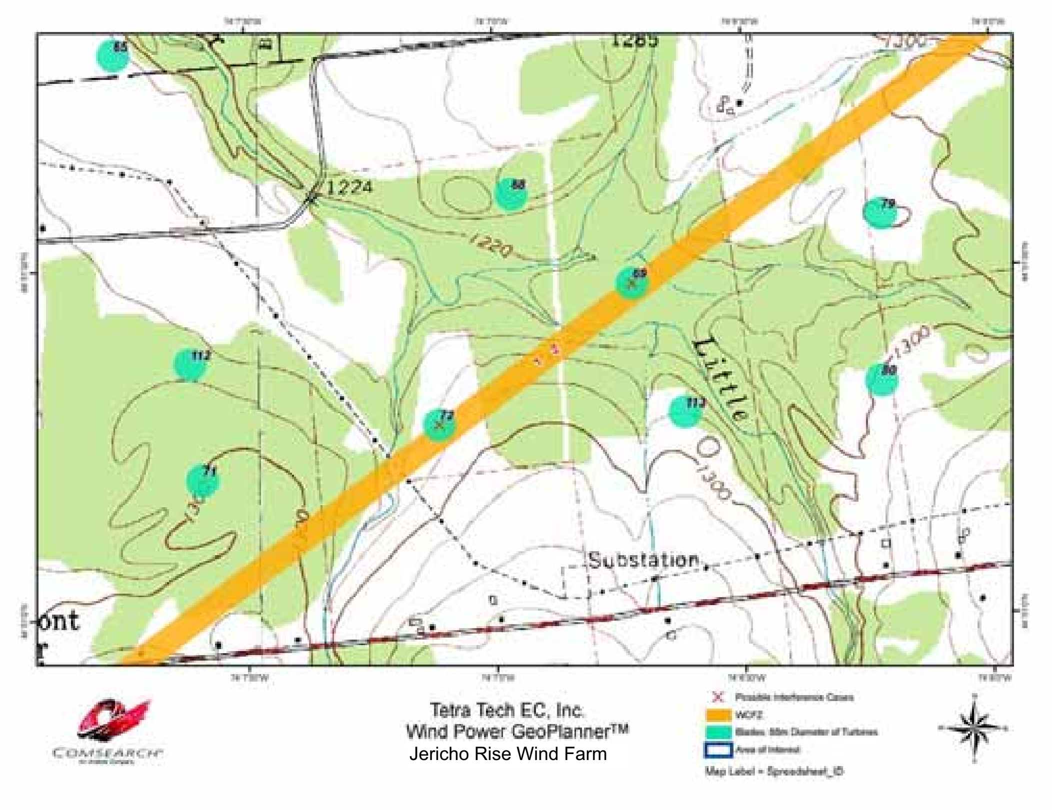


Figure 5 – Potential Interference Cases
(Turbines 69 & 72)

ID	Site Name 1	Site Name 2	Call Sign 1	Call Sign 2	Band Name	Licensee	WCFZ (m)
1	MALONE	CHURUBUSCO	WMQ391	WMQ392	2.1 GHz	RCC Atlantic Licenses, LLC	34.75
2	CHURUBUSCO	MALONE	WMQ392	WMQ391	Lower 6 GHz	RCC Atlantic Licenses, LLC	20.48
3	MASSENA SUB	WILLIS	WNEK637	WNEV804	Upper 6 GHz	New York Power Authority	25.17
4	WILLIS SUB S	CLINTON SUB	WNEV804	CLINTONS	Upper 6 GHz	New York Power Authority	10.79
5	CHATEAUGUAY	WILLIS	XOJ519	WNEV804	Upper 6 GHz	New York Power Authority	22.38
6	CHATEAUGUAY	WILLIS	XOJ519	WNEV804	7 GHz	HYDRO-QUEBEC (ETAGE 17)	21.90

Table 1 – Microwave GeoPlanner Links Considered in Analysis (See enclosed mw_geopl.xls for more detailed information and GP_dict_matrix_description.xls for field description)

ID	Site Name 1	Site Name 2	Call Sign 1	Call Sign 2	Band Name	Licensee	WCFZ (m)
1	MALONE	CHURUBUSCO	WMQ391	WMQ392	2.1 GHz	RCC Atlantic Licenses, LLC	34.75
2	CHURUBUSCO	MALONE	WMQ392	WMQ391	Lower 6 GHz	RCC Atlantic Licenses, LLC	20.48
5	CHATEAUGUAY	WILLIS	XOJ519	WNEV804	Upper 6 GHz	New York Power Authority	22.38
6	CHATEAUGUAY	WILLIS	XOJ519	WNEV804	7 GHz	HYDRO-QUEBEC (ETAGE 17)	21.90

Table 2 – Microwave GeoPlanner Links with Potential Conflict to Wind Turbines

FID	WTG_NUM	Easting	Northing	Longitude	Latitude
10	58	601116.574944	2201684.419950	-74.07953876	44.87504018
15	18	594087.745598	2213188.164530	-74.10643836	44.90669107
29	69	592725.731060	2195405.551880	-74.11202340	44.85793201
40	72	591042.117190	2194182.213460	-74.11853843	44.85459830
70	116	593376.064734	2211132.727780	-74.10922348	44.90106254

Table 3 – Affected Turbines

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and
Information Administration
Washington, D.C. 20230

JUN 2 2007

Mr. Lester E. Polisky
Comsearch
Senior Principal Engineer
Field Services Department
19700 Janelia Farms Blvd
Ashburn, VA 21147

Re: Jericho Rise Wind Farm Franklin County, NY

Dear Mr. Polisky:

In response to your request, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC) the plans for the Jericho Rise Wind Farm in Franklin County, NY. After a 30 day period of review, the agencies have not identified any concerns regarding blockage of their radio frequency transmissions.

While the IRAC agencies did not identify any concerns regarding radio frequency blockage, this does not eliminate the need for the wind energy facilities to meet any other requirements specified by law related to these agencies. For example, this review by the IRAC does not eliminate any need that may exist to coordinate with the Federal Aviation Administration concerning flight obstruction.

Thank you for the opportunity to review these proposals.

Sincerely,

Karl B. Nebbia
Associate Administrator
Office of Spectrum Management

Appendix M
TV Broadcast Off-Air Reception, AM/FM Station Locations

TV BROADCAST
OFF-AIR RECEPTION
MEASUREMENT REPORT

FOR
JERICHO RISE WIND FARM

COMSEARCH

19700 Janelia Farms Blvd
Ashburn, VA 20147
703-726-5500

Off-Air TV Reception Analysis at the Jericho Rise Wind Farm Project Area in Franklin County, New York

Comsearch was contracted by Tetra-Tech EC Inc. to identify all of the off-air television stations within 100-mile radius of the proposed Jericho Rise Wind Farm Project in Franklin County, NY. Off-air stations are television broadcasters that transmit signals that can be received directly on a television receiver from terrestrially located broadcast facilities. Comsearch examined the coverage of the off-air TV stations and the communities in the area that could potentially have degraded television reception because of the location of the wind turbines. The proposed wind energy facility boundaries and local communities are plotted in the map shown in Figure 1 of this memorandum. Table 1 lists the off-air television stations in the U.S. and Table 2 lists the stations in Canada within 100 mile radius of the wind facility. Figure 2 shows the location of the TV stations with respect to the area.

Table 1 List of U. S. Off-Air TV Channels within 100 Miles of the Jericho Rise Wind Farm

Location		Call Sign	Channel	Service	Status	Distance-miles
BURLINGTON	VT	WCAX-TV	3	TV	LIC	67.83 mi
NORTH POLE	NY	WPTZ	5	TV	LIC	29.82 mi
NORTH POLE	NY	WPTZ	5	TV	APP	29.82 mi
NORTH CREEK, ETC.	NY	W07BH	7	TX	LIC	84.84 mi
SCHROON LAKE	NY	W07BI	7	TX	LIC	72.58 mi
NORTH CREEK, ETC.	NY	W09AZ	9	TX	LIC	84.84 mi
SCHROON LAKE	NY	W09BB	9	TX	LIC	72.58 mi
GOUVERNEUR	NY	NEW	9	TX	APP	76.94 mi
RUTLAND	VT	WVER-TV	9	DR	GRANT	97.73 mi
RUTLAND	VT	WVER	9	DT	LIC	97.75 mi
NORTH CREEK, ETC.	NY	W11AW	11	TX	LIC	84.84 mi
NEWCOMB	NY	W12BG	12	TX	LIC	63.97 mi
OGDENSBURG	NY	W13DG	13	TX	CP	66.23 mi
BURLINGTON	VT	WVNY-DR	13	DR	GRANT	67.79 mi
BURLINGTON	VT	WVNY	13	DT	CP MOD	67.85 mi
MASSENA	NY	W14BU	14	TX	LIC	38.48 mi
NORTH POLE	NY	WPTZ	14	DT	CP MOD	67.85 mi
NEWPORT	VT	W14CK	14	CA	LIC	77.32 mi
BURLINGTON	VT	W16AL	16	TX	LIC	67.80 mi
BURLINGTON	VT	W16AL	16	LD	APP	67.80 mi
NORWOOD	NY	WNPI-TV	18	TV	LIC	46.00 mi
NORWOOD	NY	WNPI-TV	18	TV	CP	45.98 mi
MONKTON	VT	W19BR	19	CA	LIC	59.79 mi
MASSENA	NY	W20BA	20	TX	LIC	38.48 mi
OGDENSBURG	NY	NEW	20	TX	APP	68.25 mi
BURLINGTON	VT	WVNY	22	TV	LIC	67.79 mi
NORWOOD	NY	WNPI-TV	23	DS	STA	46.00 mi
NORWOOD	NY	WNPI-TV	23	DT	LIC	45.99 mi

Location		Call Sign	Channel	Service	Status	Distance-miles
TUPPER LAKE	NY	W25AT	25	TX	LIC	53.16 mi
MASSENA	NY	W25BX	25	TX	LIC	38.48 mi
TUPPER LAKE	NY	W25AT	25	LD	APP	53.16 mi
MONKTON	VT	W25BT	25	TX	LIC	66.23 mi
MONKTON	VT	W25BT	25	LD	APP	66.23 mi
PLATTSBURGH	NY	WWBI-LP	27	CA	LIC	25.14 mi
MASSENA	NY	WNYF-LP	28	TX	LIC	38.48 mi
PITCAIRN	NY	W28CI	28	TX	CP	75.19 mi
RUTLAND	VT	WVER	28	TV	LIC	97.73 mi
BURLINGTON	VT	WBVT-CA	30	CA	LIC	62.84 mi
BURLINGTON	VT	WBVT-CA	30	CA	APP	51.39 mi
BURLINGTON	VT	WBVT-CA	30	CA	APP	51.39 mi
BURLINGTON	VT	WETK	32	DT	APP	67.93 mi
BURLINGTON	VT	WETK	32	DT	CP	67.93 mi
BURLINGTON	VT	WETK	33	TV	LIC	67.90 mi
LAKE PLACID	NY	960910KE	34	TV	APP	43.06 mi
LAKE PLACID	NY	960910KE	34	TA	-	41.53 mi
RUTLAND	VT	W61CE	35	TX	CP	97.75 mi
MASSENA	NY	W36BN	36	TX	LIC	38.48 mi
BURLINGTON	VT	NEW	36	LD	APP	51.96 mi
PLATTSBURGH	NY	WCFE-TV	38	DS	STA	16.69 mi
PLATTSBURGH	NY	WCFE-TV	38	DT	CP MOD	16.69 mi
PLATTSBURGH	NY	WCFE-TV	38	DS	APP	16.69 mi
OGDENSBURG	NY	NEW	39	TX	APP	69.62 mi
BURLINGTON	VT	WGMU-CA	39	CA	LIC	59.79 mi
SARANAC LAKE	NY	NEW	40	NM	GRANT	53.16 mi
SARANAC LAKE	NY	WCWF	40	TV	CP	53.16 mi
VERGENNES	VT	NEW	40	NN	ADD	70.65 mi
ST. ALBANS	VT	W52CD	41	TX	CP	51.39 mi
BURLINGTON	VT	WFFF-TV	43	DT	CP	67.85 mi
BURLINGTON	VT	WFFF-TV	43	DS	APP	67.85 mi
BURLINGTON	VT	WFFF-TV	44	TV	CP MOD	67.90 mi
CRYSTAL DALE	NY	NEW	45	TX	APP	92.90 mi
POTSDAM	NY	NEW	46	TX	APP	47.96 mi
BLUE MOUNTAIN LAKE	NY	NEW	46	TX	APP	71.24 mi
WILLSBORO	NY	W67AR	46	LD	APP	46.54 mi
PORT HENRY	NY	W60AO	46	LD	APP	67.34 mi
NEWPORT	VT	W14CK	47	CA	APP	67.79 mi
OGDENSBURG	NY	NEW	48	TX	APP	69.62 mi
ELLENBURG	NY	W49BI	49	TX	LIC	6.48 mi
ELLENBURG	NY	W49BI	49	TX	APP	6.48 mi
BURLINGTON	VT	NEW	49	LD	APP	59.79 mi
OGDENSBURG	NY	NEW	51	TX	APP	69.62 mi
BURLINGTON	VT	W51CB	51	TX	LIC	51.88 mi
ST. ALBANS	VT	W52CD	52	TX	LIC	51.39 mi
BURLINGTON	VT	WCAX-TV	53	DT	CP MOD	67.85 mi
PHILADELPHIA	NY	WTKJ-LP	54	TX	CP	96.88 mi

Location		Call Sign	Channel	Service	Status	Distance-miles
PHILADELPHIA	NY	WTKJ-LP	54	TX	CP MOD	98.45 mi
BURLINGTON	VT	W54CV	54	TX	LIC	95.19 mi
LAKE PLACID	NY	W55AI	55	TX	LIC	41.50 mi
PLATTSBURGH	NY	WCFE-TV	57	TV	LIC	16.69 mi
PLATTSBURGH	NY	WCFE-TV	57	TV	CP	16.69 mi
PORT HENRY	NY	W60AO	60	TX	LIC	67.34 mi
SARANAC LAKE	NY	951106KE	61	TV	APP	53.16 mi
SARANAC LAKE	NY	951106KH	61	TV	APP	53.16 mi
OGDENSBURG	NY	NEW	61	TX	APP	69.62 mi
RUTLAND	VT	W61CE	61	TX	LIC	97.75 mi
MASSENA	NY	W65CR	65	TX	LIC	38.48 mi
WILLSBORO	NY	W67AR	67	TX	LIC	46.54 mi
WESTPORT	NY	W67AY	67	TX	LIC	57.89 mi
TICONDEROGA	NY	W67AW	67	TX	LIC	79.52 mi

TV –Normal Broadcast Station
DS-Digital Service Television, Temporary Operation, STA Operation
DT-Digital Television Broadcast Station
DR- Indicates Station has Applied for FCC Rule Making
GRA-Indicates Rule Making was granted by FCC
LP-Low Power Television Broadcast Station
TX-Translator Television Broadcast Station
LIC – Licensed and operational station
CP – License approved construction permit granted
APP – License application, not yet operational
STA – Special transmit authorization, usually granted by FCC for temporary operation

Table 2 Canadian Off-Air TV Channels within 100 Miles of the Jericho Rise Wind Farm

Location		Call Sign	Channel	CLASS	Distance-miles
Sherbrooke	QC	QU-DT-213	64	C	95.56
Sherbrooke	QC	CIVS-DT	65	C	95.56
Sherbrooke	QC	CKSH-DT	55	VU	95.56
Sherbrooke	QC	CIVS-TV	24	C	95.56
Sherbrooke	QC	CHLT-TV	7	R	95.56
Sherbrooke	QC	CKMI-TV-2	11	R	95.56
Sherbrooke	QC	CKMI-DT-2	41	VU	95.56
Sherbrooke	QC	CHLT-DT	60	VU	95.56
Sherbrooke/Magog	QC	CFKS-DT	66	C	95.56
Bolton-Est	QC	QU-DT-114	16	B	89.15
Bolton-Est	QC	QU-TV-414	47	B	89.15
Granby	QC	QU-DT-148	25	B	76.48
Granby	QC	QU-DT-147	15	B	76.48
Granby	QC	QU-DT-146	36	B	76.48
Granby	QC	QU-TV-447	34	B	76.48
Granby	QC	QU-TV-446	54	A	76.48
Cowansville	QC	QU-DT-136	28	A	69.63
Cowansville	QC	QU-TV-436	52	A	69.63
St-Hyacinthe	QC	QU-DT-220	39	B	76.40

Location		Call Sign	Channel	CLASS	Distance-miles
St-Hyacinthe	QC	QU-TV-520	40	B	76.40
Sorel	QC	QU-TV-515	64	B	93.73
Sorel	QC	QU-DT-217	48	B	93.73
Sorel	QC	QU-DT-216	54	B	93.73
Sorel	QC	QU-DT-215	23	B	93.73
Sorel	QC	QU-TV-516	36	A	93.73
Sorel	QC	QU-TV-517	44	A	93.73
St-Jean	QC	QU-DT-221	4	B	51.95
St-Jean	QC	QU-TV-521	48	A	51.95
Joliette	QC	QU-DT-152	50	B	84.78
Joliette	QC	QU-TV-452	43	B	84.78
Montreal	QC	CBFT-DT(1)	19	VU	51.47
Montreal	QC	CBMT-DT(1)	20	C	51.47
Montreal	QC	CFTM-DT(1)	59	VU	51.60
Montreal	QC	QU-DT-184	26	C	50.99
Montreal	QC	QU-DT-182	20	C	50.99
Montreal	QC	QU-TV-482	56	B	50.99
Montreal	QC	CJNT-TV	62	B	49.68
Montreal	QC	CJNT-DT	69	B	49.68
Montreal	QC	CIVM-TV	17	C	49.70
Montreal	QC	CBFT-DT	19	VL	49.70
Montreal	QC	CBMT-DT	20	VU	49.70
Montreal	QC	CIVM-DT(1)	27	C	49.70
Montreal	QC	CFJP-DT(1)	42	C	49.70
Montreal	QC	CFJP-TV	35	C	49.70
Montreal	QC	CFCF-TV	12	R	49.70
Montreal	QC	CFTM-TV	10	R	49.70
Montreal	QC	CBFT	2	R	49.70
Montreal	QC	CBMT	6	R	49.70
Montreal	QC	CBMT-DT	61	VL	49.70
Montreal	QC	CFTM-DT	59	VU	49.70
Montreal	QC	CFJP-DT	42	C	49.70
Montreal	QC	CFCF-DT	21	VU	49.70
Montreal	QC	CKMI-DT-1	51	C	49.70
Montreal	QC	CIVM-DT	27	C	49.70
Montreal	QC	CKMI-TV-1	46	C	49.70
Montreal	QC	CFTU-TV	29	B	48.99
Montreal	QC	CFTU-DT	54	B	48.99
St-Jerome	QC	QU-DT-222	36	B	62.43
St-Jerome	QC	QU-TV-523	34	A	62.43
St-Jerome	QC	QU-TV-522	23	B	62.43
Ste-Adele	QC	QU-DT-226	39	A	71.10
Ste-Adele	QC	QU-TV-526	15	A	71.10
Valleyfield	QC	QU-DT-240	50	B	25.49
Ste-Adele	QC	QU-DT-227	28	A	73.34
Ste-Adele	QC	QU-TV-527	54	A	73.34
Ste-Agathe-Des-Monts	QC	QU-DT-229	52	A	79.87

Location		Call Sign	Channel	CLASS	Distance-miles
Ste-Agathe-Des-Monts	QC	QU-TV-529	33	A	79.87
Ste-Agathe-Des-Monts	QC	QU-TV-528	49	A	79.89
Ste-Agathe-Des-Monts	QC	QU-DT-228	31	A	79.89
Cornwall	ON	CJOH-TV-8	8	R	29.16
Cornwall	ON	CJOH-DT-8	45	VU	29.16
Mont-Tremblant	QC	CBFT-1	11	R	94.90
Mont-Tremblant	QC	CBFT-DT-1	56	VU	94.90
Hawkesbury	ON	CICO-TV-96	48	A	51.53
Hawkesbury	ON	CHLF-TV-2	39	A	51.53
Hawkesbury	ON	CHLF-DT-2	31	A	51.53
Hawkesbury	ON	CICO-DT-96	52	A	51.53
Cornwall	ON	ON-TV-419	64	A	32.72
Cornwall	ON	ON-DT-118	47	B	32.72
Cornwall	ON	ON-DT-117	36	B	32.72
Cornwall	ON	ON-DT-116	28	B	32.72
Cornwall	ON	ON-DT-120	55	B	32.72
Cornwall	ON	ON-DT-119	31	A	32.72
Cornwall	ON	ON-TV-418	53	A	32.72
Cornwall	ON	ON-TV-417	29	B	32.72
Cornwall	ON	ON-TV-416	54	B	32.72
Cornwall	ON	ON-TV-491	11	R	35.74
Buckingham	QC	QU-TV-416	50	A	80.39
Prescott	ON	CKWS-TV-2	26	A	69.80
Prescott	ON	CKWS-DT-2	3	A	69.80
Ottawa	ON	CFMT-DT-2	27	C	75.23
Ottawa	ON	CJMT-DT-2	66	C	75.23
Ottawa	ON	CITS-TV-1	32	B	75.23
Ottawa	ON	CITS-DT-1	42	C	75.23
Ottawa	ON	CJMT-TV-2	14	C	75.23
Ottawa	ON	CJMT-DT-2	66	C	75.23
Ottawa	ON	CDTV-DT-OTT	67	VU	75.23
Ottawa	ON	CFMT-TV-2(1)	60	D	75.23
Ottawa	ON	CHRO-DT-43	17	C	75.23
Ottawa	ON	CHCH-TV-1	11	R	75.23
Ottawa	ON	CFMT-TV-2	60	D	75.23
Ottawa	ON	CHRO-TV-43	43	C	75.23
Ottawa	ON	CITY-TV-3	65	C	75.23
Ottawa	ON	CHCH-DT-1	33	C	75.23
Ottawa	ON	CITY-DT-3	67	C	75.23
Brockville	ON	ON-DT-113	31	A	80.20
Brockville	ON	ON-TV-413	39	A	80.20
Ottawa	ON	CRC-DT-2	54	LP	85.86
Ottawa	ON	CDTV-DT-OTT2	67	A	85.86
Ottawa	ON	CFMT-DT-2	27	C	86.38
Ottawa	ON	CRC-DT-3	54	LP	86.14
Gatineau	QC	CRC-DT-1	54	LP	87.28
Hull	QC	CRC-DT	67	LP	87.28

Location		Call Sign	Channel	CLASS	Distance-miles
Hull	QC	CFGS-DT	49	C	95.54
Hull	QC	CFGS-TV	34	C	95.54
Hull	QC	CIVO-TV	30	D	95.54
Hull	QC	CIVO-DT	64	C	95.54
Hull	QC	CHOT-DT	15	C	95.54
Hull	QC	CHOT-TV	40	C	95.54
Ottawa	ON	CBOFT-DT	22	VL	95.54
Ottawa	ON	CBOT-DT	25	VL	95.54
Ottawa	ON	CICO-TV-24	24	D	95.54
Ottawa	ON	CBOT	4	R	95.54
Ottawa	ON	CICO-TV-24	24	D	95.54
Ottawa	ON	CJOH-TV	13	R	95.54
Ottawa	ON	CBOFT	9	R	95.54
Ottawa	ON	CIII-TV-6	6	R	95.54
Ottawa	ON	CBOT-DT	25	VL	95.54
Ottawa	ON	CBOFT-DT	62	VU	95.54
Ottawa	ON	CICO-DT-24	20	C	95.54
Ottawa	ON	CJOH-DT	58	VU	95.54
Ottawa	ON	CIII-DT-6	12	VL	95.54
Smiths Falls	ON	CKWS-TV-3	36	A	96.16
Smiths Falls	ON	CKWS-DT-3	52	A	97.51

The most likely TV stations that will produce off-air coverage to the Franklin County, NY area will be those stations at a distance of 40 miles or less. Of the stations listed in Tables 1 and 2 there are a total of 27 stations within this range, fourteen U.S station and thirteen Canadian. There only two licensed full service U.S. Stations providing coverage in the area. There are six translators and one low power station providing limited service to the area. There are ten Canadian TV channels available in the area. The number of U.S. off-air television available to the local communities is extremely limited.

Table 3 Off-air TV Channels within 40 Miles of the Jericho Rise Wind Farm

Location		Call Sign	Channel	Service	Status	Distance-miles
PLATTSBURGH	NY	WCFE-TV	38	DS	STA	16.69
PLATTSBURGH	NY	WCFE-TV	38	DT	CP MOD	16.69
PLATTSBURGH	NY	WCFE-TV	38	DS	APP	16.69
PLATTSBURGH	NY	WCFE-TV	57	TV	LIC	16.69
PLATTSBURGH	NY	WCFE-TV	57	TV	CP	16.69
PLATTSBURGH	NY	WWBI-LP	27	CA	LIC	25.14
NORTH POLE	NY	WPTZ	5	TV	LIC	29.82
NORTH POLE	NY	WPTZ	5	TV	APP	29.82
MASSENA	NY	W14BU	14	TX	LIC	38.48
MASSENA	NY	W20BA	20	TX	LIC	38.48
MASSENA	NY	W25BX	25	TX	LIC	38.48
MASSENA	NY	WNYF-LP	28	TX	LIC	38.48
MASSENA	NY	W36BN	36	TX	LIC	38.48
MASSENA	NY	W65CR	65	TX	LIC	38.48
Canadian				Class		

Location		Call Sign	Channel	Service	Status	Distance-miles
Valleyfield	QC	QU-DT-240	50	B		25.49
Cornwall	ON	CJOH-TV-8	8	R		29.16
Cornwall	ON	CJOH-DT-8	45	VU		29.16
Cornwall	ON	ON-TV-419	64	A		32.72
Cornwall	ON	ON-DT-118	47	B		32.72
Cornwall	ON	ON-DT-117	36	B		32.72
Cornwall	ON	ON-DT-116	28	B		32.72
Cornwall	ON	ON-DT-120	55	B		32.72
Cornwall	ON	ON-DT-119	31	A		32.72
Cornwall	ON	ON-TV-418	53	A		32.72
Cornwall	ON	ON-TV-417	29	B		32.72
Cornwall	ON	ON-TV-416	54	B		32.72
Cornwall	ON	ON-TV-491	11	R		35.74

This area has only two full service off-air TV Stations, seven low-power and/or translator stations and one digital TV broadcast station that is operating on a special FCC authorization. There are ten Canadian stations also available but many of these may not be in English, or of interest to the local U.S. communities. Based on this, it is not expected that the off-air television stations are the primary mode of television service for the local communities. TV Cable service and/or direct satellite broadcast are probably the dominant delivery mode of TV service to the wind facility’s surrounding communities. These services will be unaffected by the presence of the wind turbine facility.

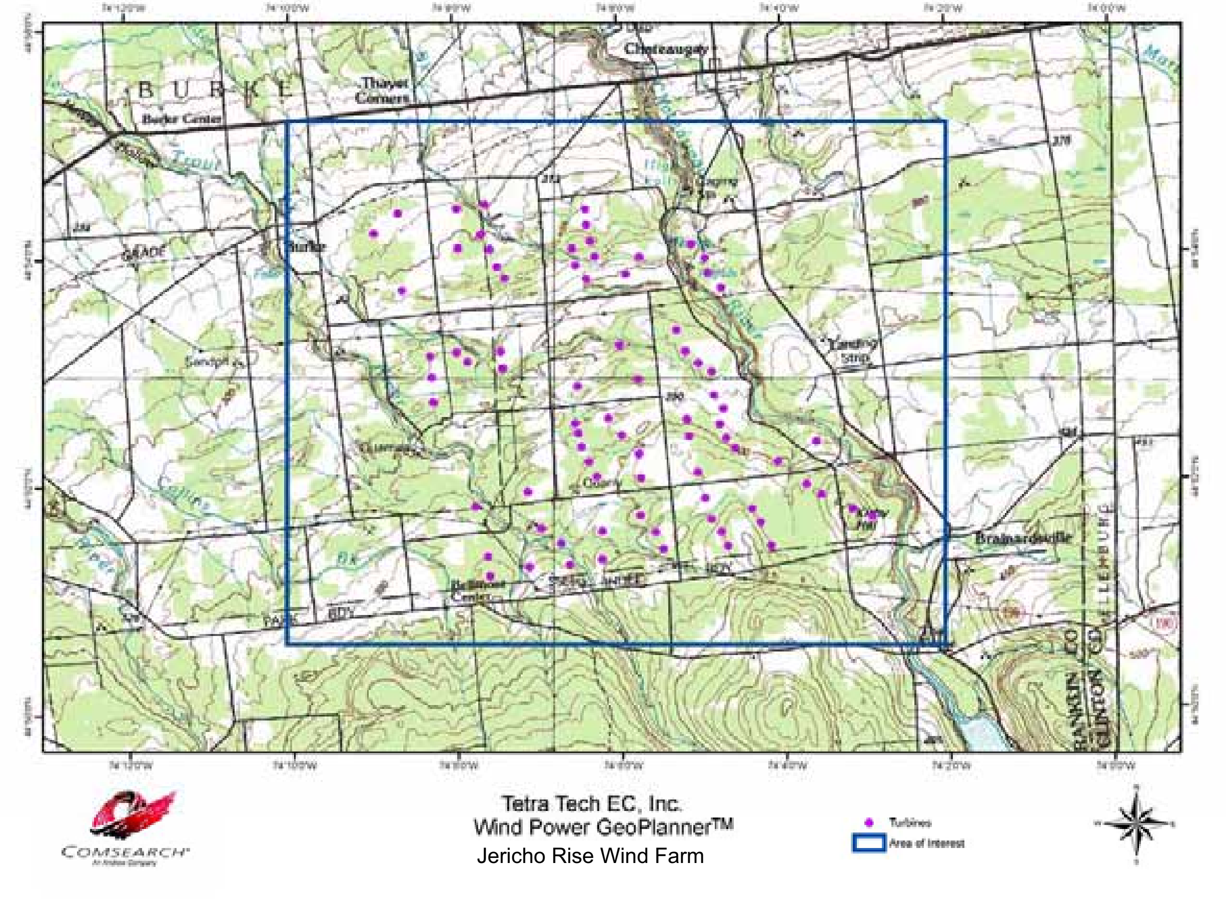


Figure 1 Jericho Rise Wind Farm Boundaries and Local Communities

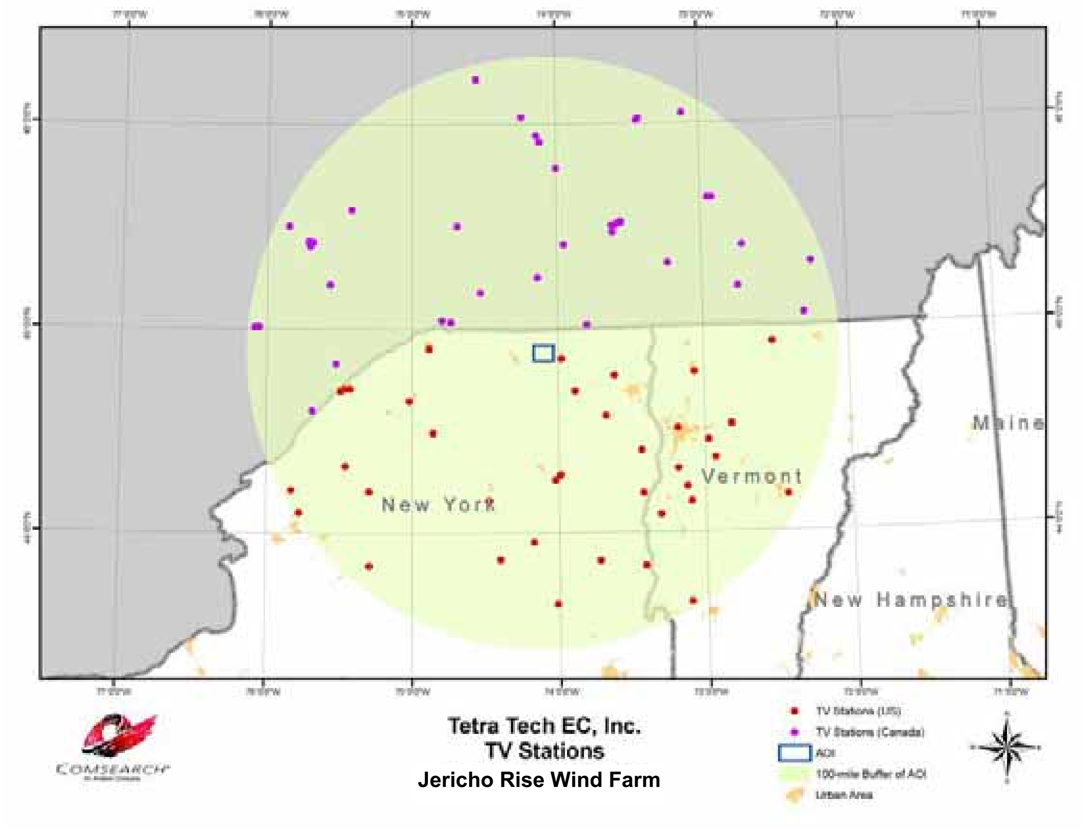


Figure 2 TV Stations within 100 Miles of the Jericho Rise Wind Farm

COMSEARCH
An Andrew Company

TV BROADCAST OFF-AIR RECEPTION MEASUREMENT REPORT

Prepared For
Tetra Tech EC, Inc.
Boston, Massachusetts

For the proposed
Jericho Rise Wind Farm
Franklin County, New York

November 14 through November 15, 2006

19700 Janelia Farm Boulevard. - Ashburn, Virginia 20147, USA - 703.726.5500 - Fax 703.726.5597

TABLE OF CONTENTS

SECTION

ONE

SECTION 1

INTRODUCTION AND BACKGROUND

1.1 Introduction

On-site TV Broadcast Off-Air measurements were performed on behalf of Tetra Tech EC, Inc. of Boston, Massachusetts for the proposed Jericho Rise Wind Farm in the Towns of Chateaugay and Bellmont, Franklin County, NY from November 14 through November 15, 2006 at ten site locations.

The purpose of these measurements was to identify and document Off-Air Television (TV) reception (TV channels). These measurements establish baseline conditions for the reception of each Off-Air TV channel by determining each TV channels signal strength reception level and evaluating the video and audio quality at each selected site. The purpose of this report is to document the results of these measurements. The analysis in this report is based upon the following:

Video Quality Rating
Code of Federal Regulations Title 47, Part 73, Section 73.685 (Attachment 1)
Television channels
Type of Reception: Analog and Digital
Measured Centerline: The test antenna was mounted 12 feet above ground level

1.2 Background

Comsearch was contracted by Tetra Tech EC, Inc. of Boston, Massachusetts to establish the baseline conditions of Off-Air TV reception in the study area. Ten locations were selected to provide a broad coverage of the study area. Test site locations are shown in Figure 1.2-1.

To determine which areas to be measured, Comsearch performed an analysis using the FCC and its own database to determine the TV broadcasters in the area surrounding the Jericho Rise Wind Farm. The identified areas, which could potentially be affected by the construction of their proposed wind turbines that could cause propagation obstruction, ghosting and multipathing, are identified in Figure 1.2-1.

After the wind energy facility is built measurements can be made at all sites where signal blockage, multipathing, ghosting and/or electromagnetic noise is reported and/or suspected. These measurements will be compared to the baseline measurements reported here to determine whether the degraded affects are the result of the presence of the wind turbines. If the measurements and analysis verify signal blockage, multipathing, ghosting and/or electromagnetic noise due to the wind turbines, Comsearch can provide consulting services to Tetra Tech EC, Inc. of Boston, MA to mitigate the conditions.

1.3 Constraints

The analysis in this report is based upon the following assumptions and constraints.

The test antenna gains are based on the information supplied by Winegard for their RV2000 VHF/UHF antenna.

It is assumed that during the measurement period all of the TV broadcast transmitters were active and operating at full transmit power for the licensed frequencies unless otherwise noted.

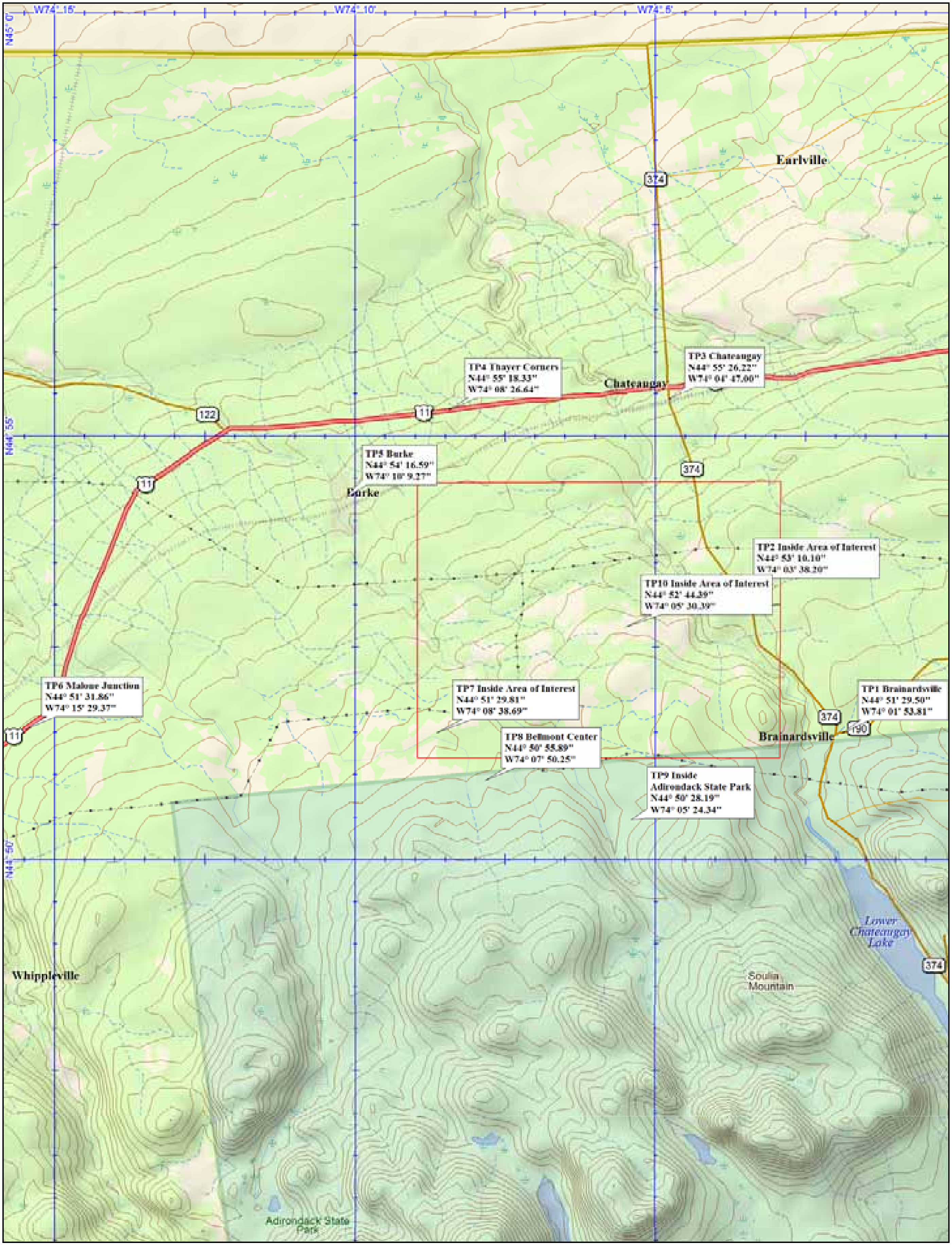
The signal identification and channels analyzed are based upon information obtained from CEA Antenna Web Selector Site.

All azimuths are in degrees true north.

The Video Quality was rated using the following criteria:

Analog Video Quality Criteria
1 Cable Quality- Perfect.
2 Some noise but excellent picture.
3 Good quality, but noticeable sparkles. Good but not excellent.
4 Fair quality, noticeable noise, sparkles, and distortion.
5 Intermittent video. Not viewable, unacceptable.
6 No detected video.

Digital Video Quality Criteria
1 Cable Quality – Perfect
2 Some video blocking/freezing occurring
3 No video detected



Scale 1 : 112,500

FIGURE 1.2-1

1" = 1.78 mi

Data Zoom 10-7

SECTION

TWO

SECTION 2

TEST PROCEDURE

2.1 Calibration

Figure 2.1-1 is the block diagram of the TV broadcast test set. All test equipment used was allowed a proper warm-up period prior to calibration. The test set was calibrated by the signal substitution method, utilizing the Signal generator output from the HP86630L. The calibrated reference at (zero dBm) from the signal generator injected into the end of the coaxial cable of the test set at the point that normally connects to the test antenna. An HP E4407B spectrum analyzer then measures the reference signal level after passing through the test set. At this point, the HP E4407B spectrum analyzer is calibrated such that the displayed signal on the spectrum analyzer displays the losses of the testing system at each individual frequency. Upon completion of the calibration process, a known reference level is obtained for the measurements that correspond to a given set of spectrum analyzer readings.

The following formula is used to transform the measured signal level as initially viewed on the spectrum analyzer display (dBm) as seen at the point and time of testing to an isotropic reference signal level (dBm_I) as adjusted by the Dell computer software program in the output display of the spectrum photographs.

$\text{dBm}_\text{I} = \text{LI} - \text{GA}$

Where: dBm_I = Isotropic level in dBm

LI = Level (dBm) of injected signal

GA = Test antenna gain

For TV channels 2 to 13:

$$\text{dBm}_\text{I} = 0\ \text{dBm} - (+15.5)\ \text{dB}$$
$$= -15.5\ \text{dBm}_\text{I}$$

For TV channels 14 to 69:

$$\text{dBm}_\text{I} = 0\ \text{dBm} - (+19.5)\ \text{dB}$$
$$= -19.5\ \text{dBm}_\text{I}$$

Therefore, the proper gain needs to be applied dependent on the TV broadcast channel measured. The gains have been applied to each spectrum photograph included in this report. Figures 2.1-2 (A) (B) (C) display the spectrum photographs of the described calibration procedures employed during the TV broadcast measurements.

2.2 Methodology

Upon arriving at the measurement site, coordinates were obtained using GPS instrumentation. Photographs were taken to document the site and are included in this report.

After site coordinates were verified, the test equipment was set up to measure the RF environment. Measurements were conducted at 10 locations in the vicinity of the wind farm. After the equipment set up was completed, the test antenna was mounted on an extendable tower and elevated to a height of 12 feet above the ground level. The antenna was rotated 360 degrees (scanning) while in the horizontal plane while monitoring the TV monitor and spectrum analyzer. The test antenna was peaked on each channel of interest and the azimuth, signal level and the video quality rating was recorded and included in this report (Tables 4.1-1 through 4.10-1, Video Quality). Video recording of each TV channel was performed for a 30 second period. These video recordings will be retained with Comsearch.

Upon completion of the RF testing, the measured signal levels were transposed from dBm to dBuV/m after accounting for the gain of the test antenna, and the bandwidth factor of the spectrum analyzer.

The following is a description on how the conversion of the data from dBm to dBuV/m (dB above one µV/m) was accomplished. The data was converted to dBuV/m to compare it with the minimum field strength levels outlined in FCC 47CFR73.685 (a). Below is set of two formulas that were used to convert the measured signals in dBm to field strength measurements in dBuV/m.

First the isotropic receive level in dBm was converted to field strength in V/m using the formula below:

$$E = (480 * \pi^2 * P_m / \lambda^2)^{1/2}$$

Where: λ = the wavelength (= c/f)

c = speed of light

f = frequency in Hz

P_m = Power measured in Watts

Watts = $(10\char`^ (P_{dBm} /10))/1000$

P_{dBm} = Power in dBm

E = Field Strength in V/m

Last the field strength in V/m was converted to field strength in dBuV/m (dB above 1µV/m) using the formula below:

$E_{dB} = 20 \log (E * 1x10_{6})$

Where: E = Field Strength in V/m

E_{dB} = Field Strength in dBuV/m

$1x10_{6}$ = is the conversion factor used to covert from V/m to µV/m

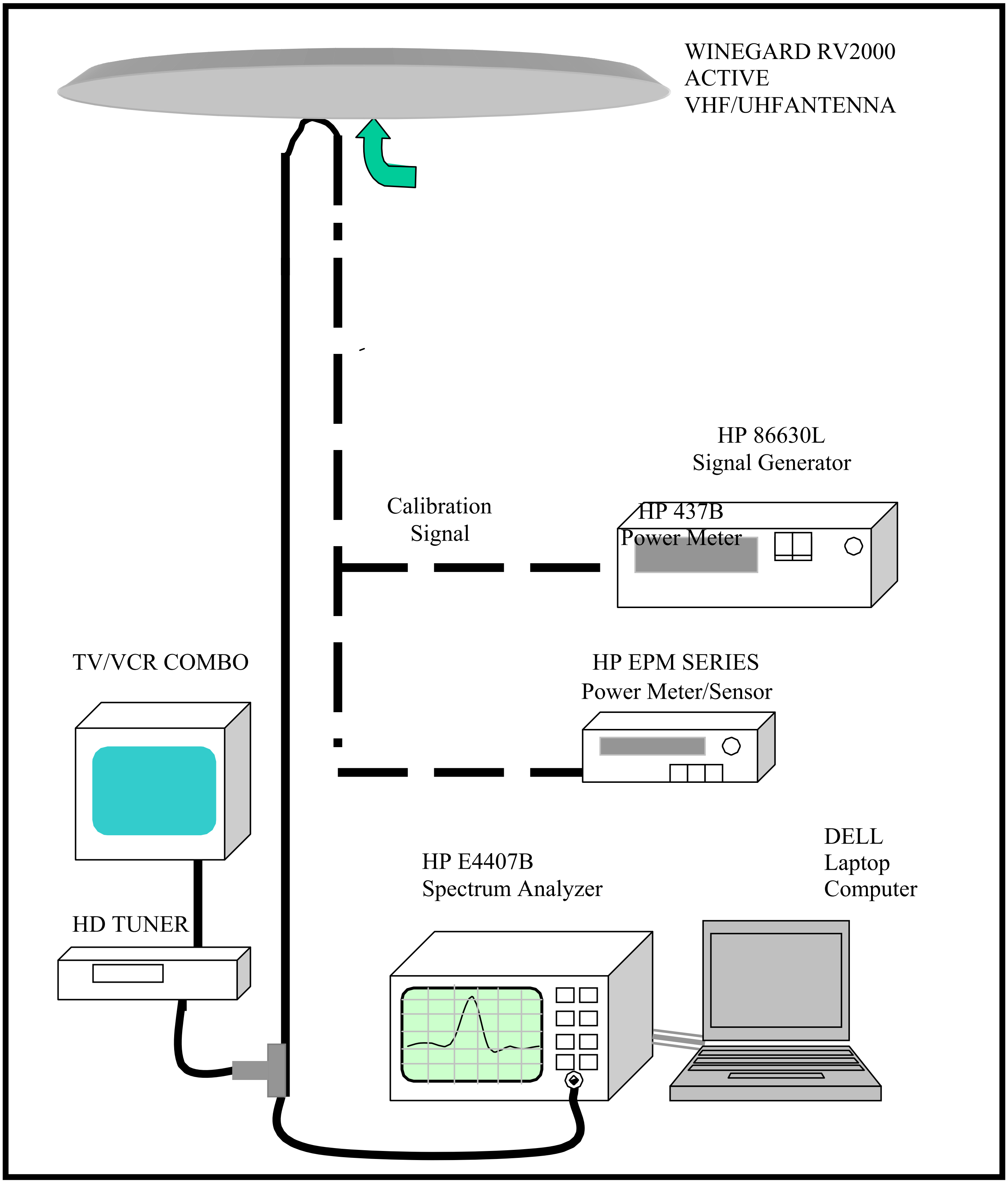


Figure 2.1-1 Test Equipment Block Diagram

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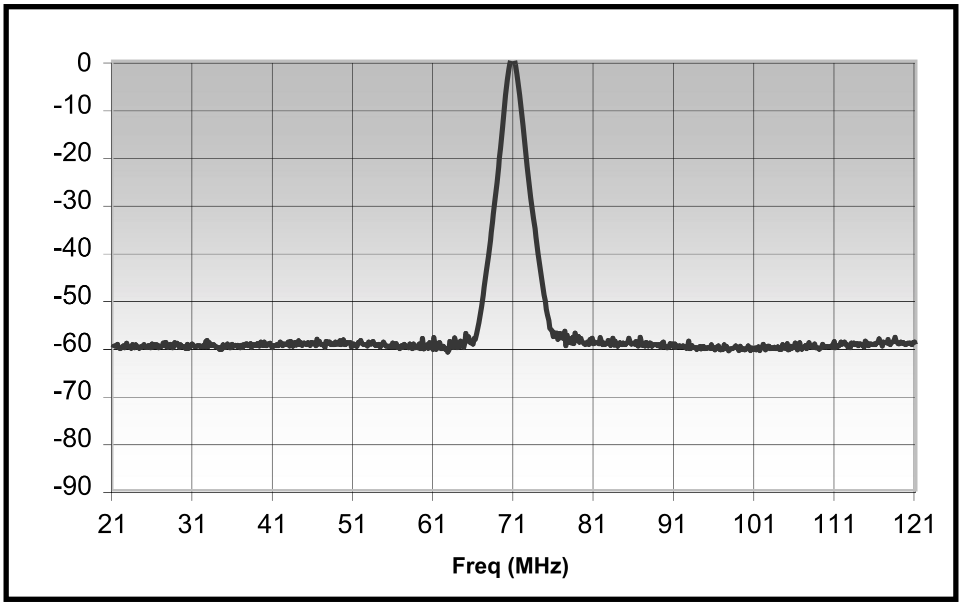


Date: 11/13/2006
Center Freq: 71 MHz
Span: 100 MHz
Res. Bandwidth: 1 MHz

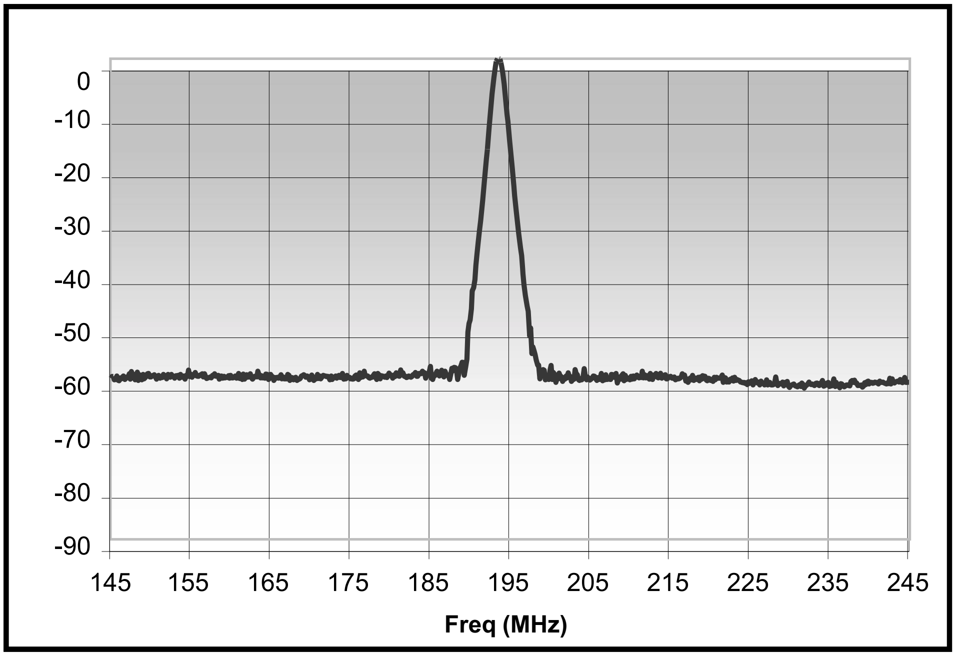
0 dBm, 71 MHz signal indication on the spectrum photograph represents a 0 dBm signal being injected at the point where the test cable connects to the output of the test antenna

Displayed reference level is equal:

Channels 2-6

0.0 dBm injected signal
-(+15.5) dB antenna gain
-15.5 dBmi; therefore, a displayed signal level of 0 dBm equals an isotropic level of -15.5 dBmi

(A)



Date: 11/13/2006
Center Freq: 195 MHz
Span: 100 MHz
Res. Bandwidth: 1 MHz

0 dBm, 195 MHz signal indication on the spectrum photograph represents a 0 dBm signal being injected at the point where the test cable connects to the output of the test antenna

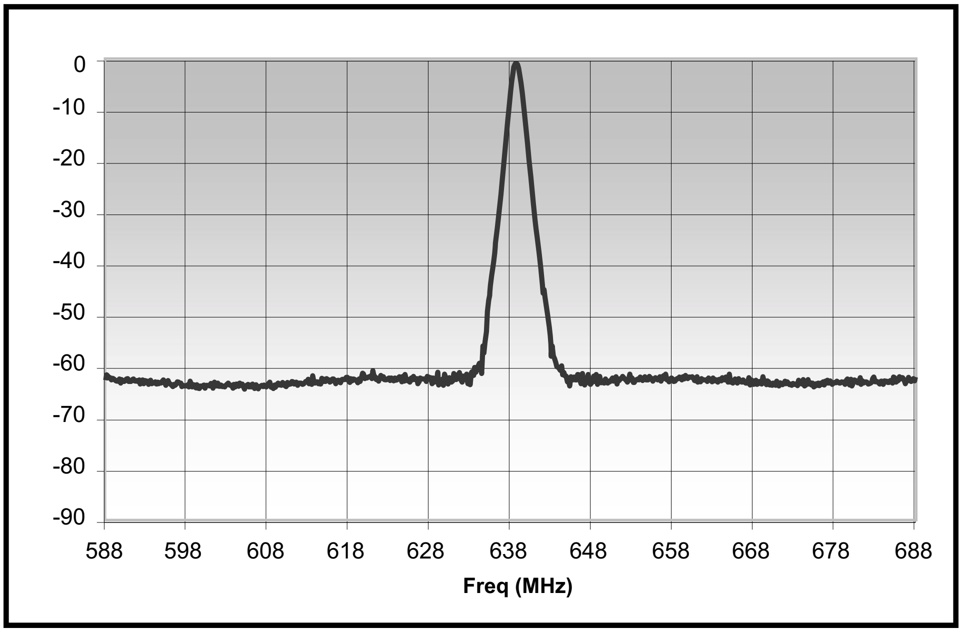
Displayed reference level is equal:

Channels 7-13

0.0 dBm injected signal
-(+15.5) dB antenna gain
-15.5 dBmi; therefore, a displayed signal level of 0 dBm equals an isotropic level of -15.5 dBmi

(B)

Figure 2.1-2 RF Calibration Photographs



Date: 11/13/2006
Center Freq: 638 MHz
Span: 100 MHz
Res. Bandwidth: 1 MHz

0 dBm, 638 MHz signal indication on the spectrum photograph represents a 0 dBm signal being injected at the point where the test cable connects to the output of the test antenna

Displayed reference level is equal:

Channels 14-69

0.0 dBm injected signal
-(+19.5) dB antenna gain
-19.5dBmi; therefore, a displayed signal level of 0.0 dBm equals an isotropic level of -19.5 dBmi

(C)

Figure 2.1-2 RF Calibration Photographs (Continued)

SECTION

THREE

SECTION THREE

DATA PRESENTATION

The following section contains the Site Photograph, Spectrum Photographs and a Topographical representation of the test site. All coordinates are NAD 83.

TP1: Brainardsville, NY
Coordinates: N44° 51' 29.50” W74° 01' 53.81"

Figure 3.1-1 is the Site Photograph depicting the measurement location.

Figures 3.1-2 through 3.1-5 are the actual Spectrum Photographs detailing the TV channels and the ambient RF background.

Figure 3.1-6 is a Topographical representation of the Test Site.

TP2: Inside Area of Interest
Coordinates: N44° 53' 10.10" W74° 03' 38.20"

Figure 3.2-1 is the Site Photograph depicting the measurement location.

Figures 3.2-2 through 3.2-5 are the actual Spectrum Photographs detailing the TV channels and the ambient RF background.

Figure 3.2-6 is a Topographical representation of the Test Site.

TP3: Chateaugay, NY
Coordinates: N44° 55' 26.22" W74° 04' 47.00"

Figure 3.3-1 is the Site Photograph depicting the measurement location.

Figures 3.3-2 through 3.3-5 are the actual Spectrum Photographs detailing the TV channels and the ambient RF background.

Figure 3.3-6 is a Topographical representation of the Test Site.

TP4: Thayer Corners, NY
Coordinates: N44° 55' 18.33" W74° 08' 26.64"

Figure 3.4-1 is the Site Photograph depicting the measurement location.

Figures 3.4-2 through 3.4-5 are the actual Spectrum Photographs detailing the TV channels and the ambient RF background.

Figure 3.4-6 is a Topographical representation of the Test Site.

TP5: Burke, NY
Coordinates: N44° 54' 16.59" W74° 10' 9.27"

Figure 3.5-1 is the Site Photograph depicting the measurement location.

Figures 3.5-2 through 3.5-5 are the actual Spectrum Photographs detailing the TV channels and the ambient RF background.

Figure 3.5-6 is a Topographical representation of the Test Site.

TP6: Malone Junction, NY
Coordinates: N44° 51' 31.86" W74° 15' 29.37"

Figure 3.6-1 is the Site Photograph depicting the measurement location.

Figures 3.6-2 through 3.6-5 are the actual Spectrum Photographs detailing the TV channels and the ambient RF background.

Figure 3.6-6 is a Topographical representation of the Test Site.

TP7: Inside Area of Interest
Coordinates: N44° 51' 29.81" W74° 08' 38.69"

Figure 3.7-1 is the Site Photograph depicting the measurement location.

Figures 3.7-2 through 3.7-5 are the actual Spectrum Photographs detailing the TV channels and the ambient RF background.

Figure 3.7-6 is a Topographical representation of the Test Site.

TP8: Bellmont Center, NY
Coordinates: N44° 50' 55.89" W74° 07' 50.25"

Figure 3.8-1 is the Site Photograph depicting the measurement location.

Figures 3.8-2 through 3.8-5 are the actual Spectrum Photographs detailing the TV channels and the ambient RF background.

Figure 3.8-6 is a Topographical representation of the Test Site.

TP9: Inside Adirondack State Park, NY
Coordinates: N44° 50' 28.19" W74° 05' 24.34"

Figure 3.9-1 is the Site Photograph depicting the measurement location.

Figures 3.9-2 through 3.9-5 are the actual Spectrum Photographs detailing the TV channels and the ambient RF background.

Figure 3.9-6 is a Topographical representation of the Test Site.

TP10: Inside Area of Interest
Coordinates: N44° 52' 44.39" W74° 05' 30.39"

Figure 3.10-1 is the Site Photograph depicting the measurement location.

Figures 3.10-2 through 3.10-5 are the actual Spectrum Photographs detailing the TV channels and the ambient RF background.

Figure 3.10-6 is a Topographical representation of the Test Site.

TP1: Brainardsville, NY

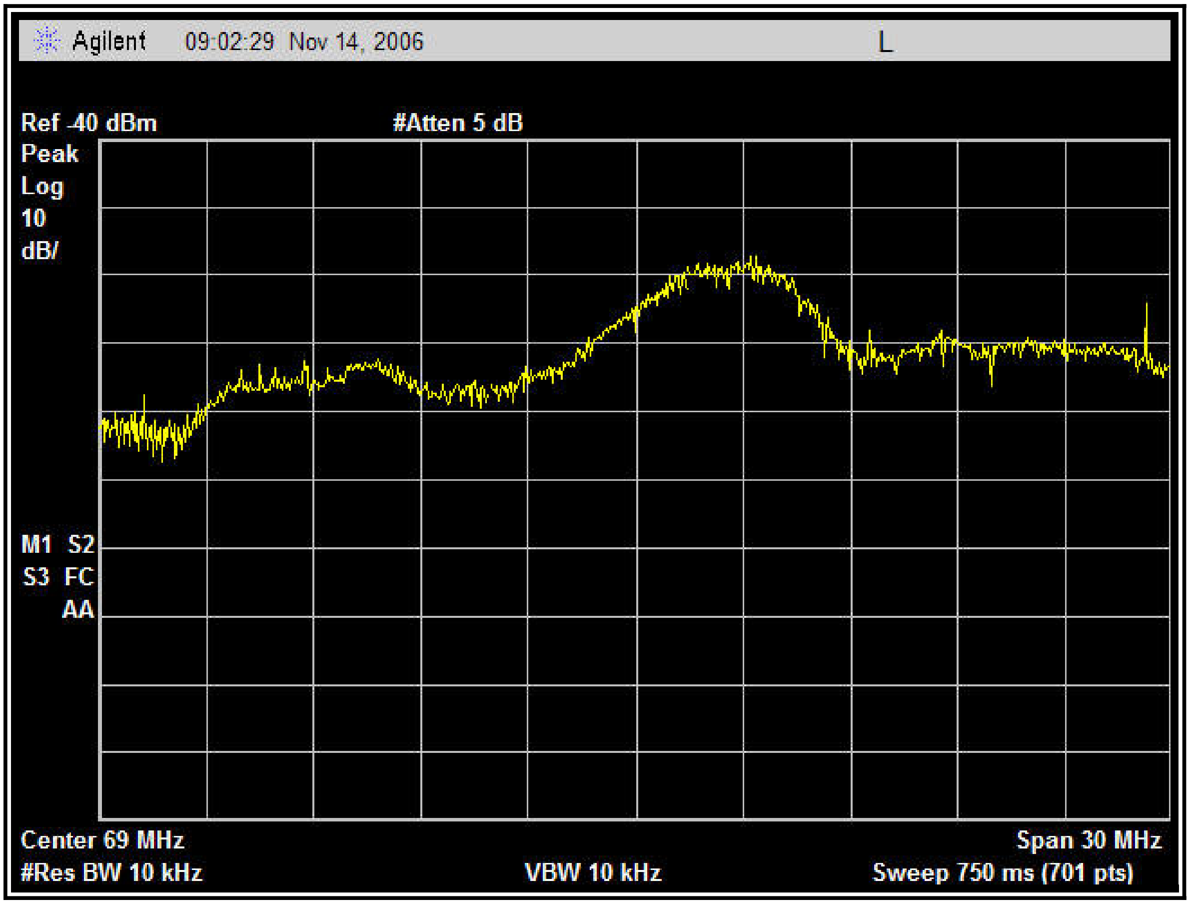
Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY

Figure 3.1-1 Site Photograph

TP1: Brainardsville, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 29.50” W74° 01' 53.81"

VHF Low Band Channels 2-6

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
83.3	-64.4

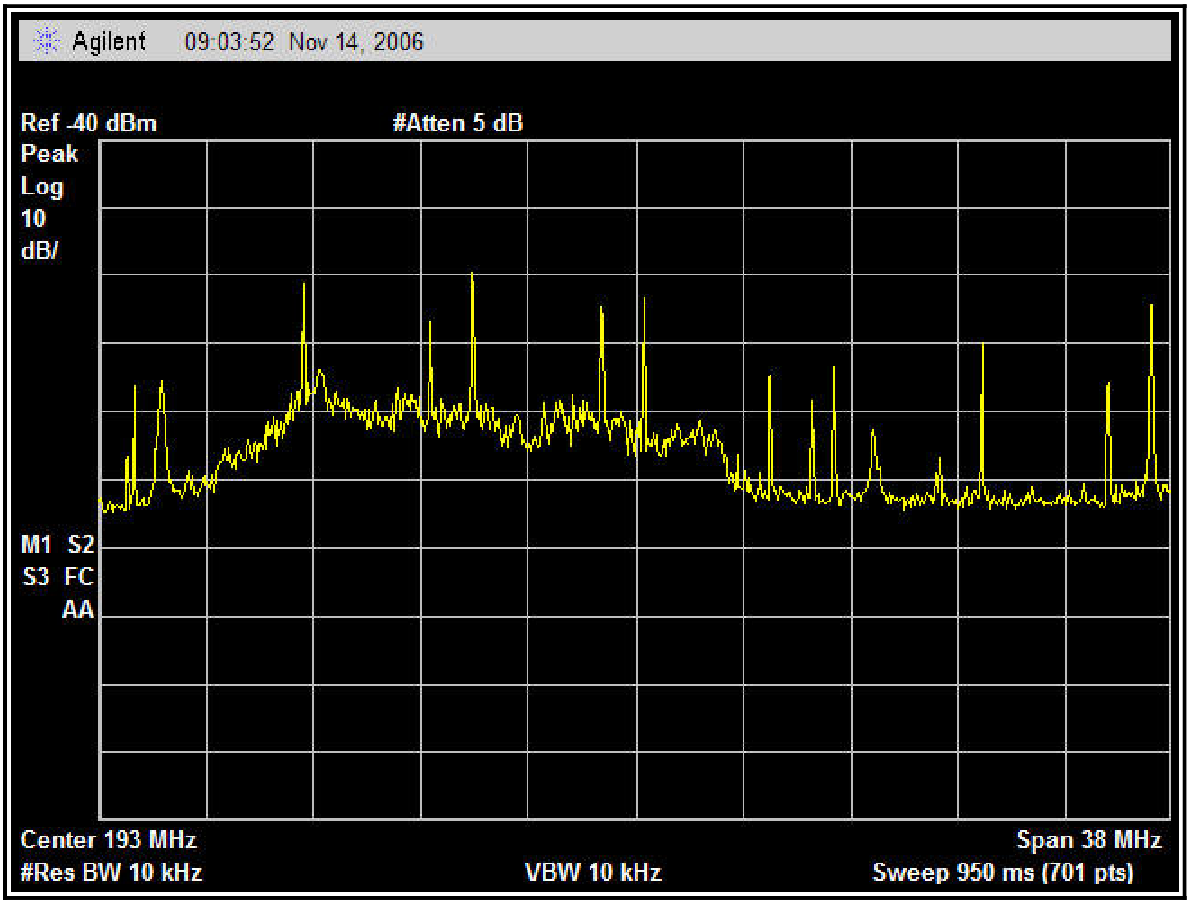
Azimuth: 0-360°

Figure 3.1-2 Spectrum Photographs

TP1: Brainardsville, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Agilent 09:03:52 Nov 14, 2006

Ref -40 dBm #Atten 5 dB

Peak
Log
10
dB/

M1 S2
S3 FC
AA

Center 193 MHz Span 38 MHz
#Res BW 10 kHz VBW 10 kHz Sweep 950 ms (701 pts)

Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 29.50” W74° 01' 53.81"

VHF High Band Channels 7-13

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
187.3	-63.03

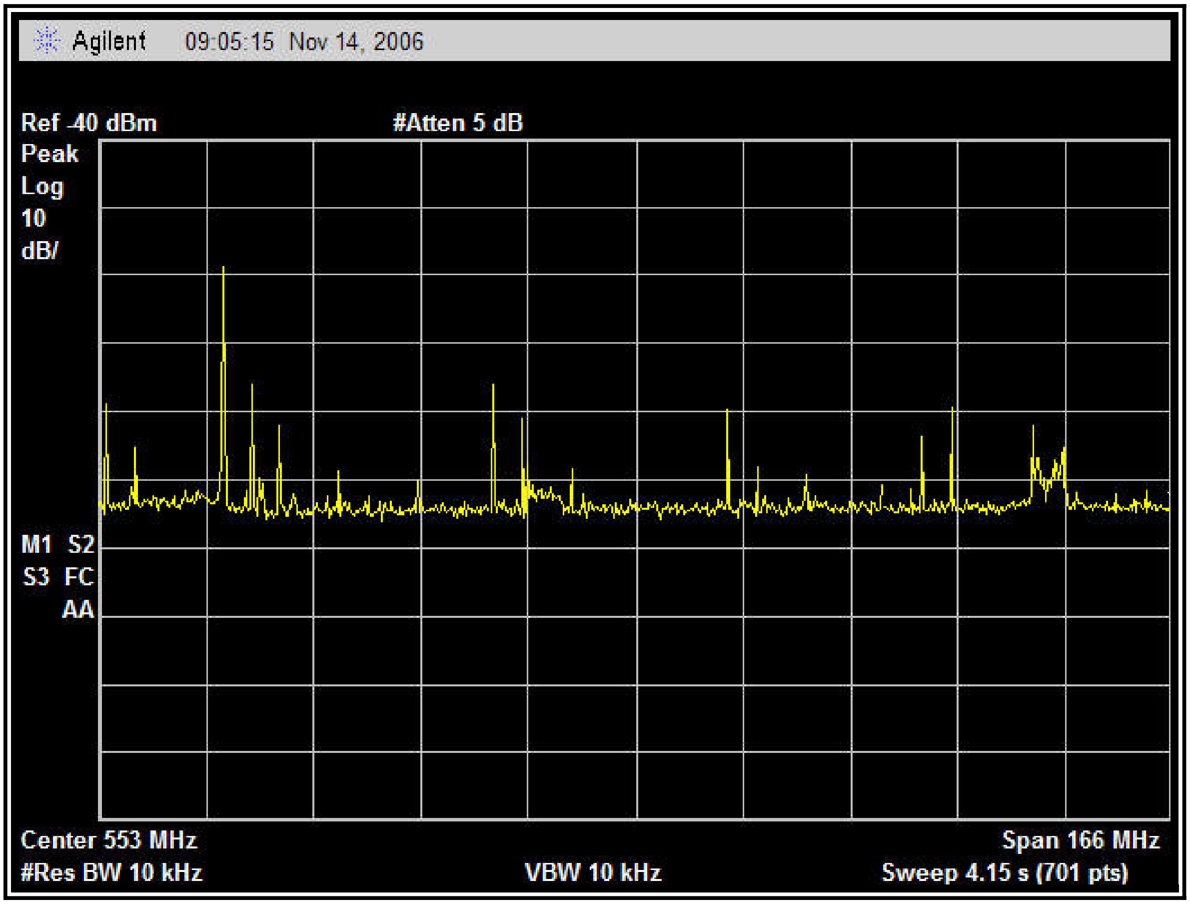
Azimuth: 0-360°

Figure 3.1-3 Spectrum Photographs

TP1: Brainardsville, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 29.50” W74° 01' 53.81"

UHF Band Channels 14-41

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
489	-60.33

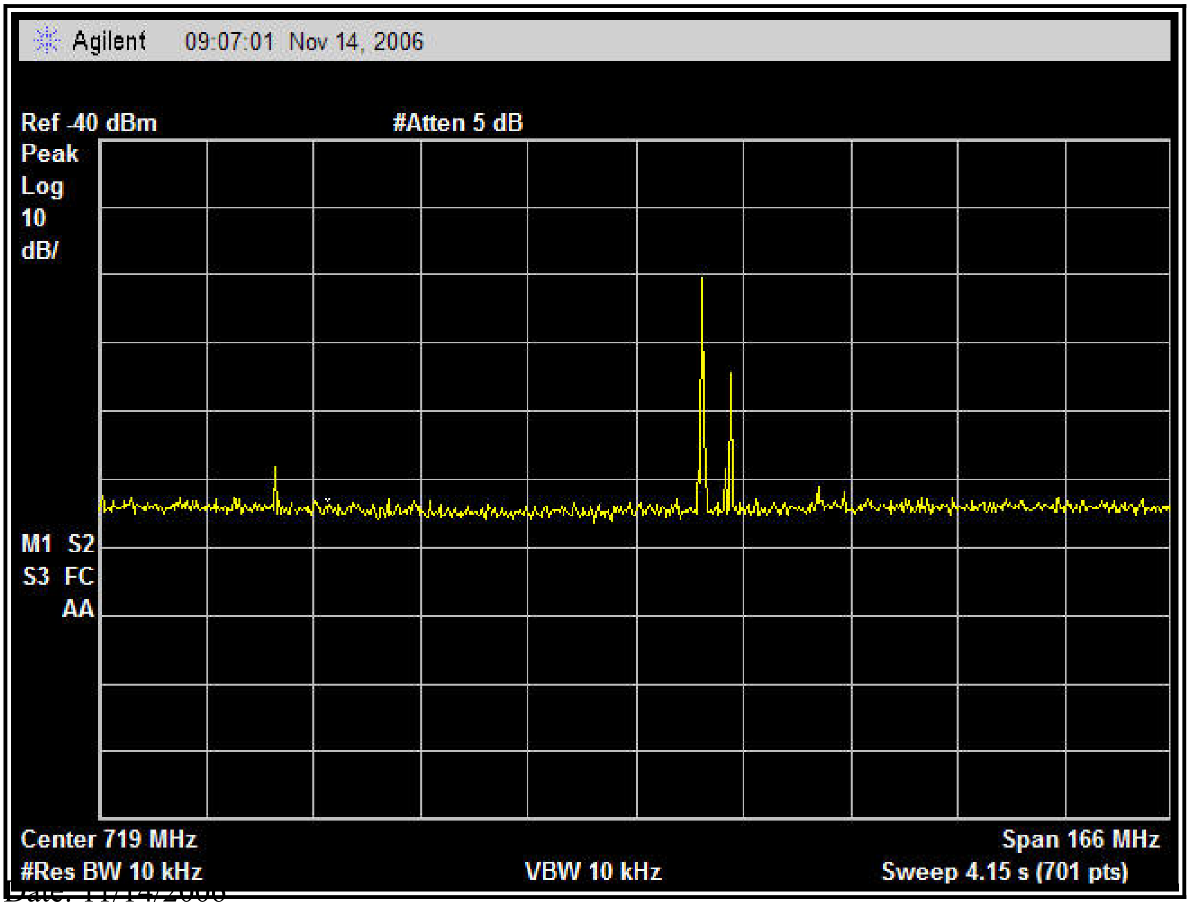
Azimuth: 0-360°

Figure 3.1-4 Spectrum Photographs

TP1: Brainardsville, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 29.50” W74° 01' 53.81"

UHF Band Channels 42-69

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
729	-61.1

Azimuth: 0-360°

Figure 3.1-5 Spectrum Photographs

TN
MN (14.6°W)

FIGURE 3.1-6

Scale 1 : 3,200

0 80 160 240 320 400 ft
0 20 40 60 80 100 m

1" = 266.7 ft

Data Zoom 16-0

TP2: Inside Area of Interest

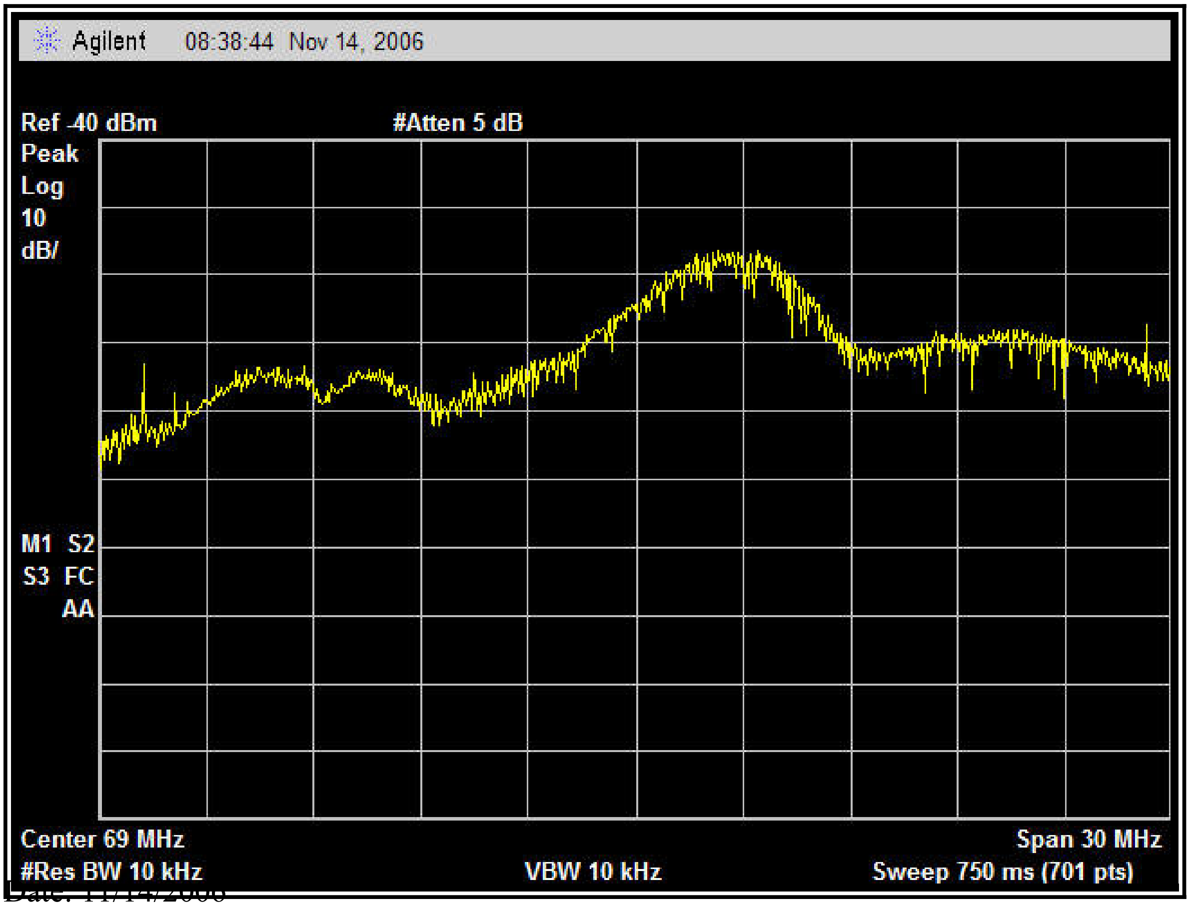
Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY

Figure 3.2-1 Site Photograph

TP2: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 53' 10.10" W74° 03' 38.20"

VHF Low Band Channels 2-6

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (DBmi)
83.3	-69.8

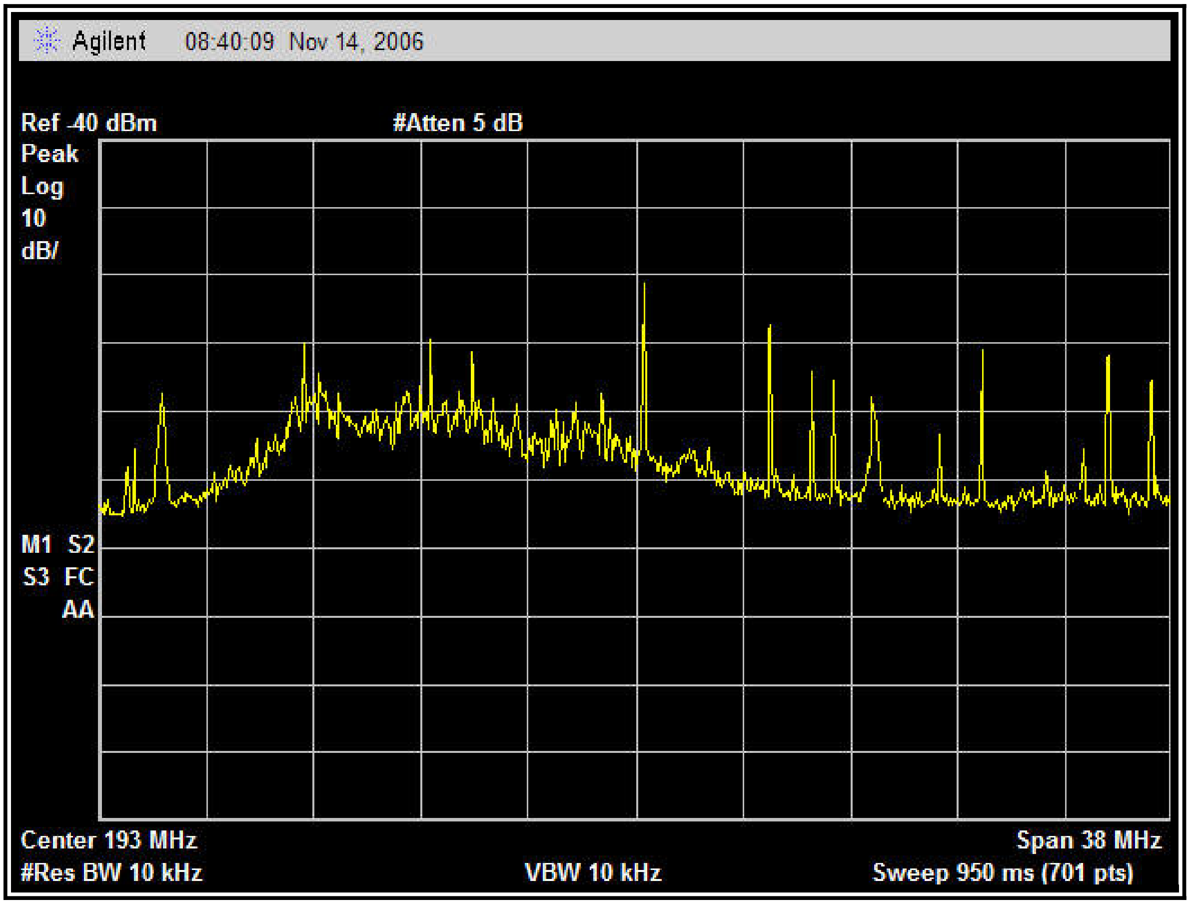
Azimuth: 0-360°

Figure 3.2-2 Spectrum Photographs

TP2: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 53' 10.10" W74° 03' 38.20"

VHF High Band Channels 7-13

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (DBmi)
193	-61.2

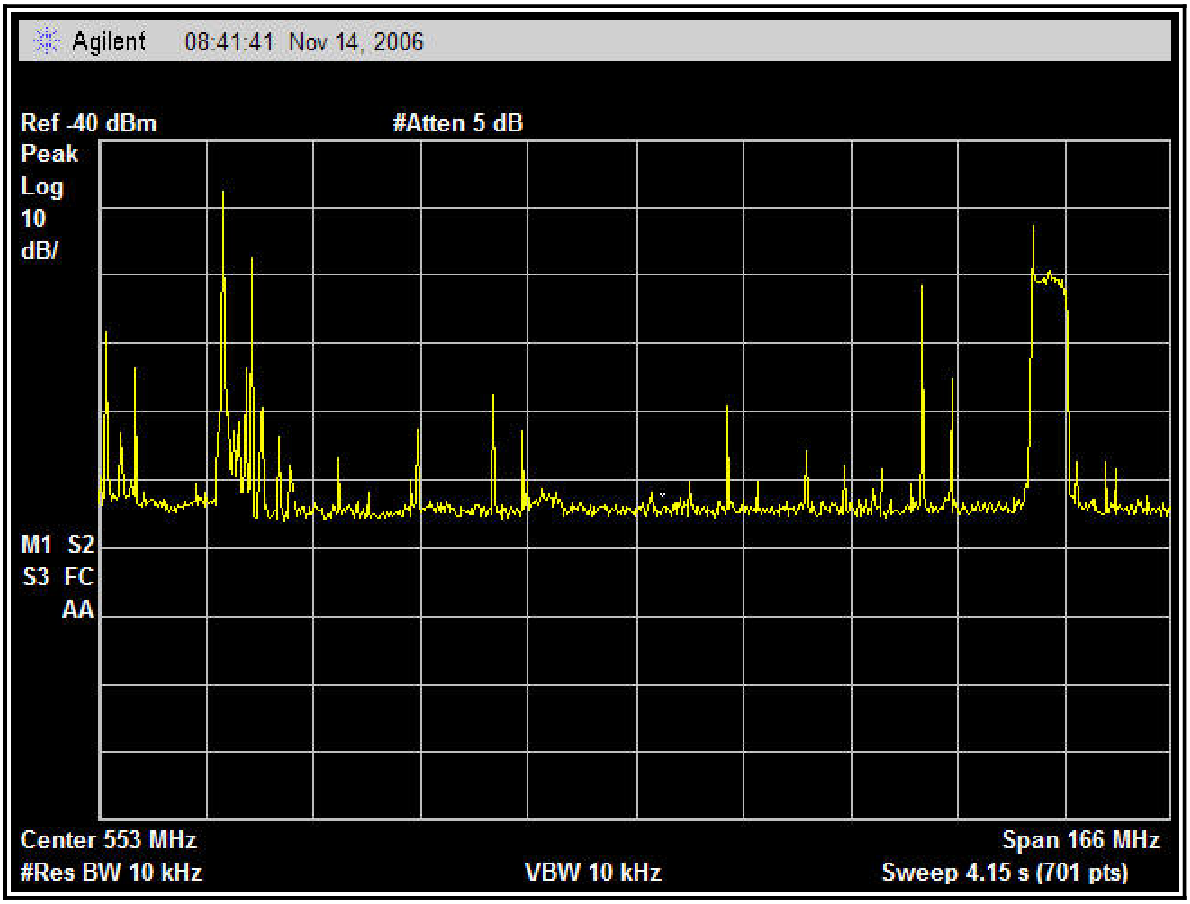
Azimuth: 0-360°

Figure 3.2-3 Spectrum Photographs

TP2: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 53' 10.10" W74° 03' 38.20"

UHF Band Channels 14-41

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (DBmi)
489	-47.7

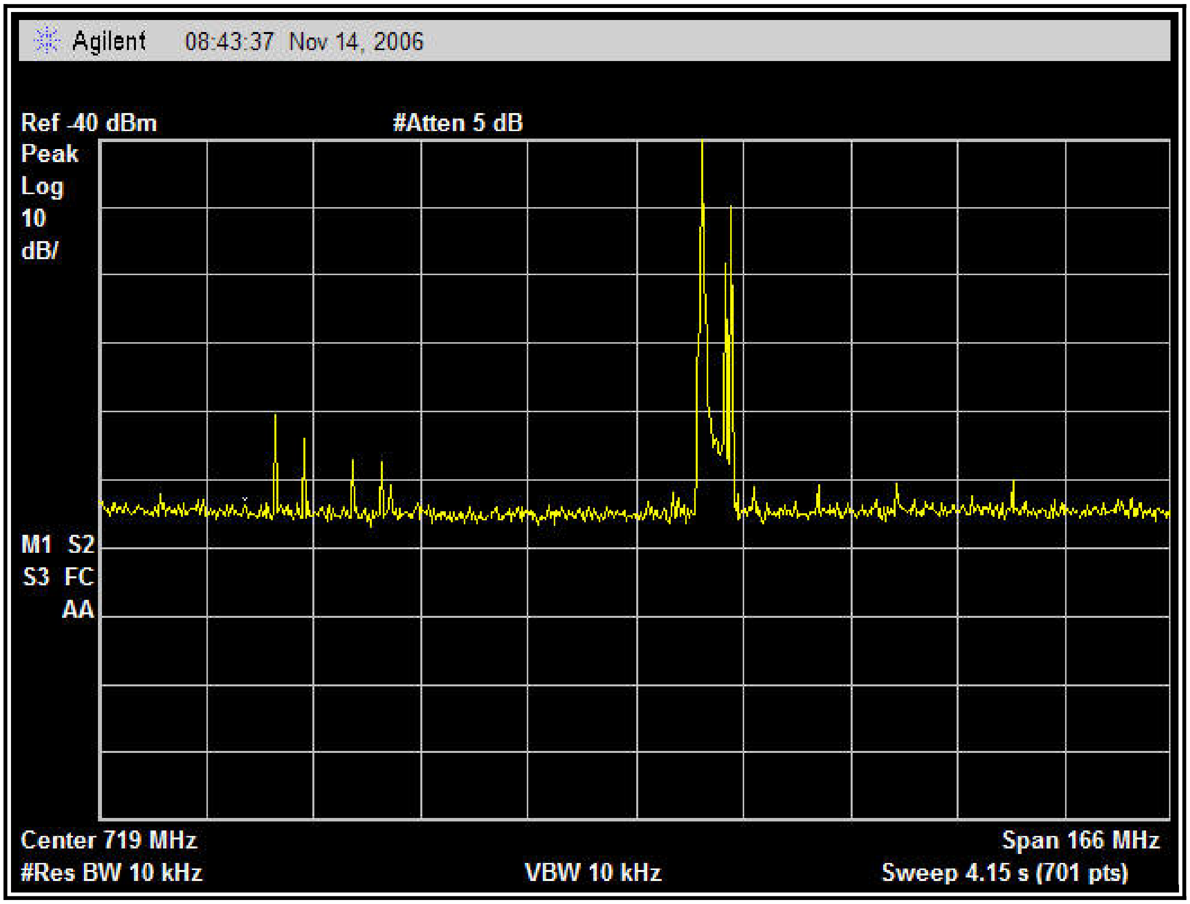
Azimuth: 0-360°

Figure 3.2-4 Spectrum Photographs

TP2: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 53' 10.10" W74° 03' 38.20"

UHF Band Channels 42-69

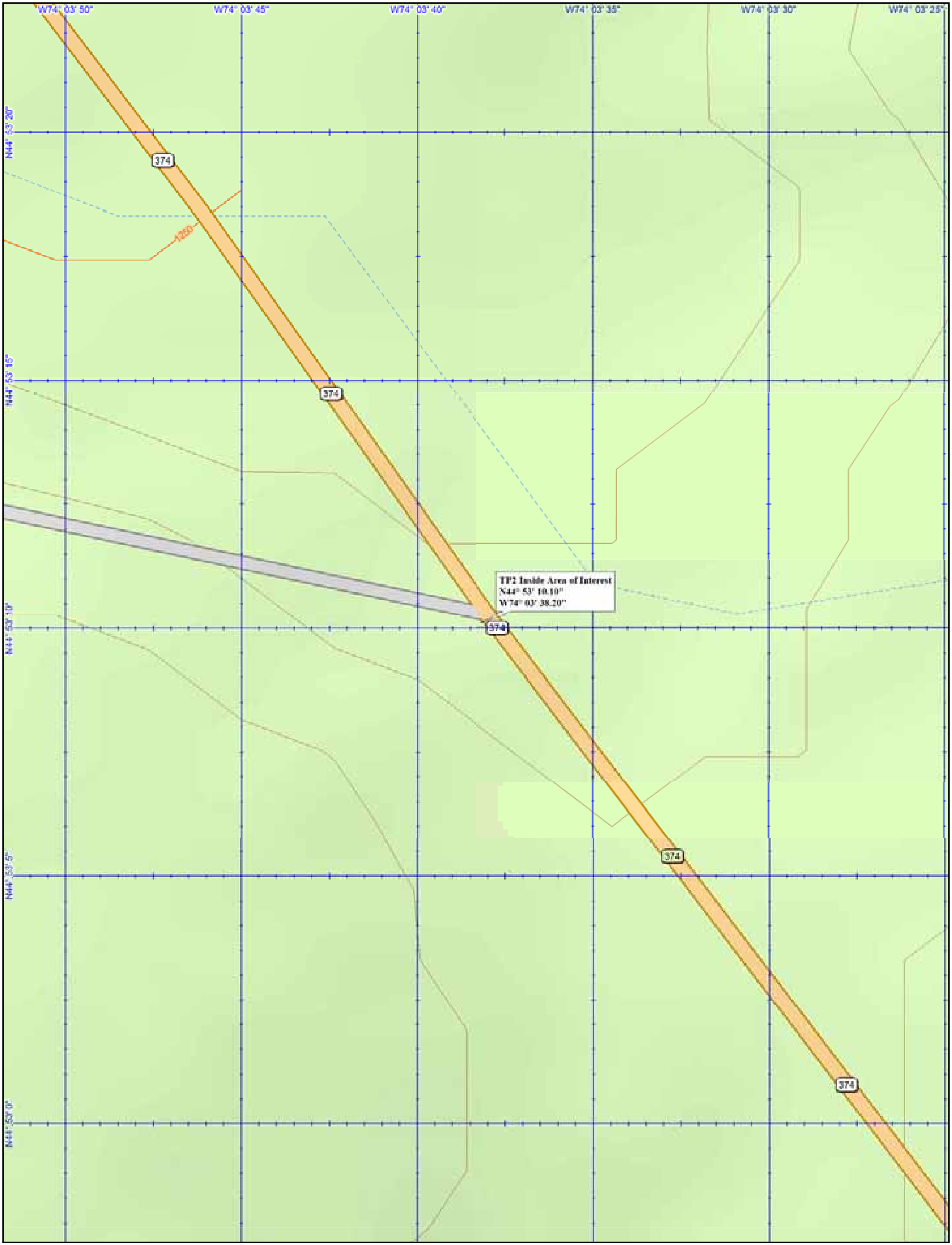
TV Broadcast

Highest Recorded Video Signal:

MHz	Level (DBm)
729	-38.2

Azimuth: 0-360°

Figure 3.2-5 Spectrum Photographs



Scale 1 : 3,200

1" = 266.7 ft

Data Zoom 16-0

FIGURE 3.2-6

TP3: Chateaugay, NY

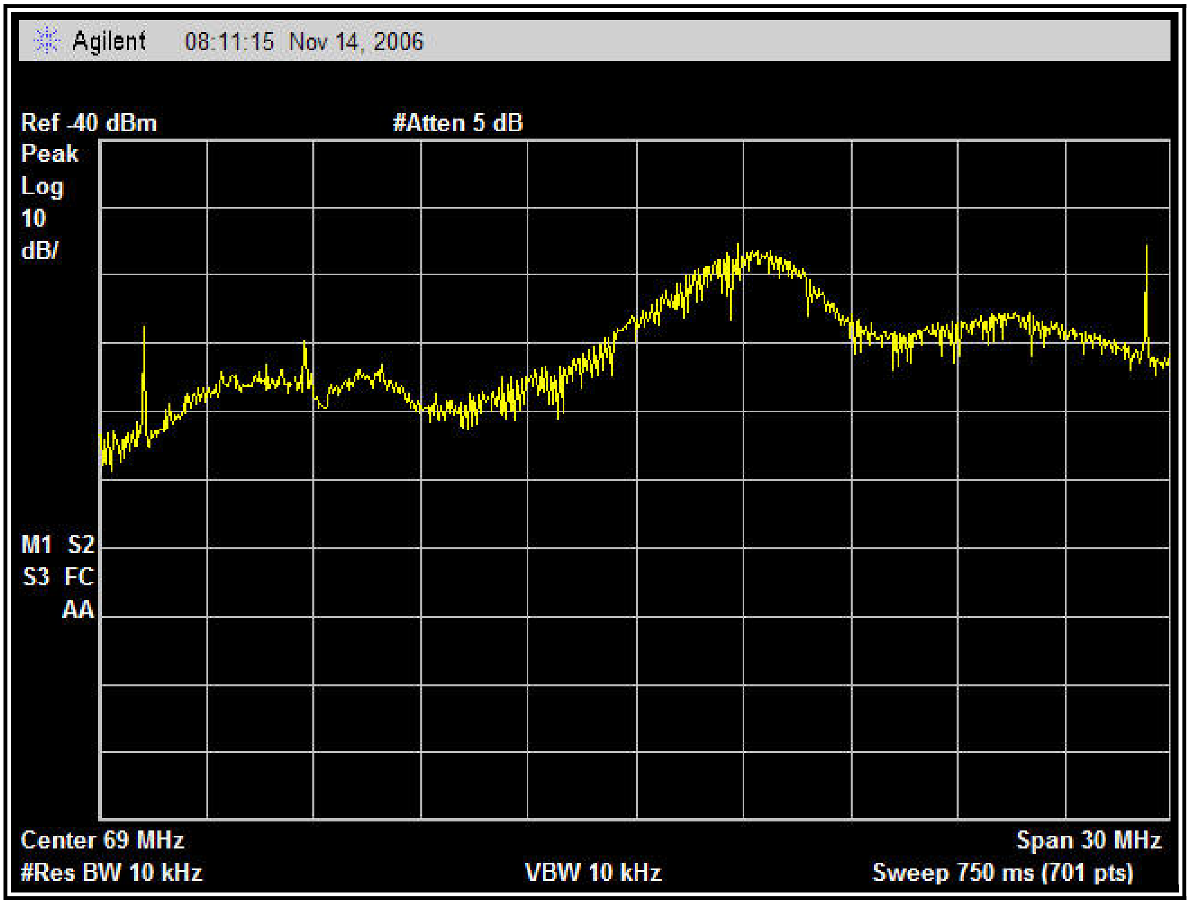
Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY

Figure 3.3-1 Site Photograph

TP3: Chateaugay, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 55' 26.22" W74° 04' 47.00"

VHF Low Band Channels 2-6

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
83.3	-56.02

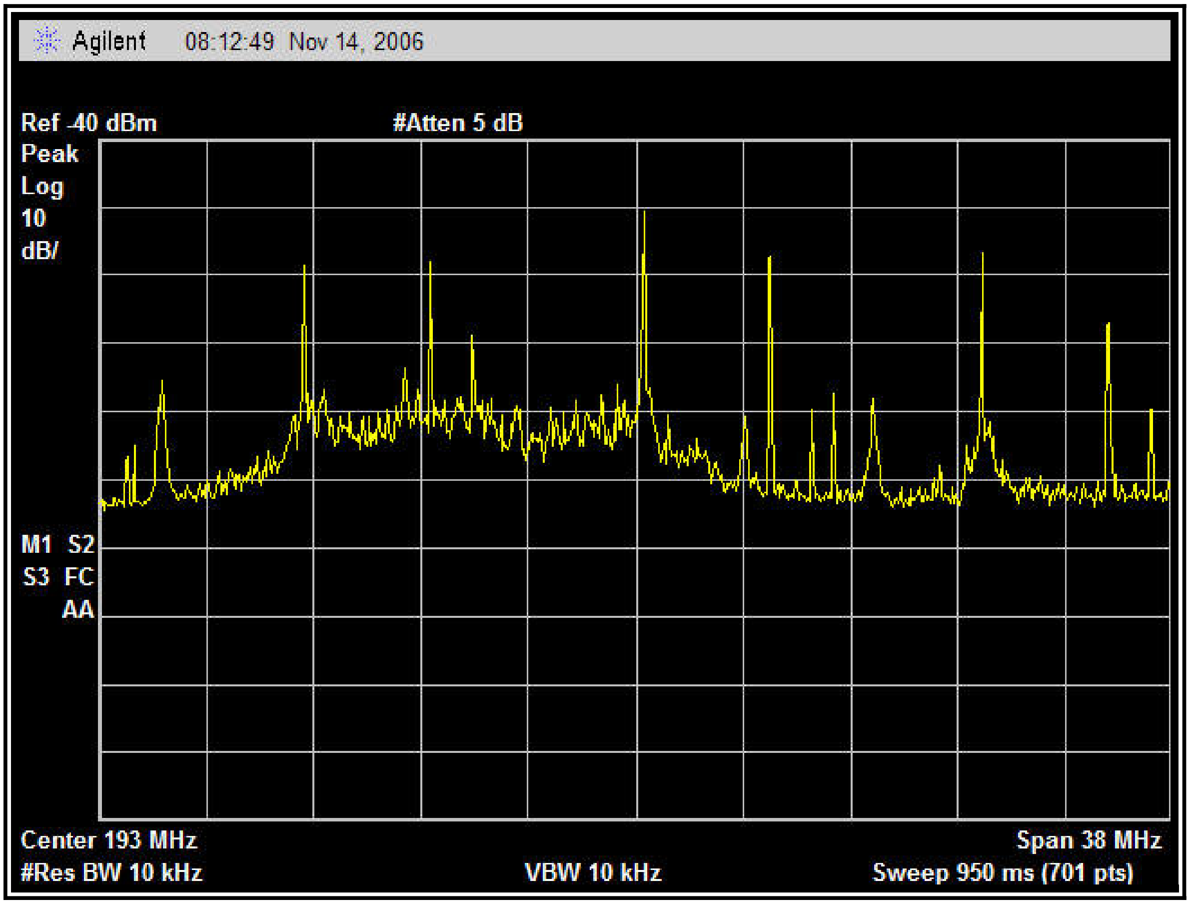
Azimuth: 0-360°

Figure 3.3-2 Spectrum Photographs

TP3: Chateaugay, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY


Agilent 08:12:49 Nov 14, 2006

Ref -40 dBm #Atten 5 dB
Peak
Log
10
dB/

M1 S2
S3 FC
AA

Center 193 MHz Span 38 MHz
#Res BW 10 kHz VBW 10 kHz Sweep 950 ms (701 pts)

Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 55' 26.22" W74° 04' 47.00"

VHF High Band Channels 7-13

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
193	-50.9

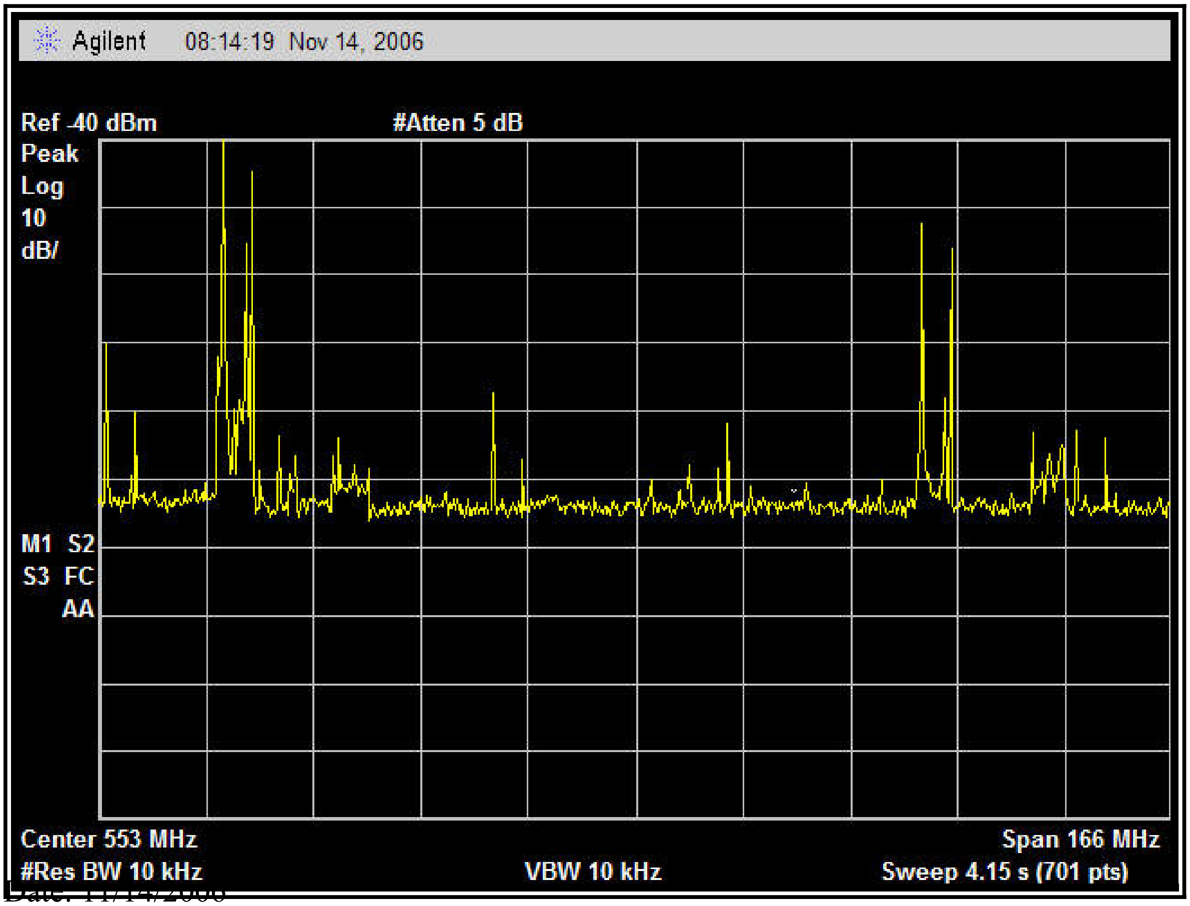
Azimuth: 0-360°

Figure 3.3-3 Spectrum Photographs

TP3: Chateaugay, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 55' 26.22" W74° 04' 47.00"

UHF Band Channels 14-41

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
494	-45.4

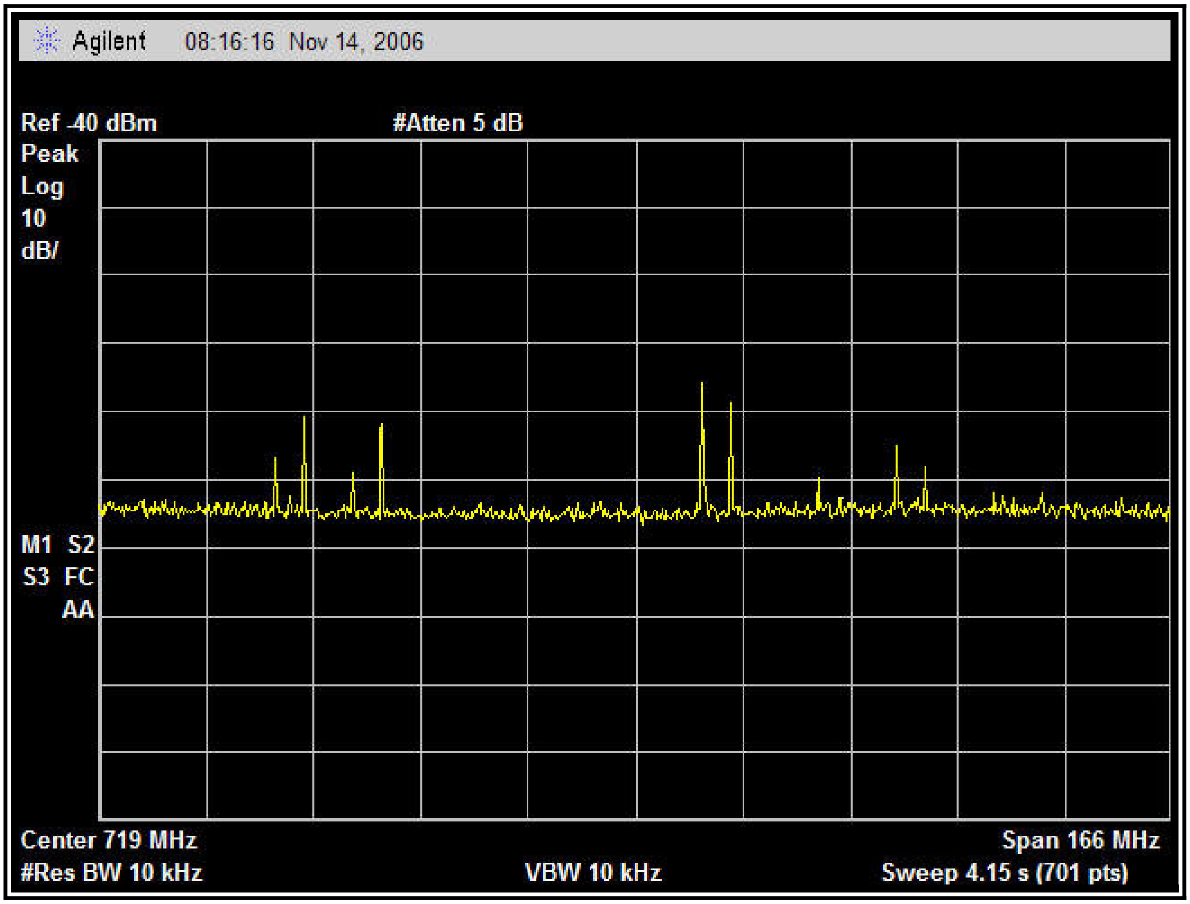
Azimuth: 0-360°

Figure 3.3-4 Spectrum Photographs

TP3: Chateaugay, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 55' 26.22" W74° 04' 47.00"

UHF Band Channels 42-69

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
729	-75.8

Azimuth: 0-360°

Figure 3.3-5 Spectrum Photographs

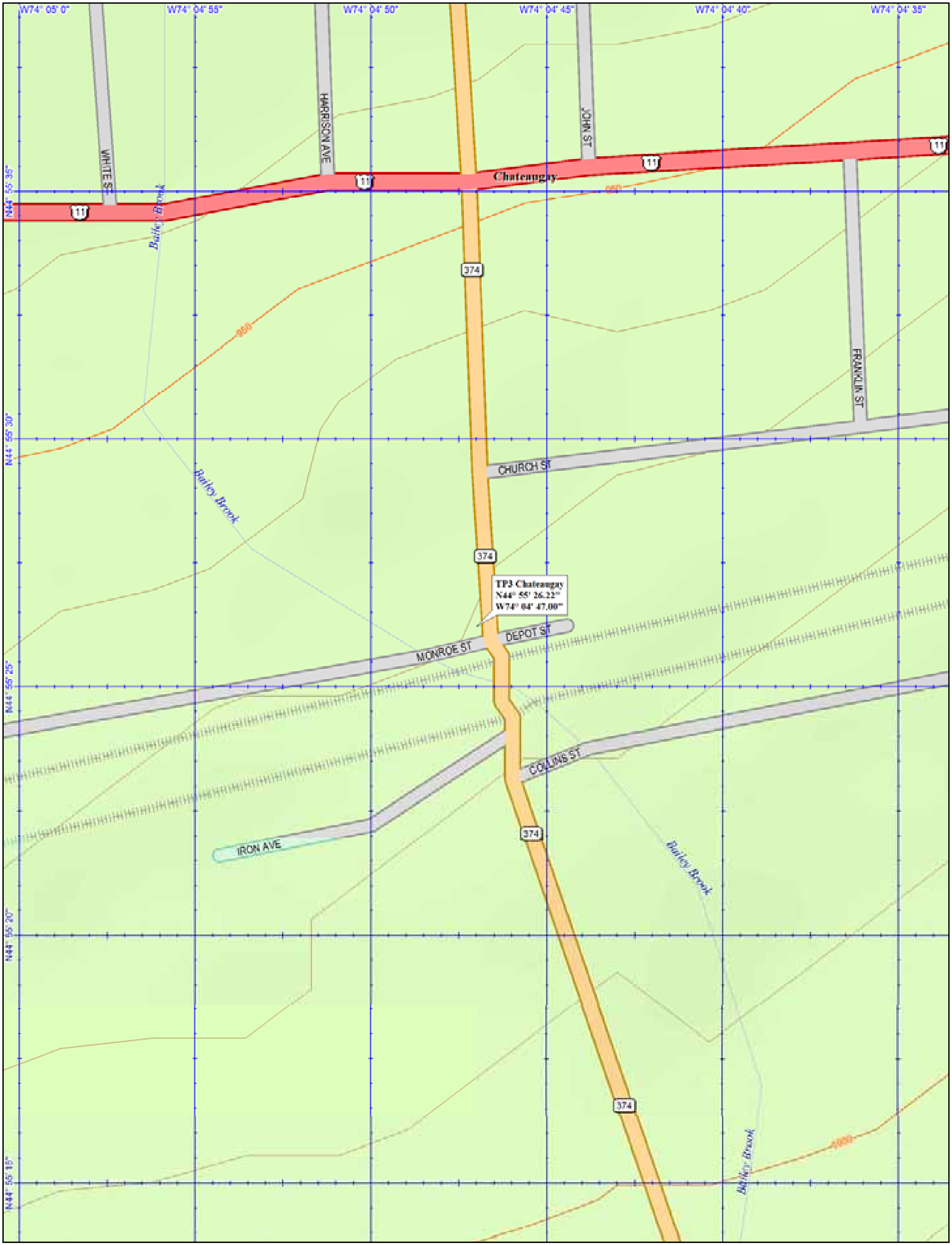

W74° 05' 0"
W74° 04' 55"
W74° 04' 50"
W74° 04' 45"
W74° 04' 40"
W74° 04' 35"
N44° 55' 35"
N44° 55' 30"
N44° 55' 25"
N44° 55' 20"
N44° 55' 15"
WHITE ST
HARRISON AVE
JOHN ST
FRANKLIN ST
11
Chateaugay
Bailey Brook
950
374
CHURCH ST
TP3 Chateaugay
N44° 55' 26.22"
W74° 04' 47.00"
MONROE ST
DEPOT ST
COLLINS ST
IRON AVE
1000
Scale 1 : 3,200
0 80 160 240 320 400 ft
0 20 40 60 80 100 m
1" = 266.7 ft
Data Zoom 16-0
TN
MN (14.6°W)

FIGURE 3.3-6

TP4: Thayer Corners, NY

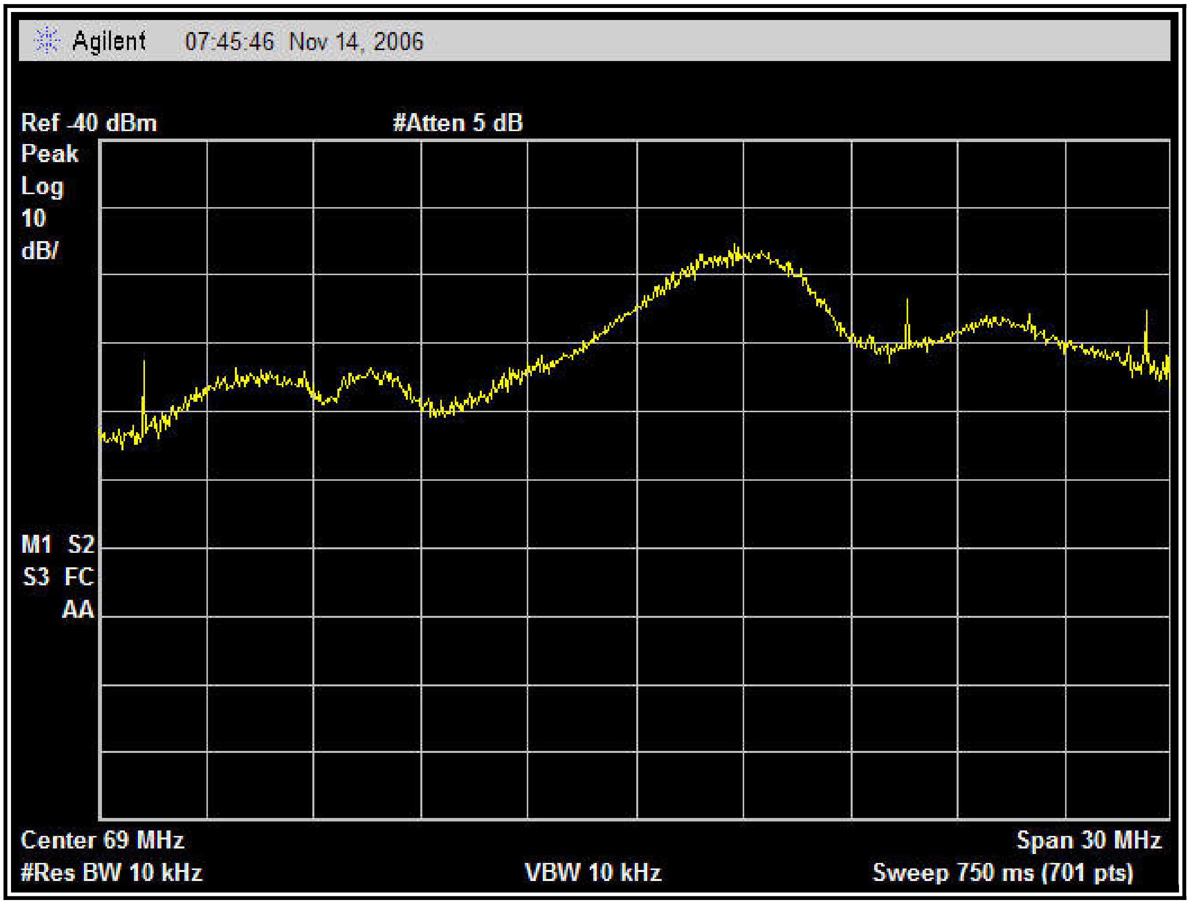
Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY

Figure 3.4-1 Site Photograph

TP4: Thayer Corners, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY


Agilent 07:45:46 Nov 14, 2006

Ref -40 dBm #Atten 5 dB

Peak
Log
10
dB/

M1 S2
S3 FC
AA

Center 69 MHz Span 30 MHz
#Res BW 10 kHz VBW 10 kHz Sweep 750 ms (701 pts)

Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 55' 18.33" W74° 08' 26.64"

VHF Low Band Channels 2-6

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
76.6	-63.5

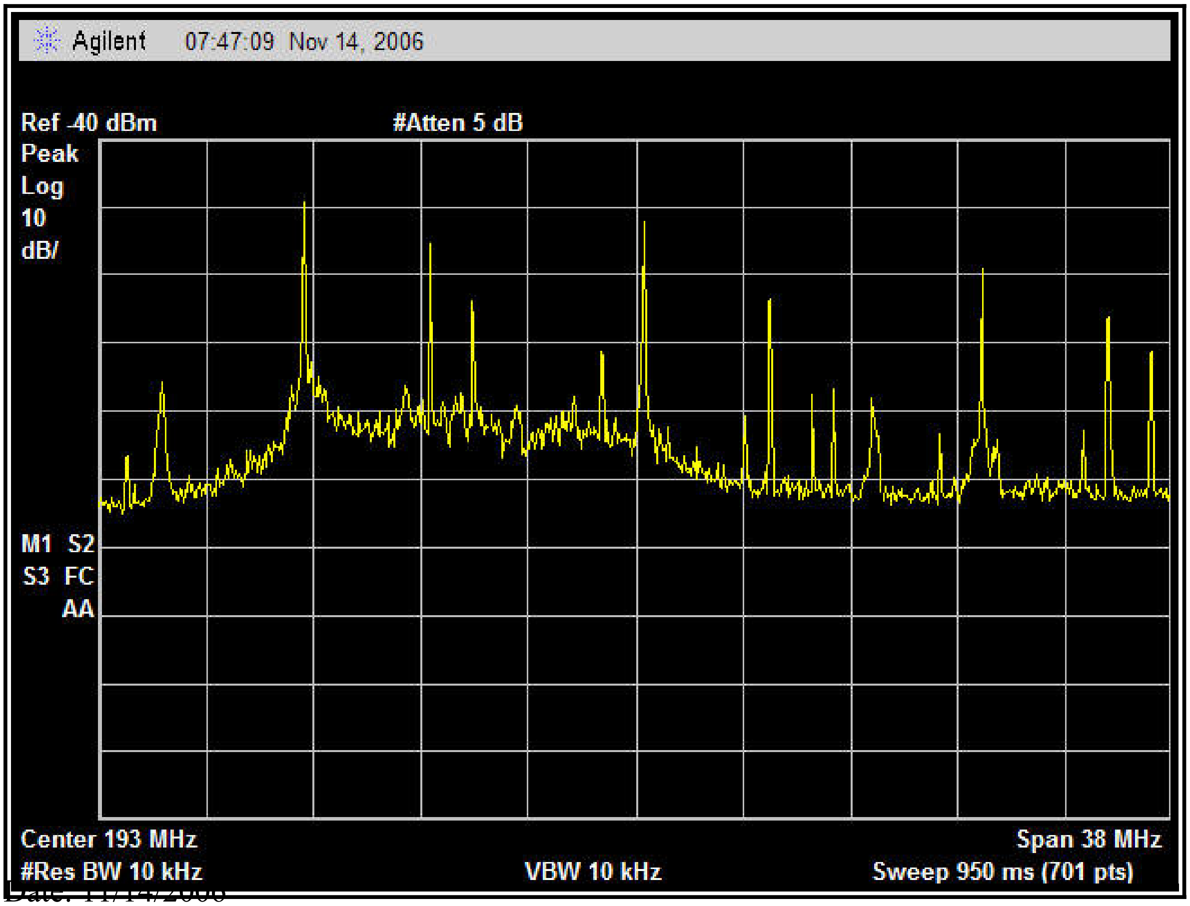
Azimuth: 0-360°

Figure 3.4-2 Spectrum Photographs

TP4: Thayer Corners, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 55' 18.33" W74° 08' 26.64"

VHF High Band Channels 7-13

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
181	-49.3

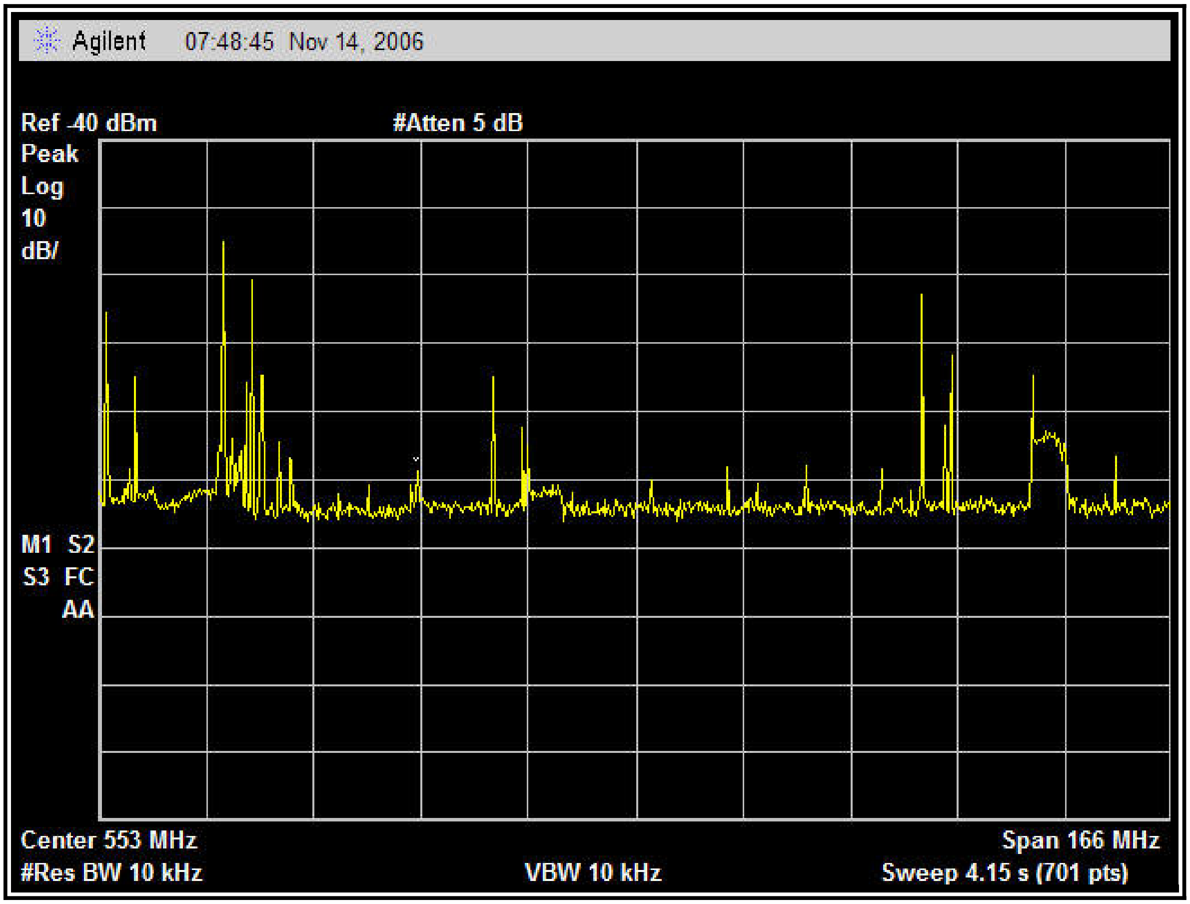
Azimuth: 0-360°

Figure 3.4-3 Spectrum Photographs

TP4: Thayer Corners, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 55' 18.33" W74° 08' 26.64"

UHF Band Channels 14-41

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
489	-55.2

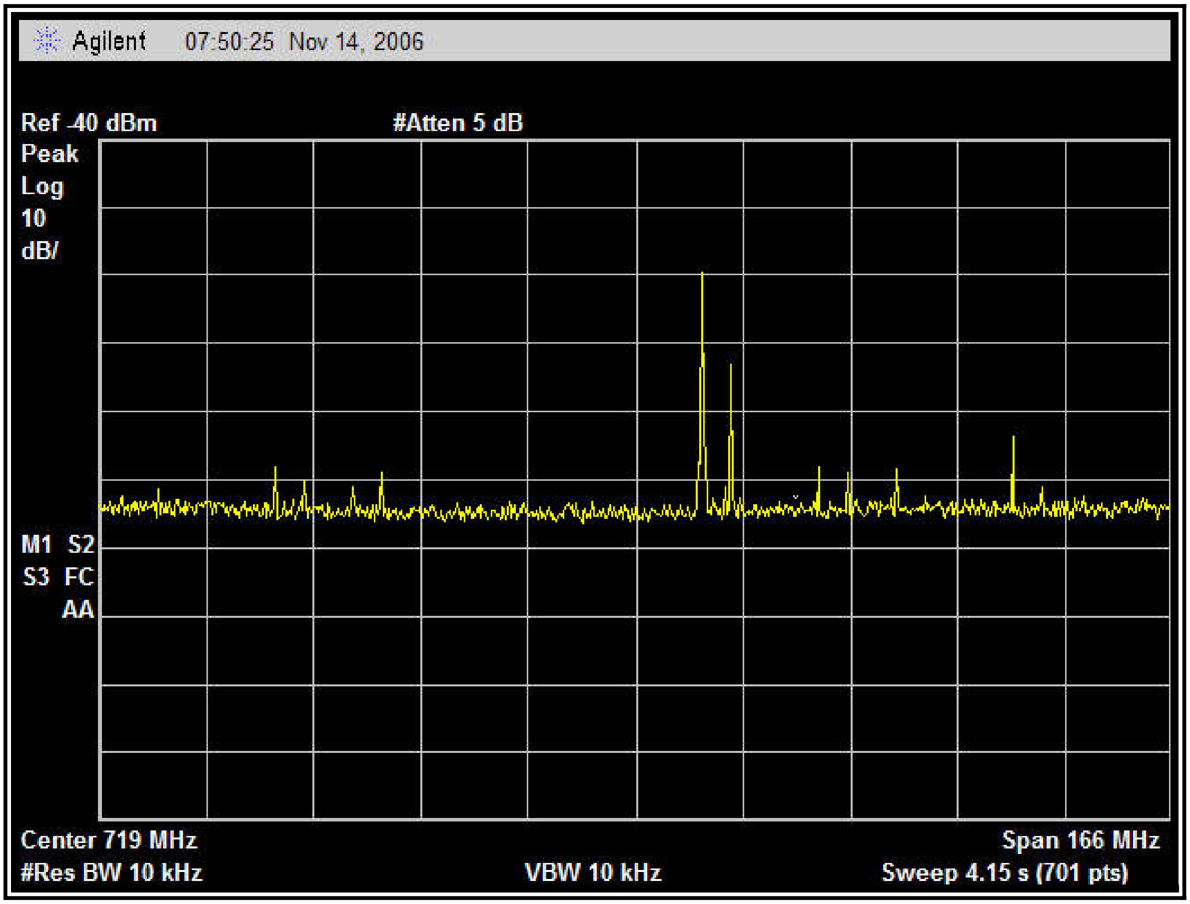
Azimuth: 0-360°

Figure 3.4-4 Spectrum Photographs

TP4: Thayer Corners, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Agilent 07:50:25 Nov 14, 2006

Ref -40 dBm #Atten 5 dB

Peak
Log
10
dB/

M1 S2
S3 FC
AA

Center 719 MHz Span 166 MHz

#Res BW 10 kHz VBW 10 kHz Sweep 4.15 s (701 pts)

Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 55' 18.33" W74° 08' 26.64"

UHF Band Channels 42-69

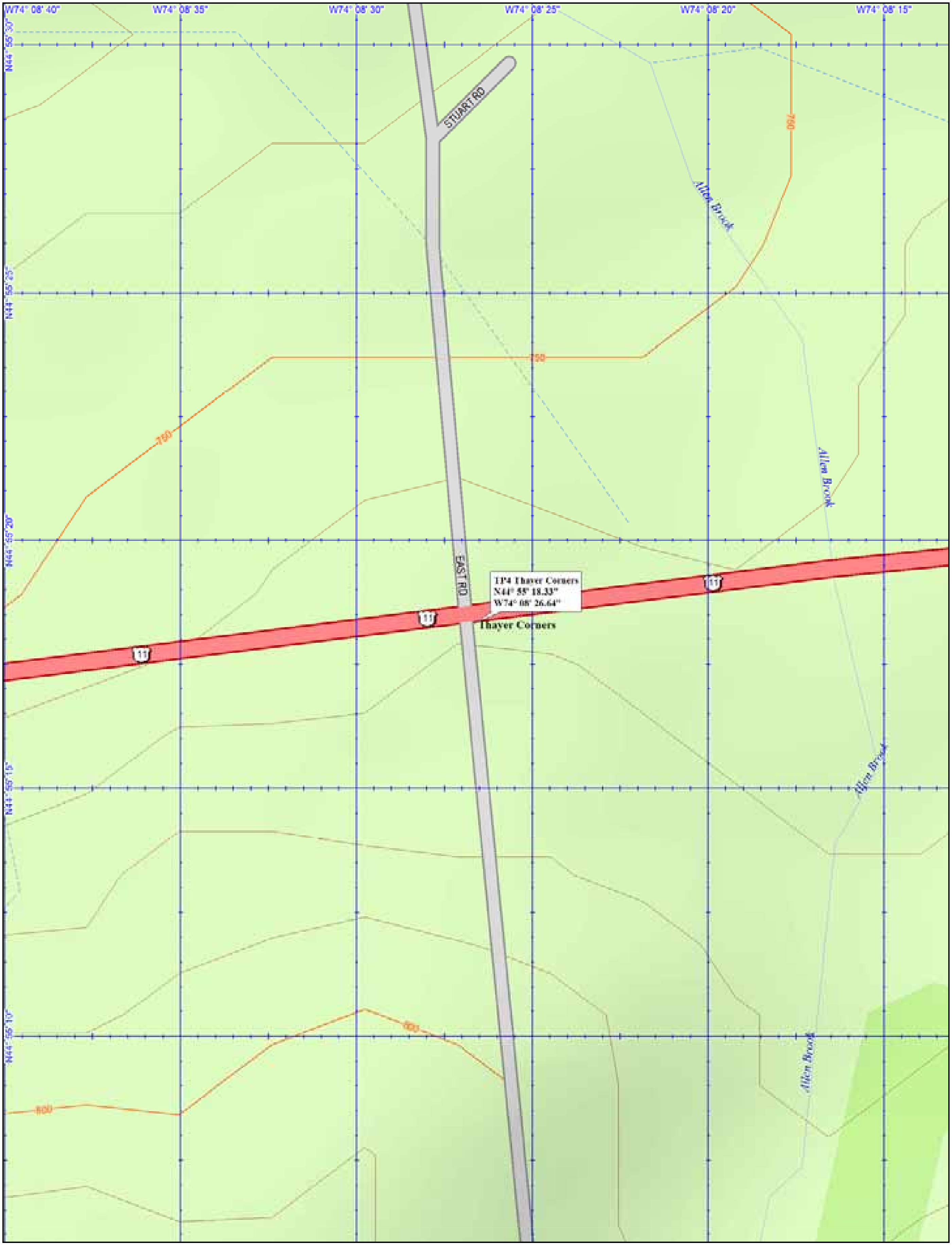
TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
729	-61.4

Azimuth: 0-360°

Figure 3.4-5 Spectrum Photographs



Scale 1 : 3,200

1" = 266.7 ft Data Zoom 16-0

FIGURE 3.4-6

TP5: Burke, NY

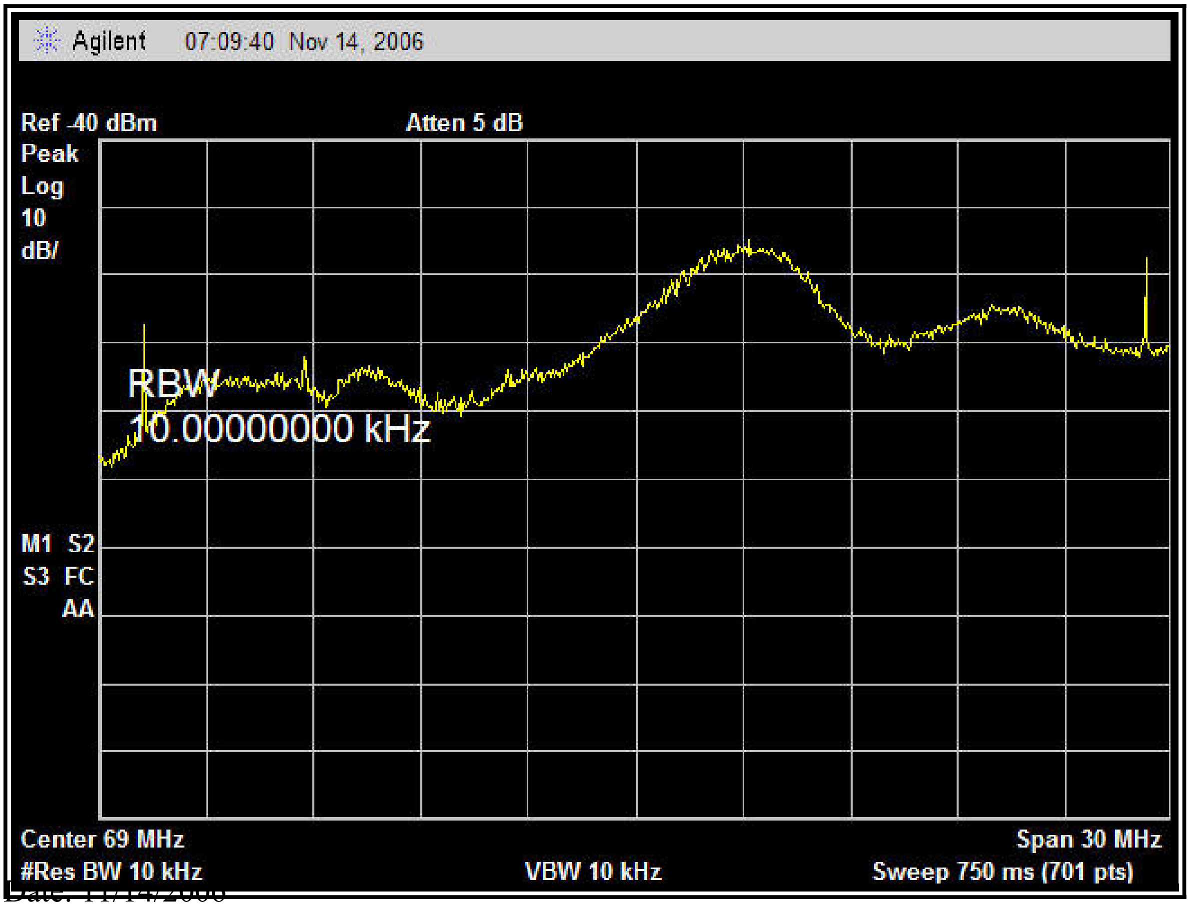
Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY

Figure 3.5-1 Site Photograph

TP5: Burke, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 54' 16.59" W74° 10' 9.27"

VHF Low Band Channels 2-6

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
83.3	-58.8

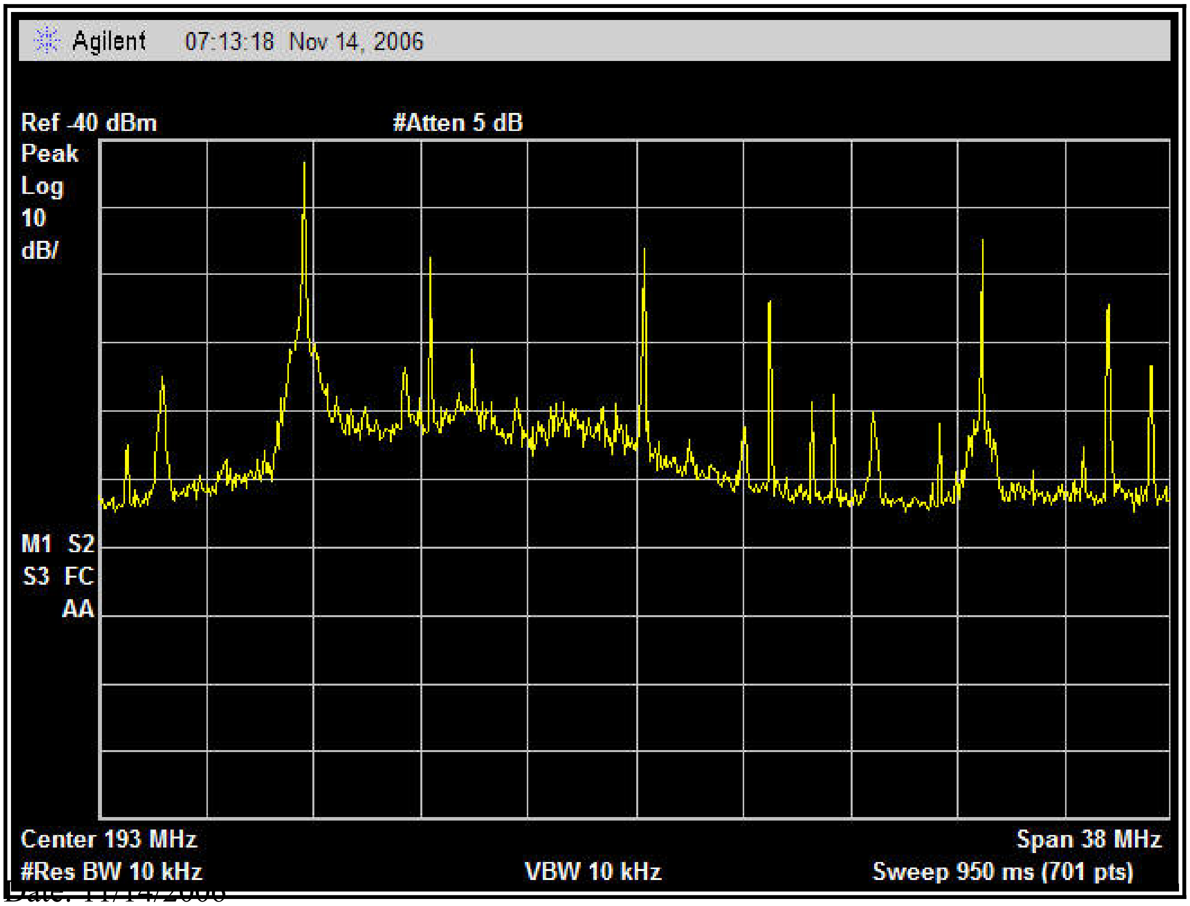
Azimuth: 0-360°

Figure 3.5-2 Spectrum Photographs

TP5: Burke, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 54' 16.59" W74° 10' 9.27"

VHF High Band Channels 7-13

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
181	-43.5

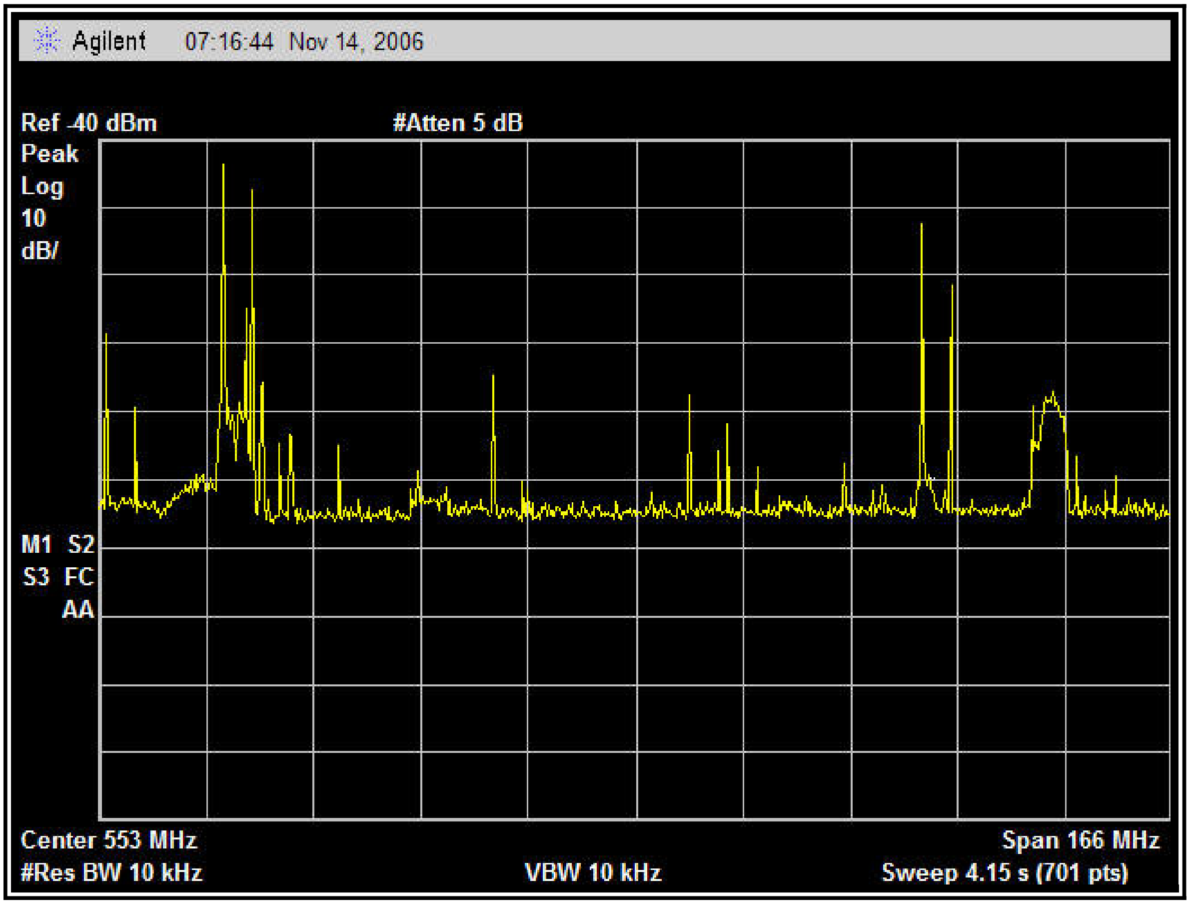
Azimuth: 0-360°

Figure 3.5-3 Spectrum Photographs

TP5: Burke, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Ref -40 dBm
#Atten 5 dB
Peak
Log
10
dB/
Center 553 MHz
Span 166 MHz
#Res BW 10 kHz
VBW 10 kHz
Sweep 4.15 s (701 pts)

Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 54' 16.59" W74° 10' 9.27"

UHF Band Channels 14-41

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
494	-48.02

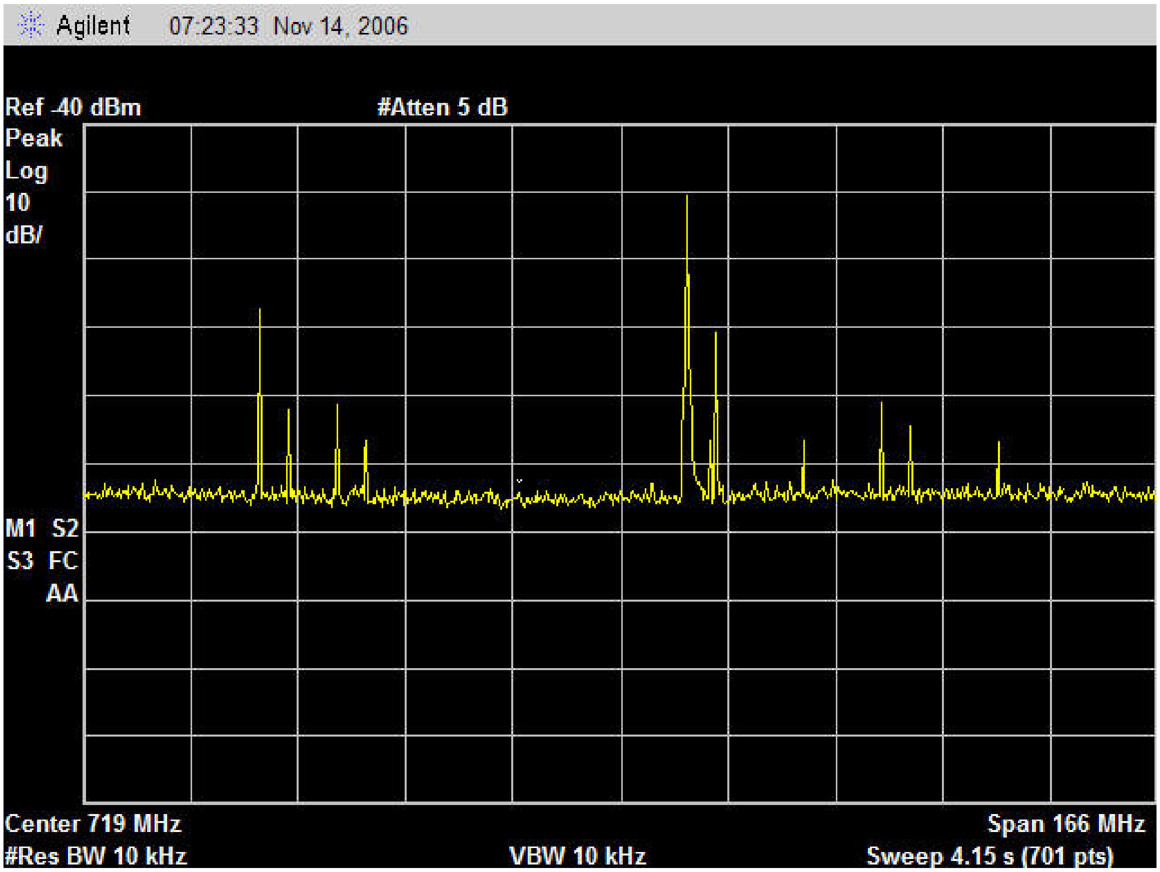
Azimuth: 0-360°

Figure 3.5-4 Spectrum Photographs

TP5: Burke, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 54' 16.59" W74° 10' 9.27"

UHF Band Channels 42-69

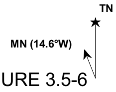
TV Broadcast

Highest Recorded Video Signal:

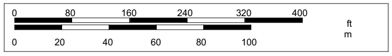
MHz	Level (dBmi)
729	-51.5

Azimuth: 0-360°

Figure 3.5-5 Spectrum Photographs



Scale 1 : 3,200



1" = 266.7 ft

Data Zoom 16-0

FIGURE 3.5-6

TP6: Malone Junction, NY

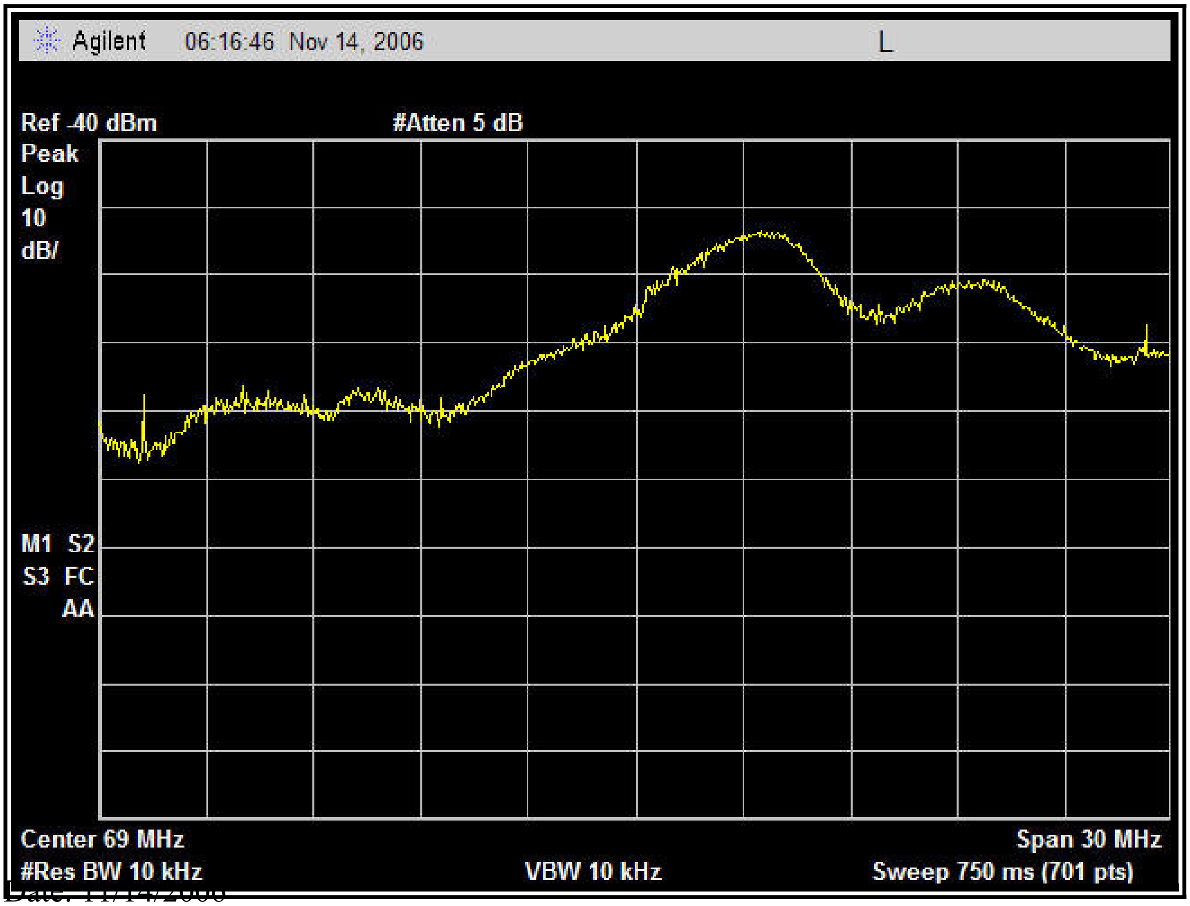
Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County

Figure 3.6-1 Site Photograph

TP6: Malone Junction, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 31.86" W74° 15' 29.37"

VHF Low Band Channels 2-6

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
83.3	-67.4

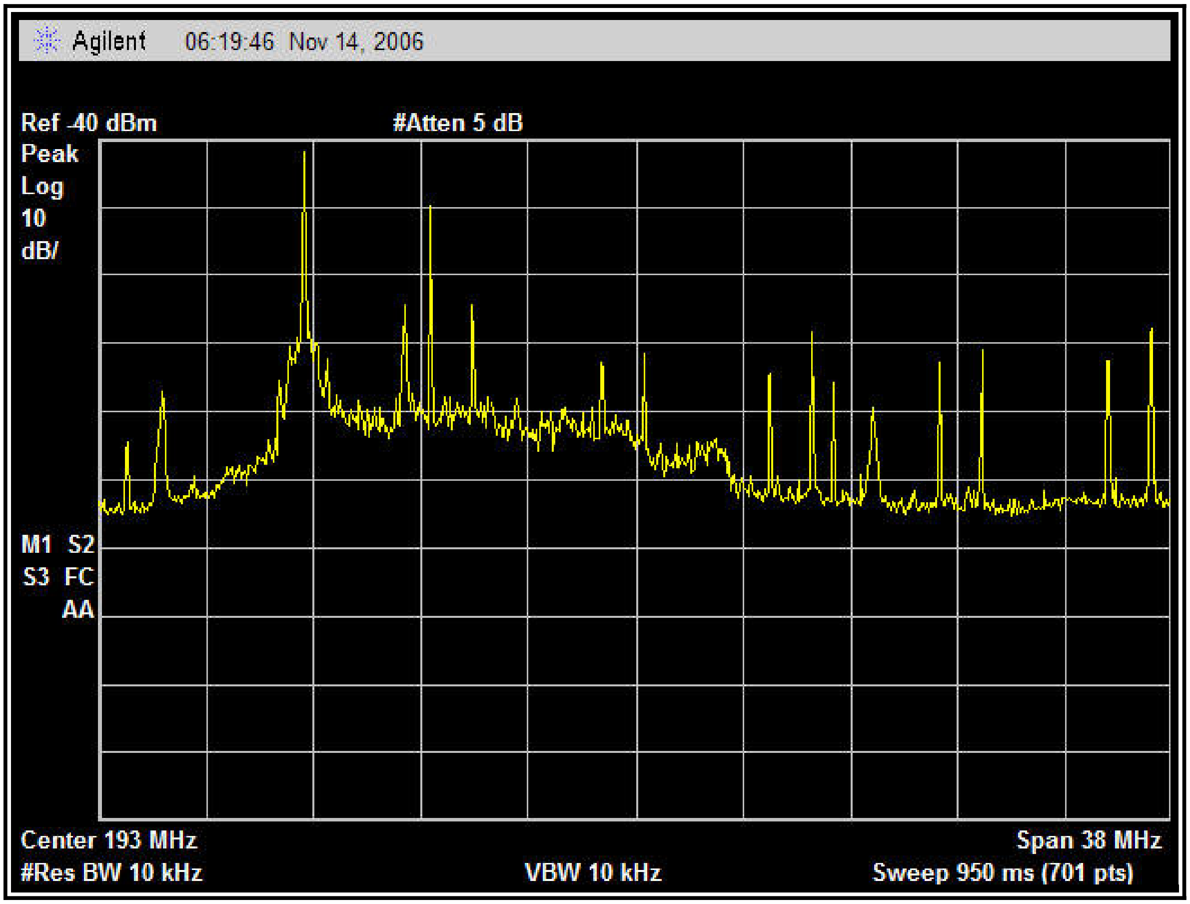
Azimuth: 0-360°

Figure 3.6-2 Spectrum Photographs

TP6: Malone Junction, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Agilent 06:19:46 Nov 14, 2006

Ref -40 dBm #Atten 5 dB

Peak
Log
10
dB/

M1 S2
S3 FC
AA

Center 193 MHz
Span 38 MHz
#Res BW 10 kHz
VBW 10 kHz
Sweep 950 ms (701 pts)

Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 31.86" W74° 15' 29.37"

VHF High Band Channels 7-13

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
181	-43.3

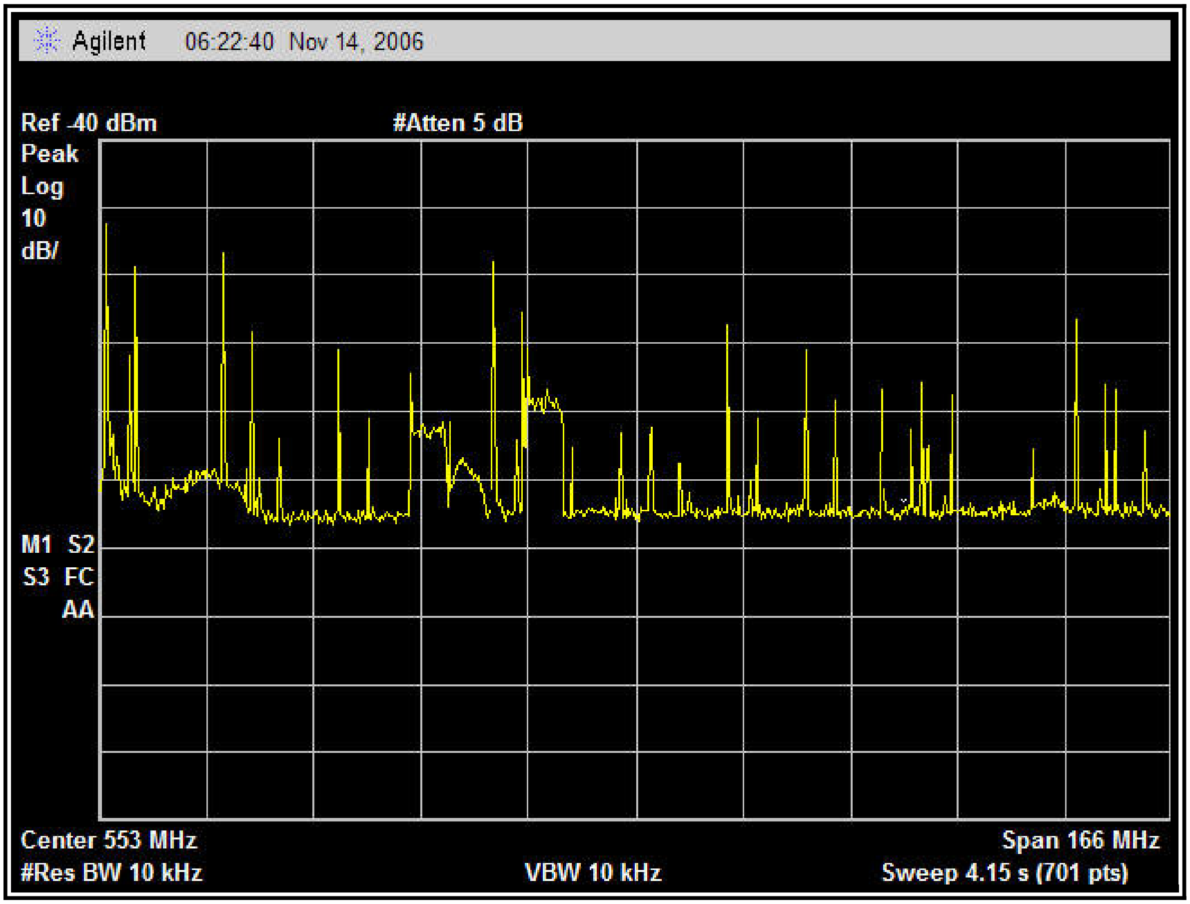
Azimuth: 0-360°

Figure 3.6-3 Spectrum Photographs

TP6: Malone Junction, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 31.86" W74° 15' 29.37"

UHF Band Channels 14-41

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
471	-54.9

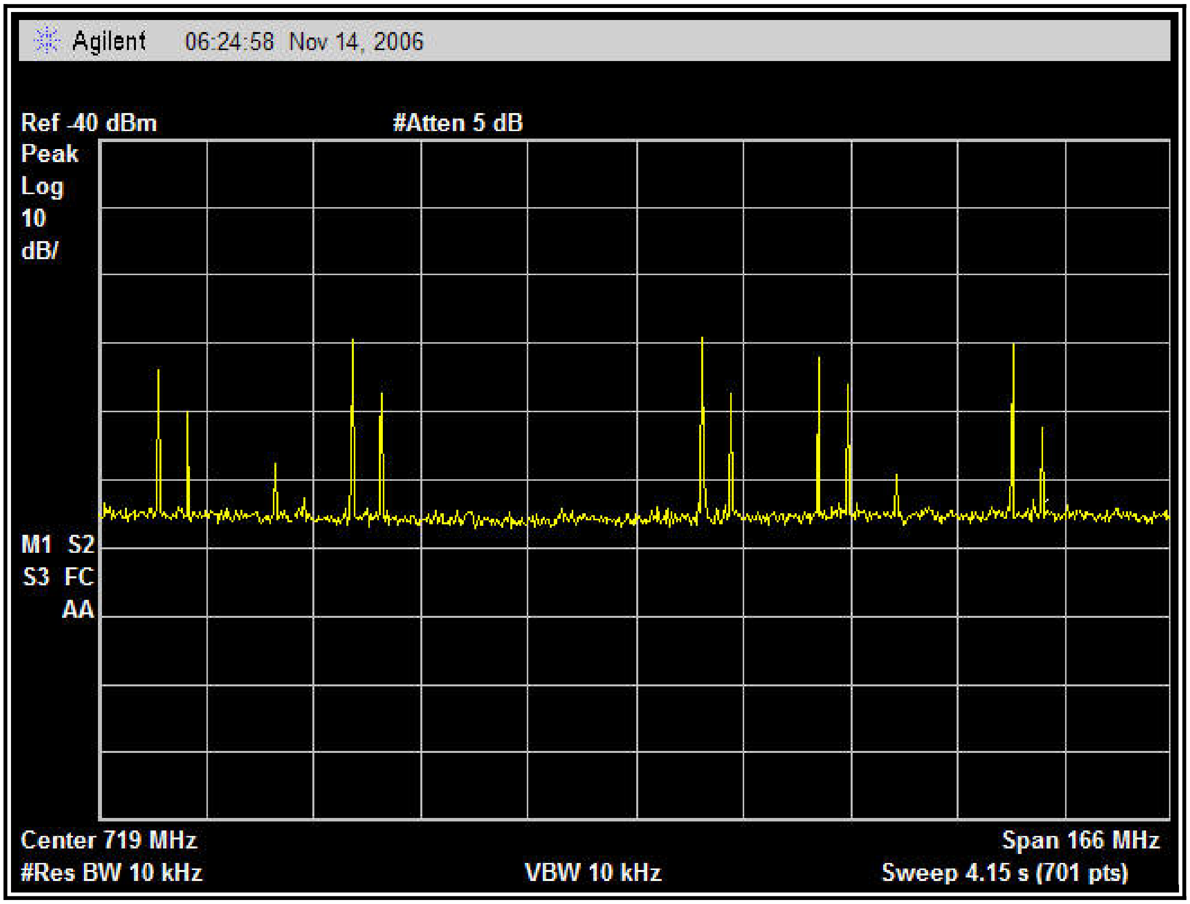
Azimuth: 0-360°

Figure 3.6-4 Spectrum Photographs

TP6: Malone Junction, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 31.86" W74° 15' 29.37"

UHF Band Channels 42-69

TV Broadcast

Highest Recorded Video Signal:

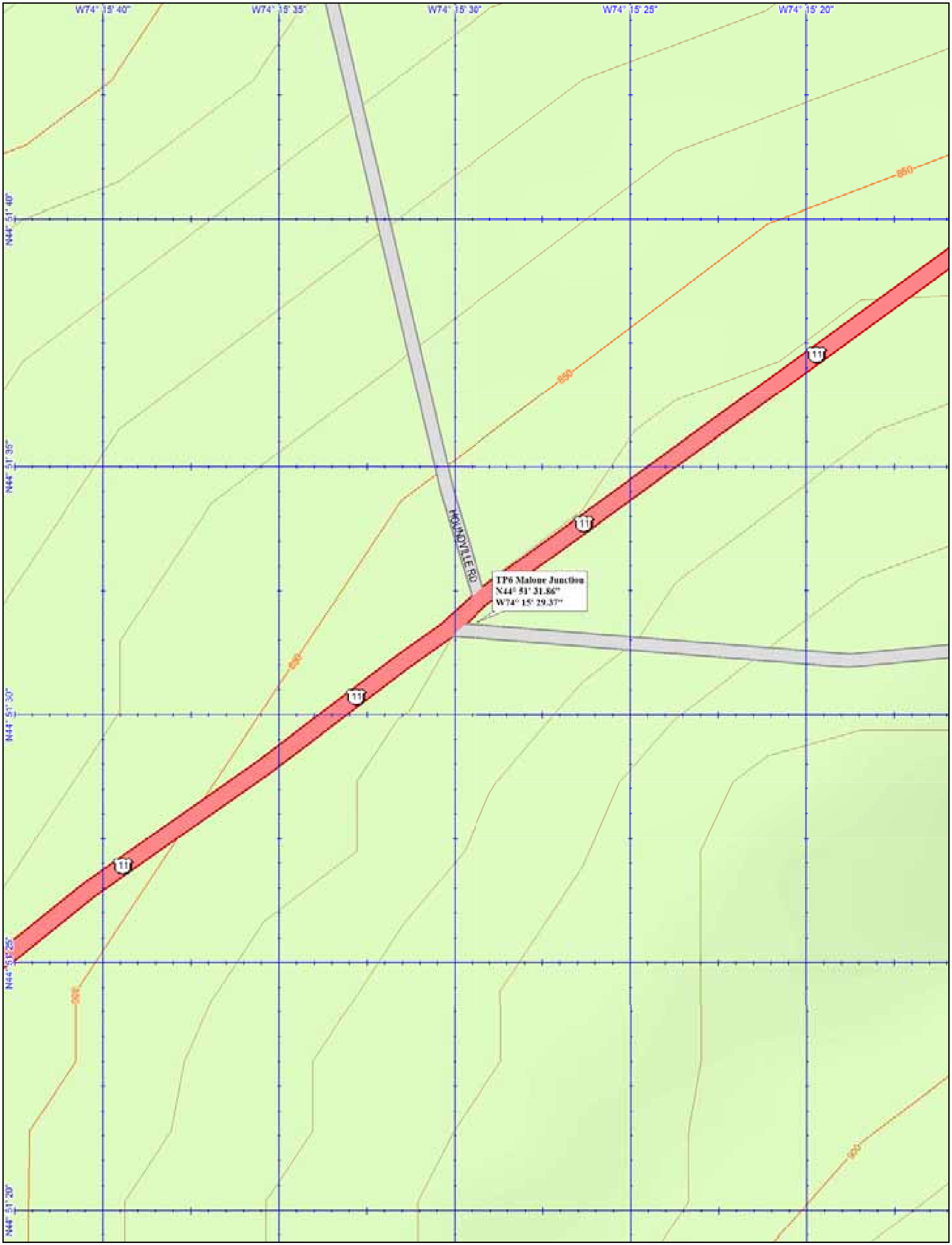
MHz	Level (dBmi)
729	-69.3

Azimuth: 0-360°

Figure 3.6-5 Spectrum Photographs

DELORME

Topo USA® 5.0



Scale 1 : 3,200

Data use subject to license.

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www.delorme.com

FIGURE 3.6-6

1" = 266.7 ft

Data Zoom 16-0

TP7: Inside Area of Interest

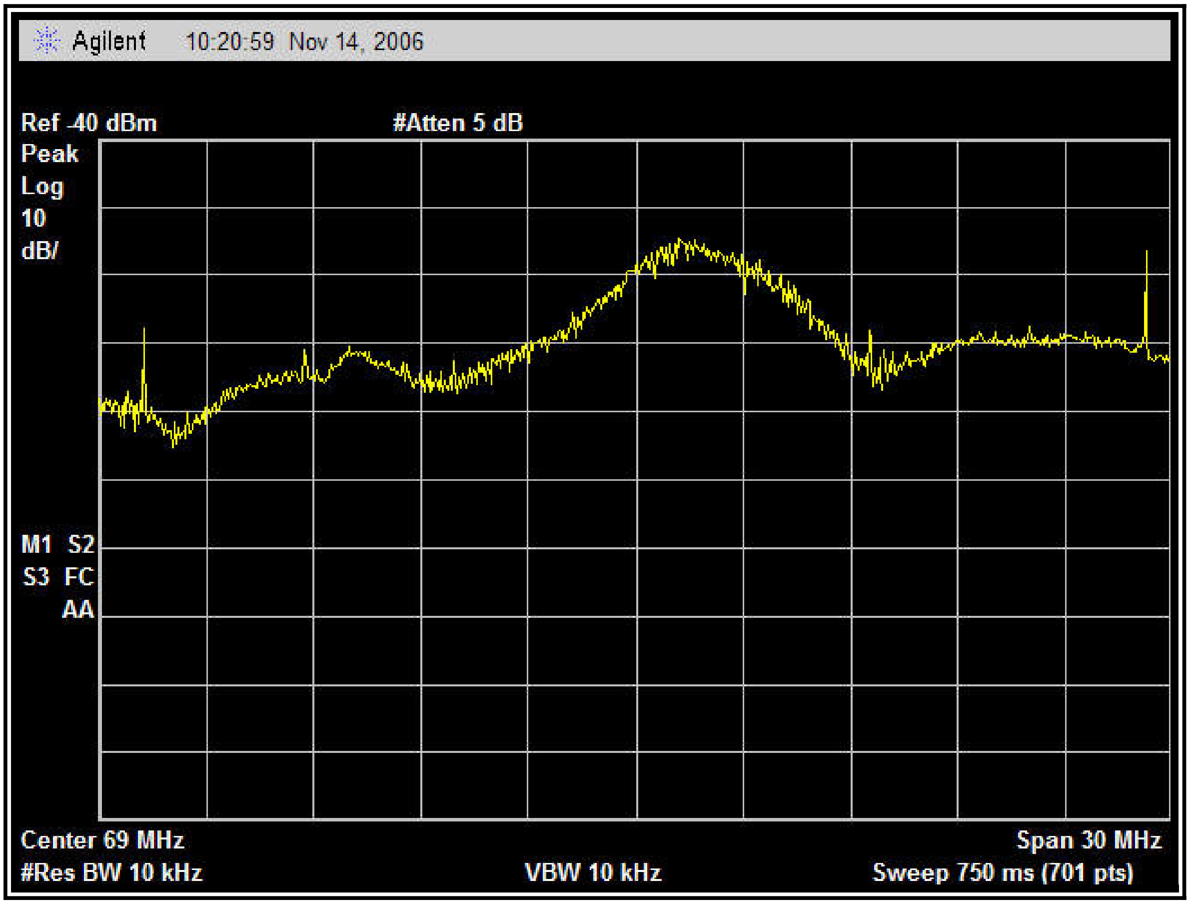
Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY

Figure 3.7-1 Site Photograph

TP7: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 29.81" W74° 08' 38.69"

VHF Low Band Channels 2-6

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
83.3	-56.5

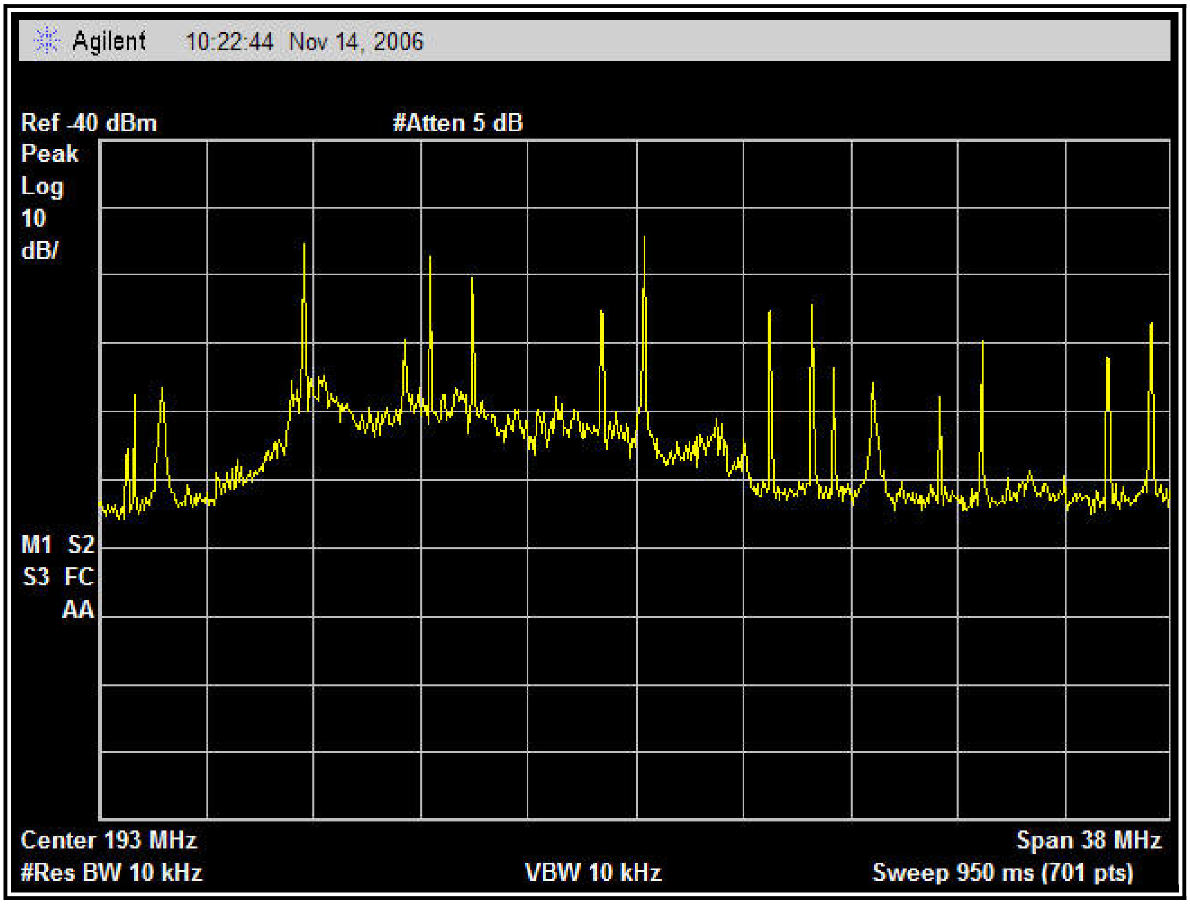
Azimuth: 0-360°

Figure 3.7-2 Spectrum Photographs

TP7: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



10:22:44 Nov 14, 2006

Ref -40 dBm
#Atten 5 dB
Peak
Log
10
dB/

Center 193 MHz
Span 38 MHz
#Res BW 10 kHz
VBW 10 kHz
Sweep 950 ms (701 pts)

Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 29.81" W74° 08' 38.69"

VHF High Band Channels 7-13

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
193	-54.8

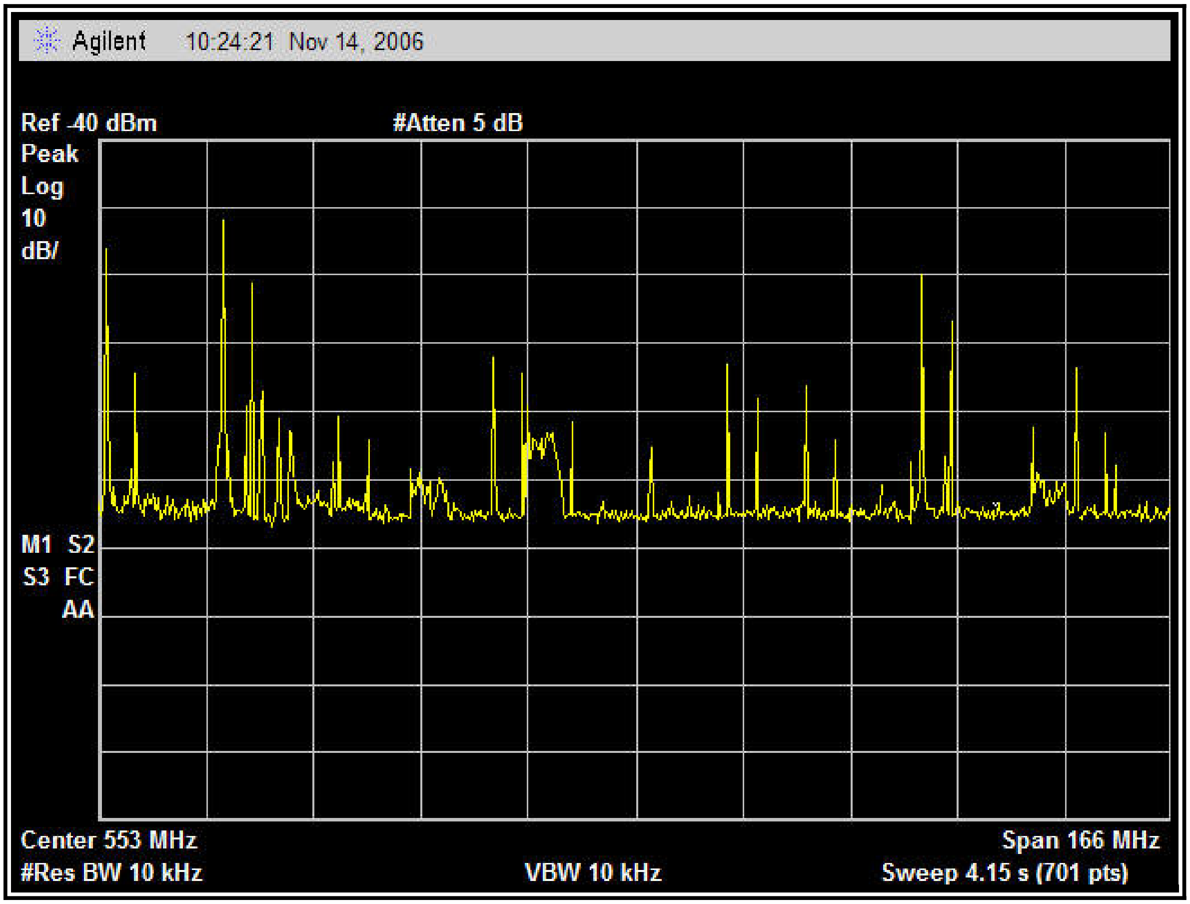
Azimuth: 0-360°

Figure 3.7-3 Spectrum Photographs

TP7: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 29.81" W74° 08' 38.69"

UHF Band Channels 14-41

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
489	-53.9

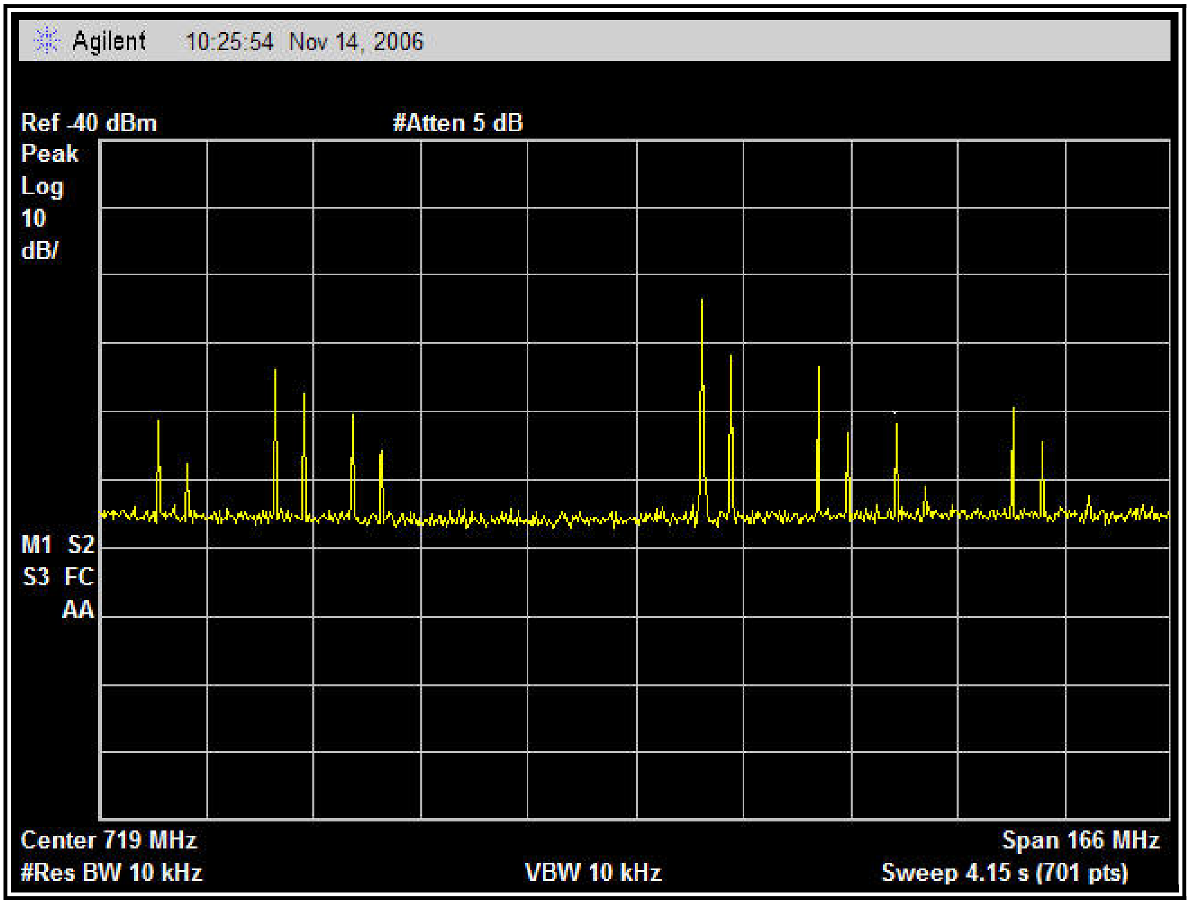
Azimuth: 0-360°

Figure 3.7-4 Spectrum Photographs

TP7: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 51' 29.81" W74° 08' 38.69"

UHF Band Channels 42-69

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
729	-64.4

Azimuth: 0-360°

Figure 3.7-5 Spectrum Photographs

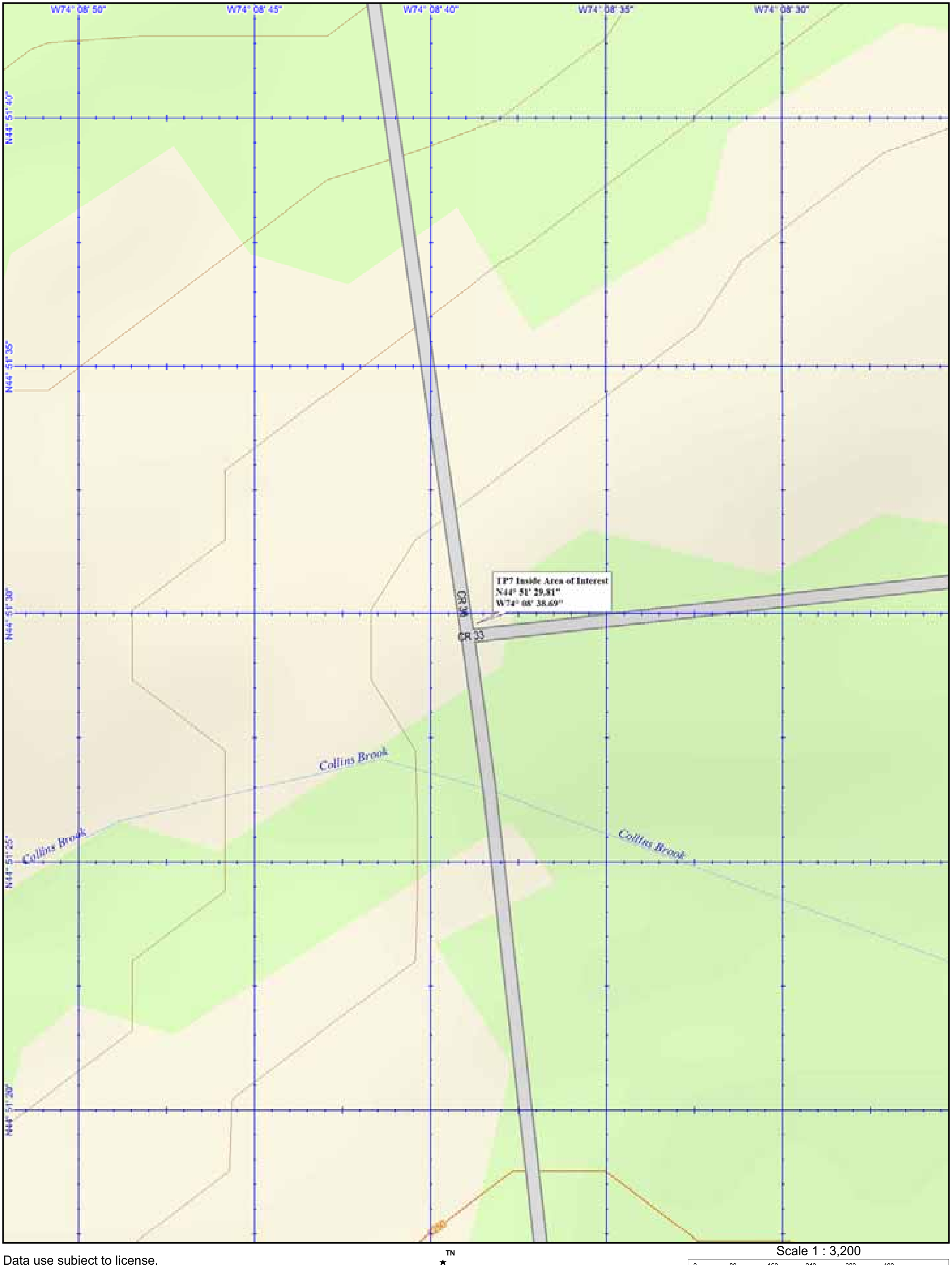

W74° 08' 50"
W74° 08' 45"
W74° 08' 40"
W74° 08' 35"
W74° 08' 30"
N44° 51' 40"
N44° 51' 35"
N44° 51' 30"
N44° 51' 25"
N44° 51' 20"
TP7 Inside Area of Interest
N44° 51' 29.81"
W74° 08' 38.69"
CR 36
CR 33
Collins Brook
Collins Brook
Collins Brook
TN
MN (14.6°W)
Scale 1 : 3,200
0
80
160
240
320
400
ft
m
0
20
40
60
80
100
1" = 266.7 ft
Data Zoom 16-0

FIGURE 3.7-6

TP8: Bellmont Center, NY

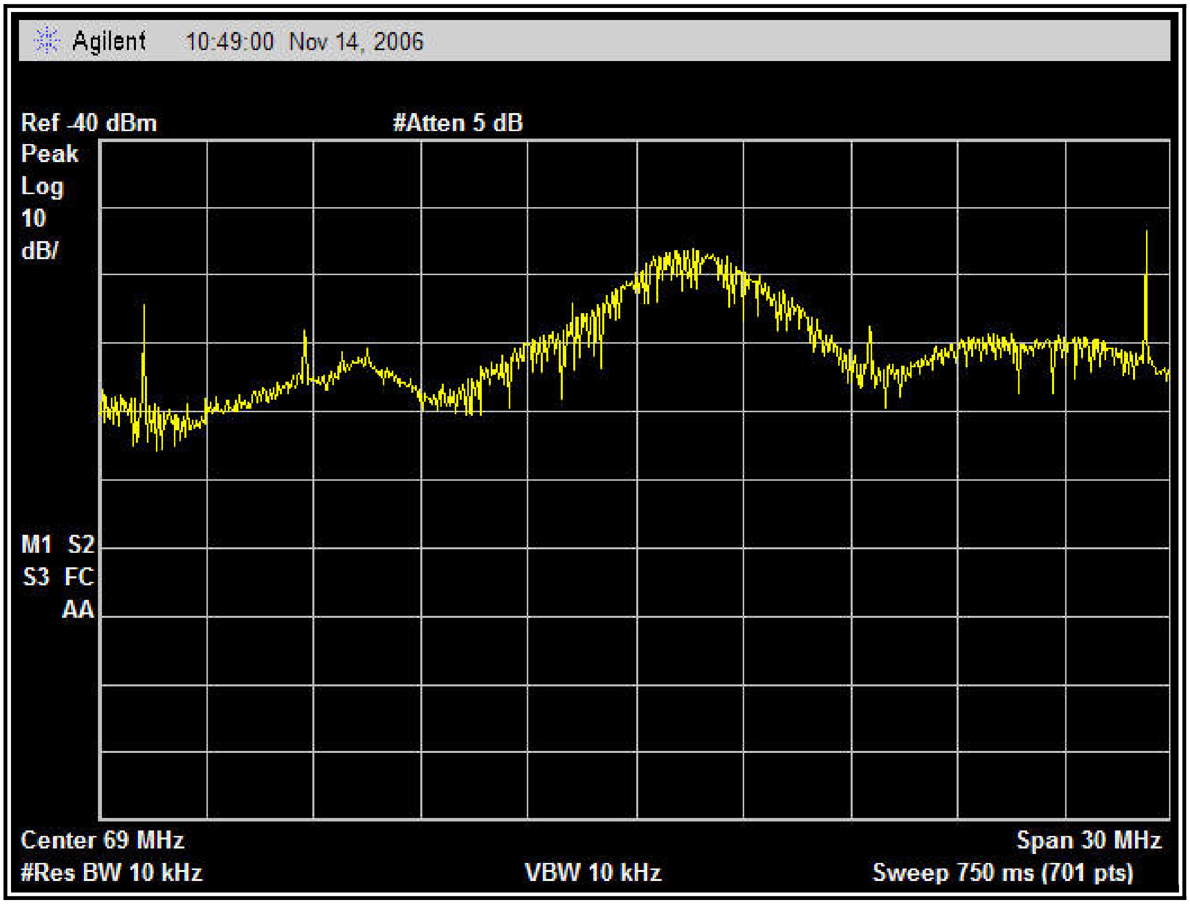
Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY

Figure 3.8-1 Site Photograph

TP8: Bellmont Center, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 50' 55.89" W74° 07' 50.25"

VHF Low Band Channels 2-6

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
83.3	-54.8

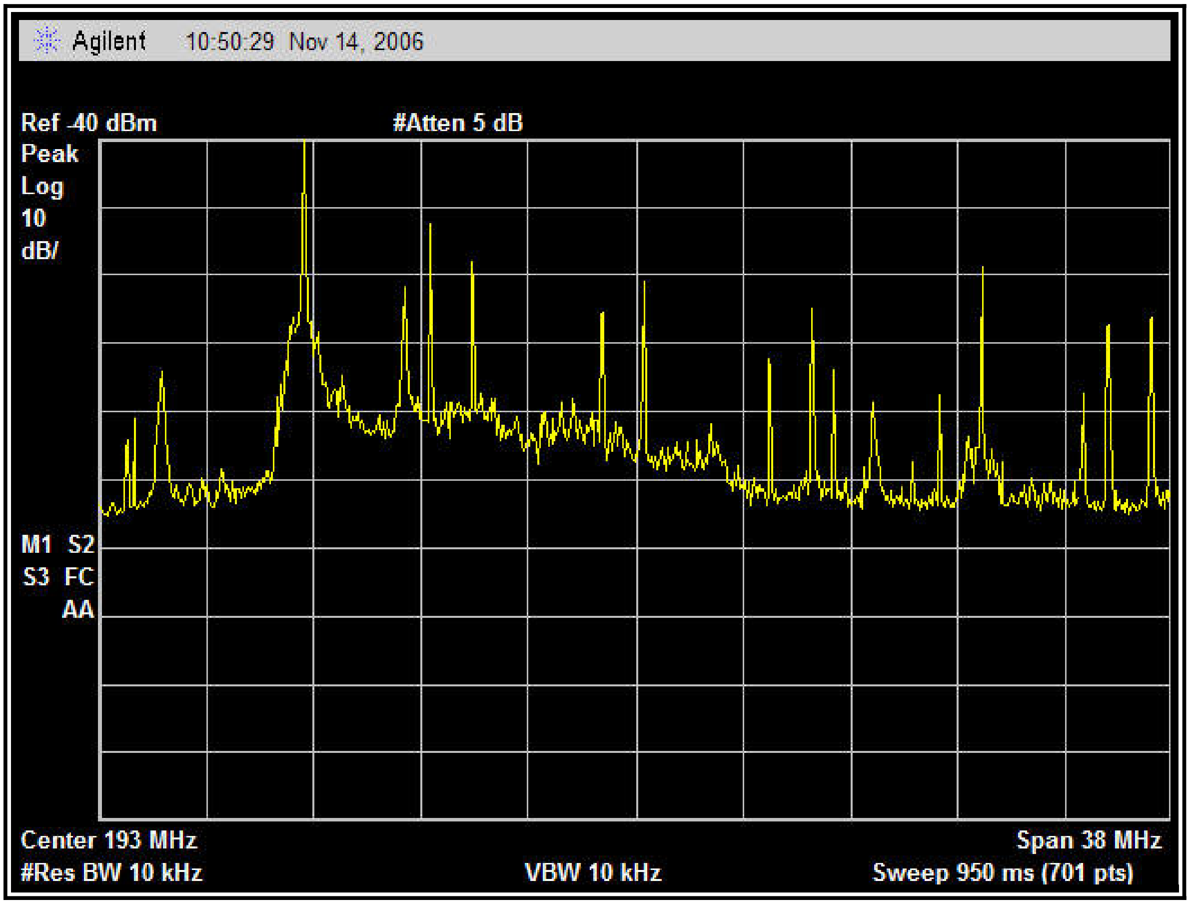
Azimuth: 0-360°

Figure 3.8-2 Spectrum Photographs

TP8: Bellmont Center, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 50' 55.89" W74° 07' 50.25"

VHF High Band Channels 7-13

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
181	-38.4

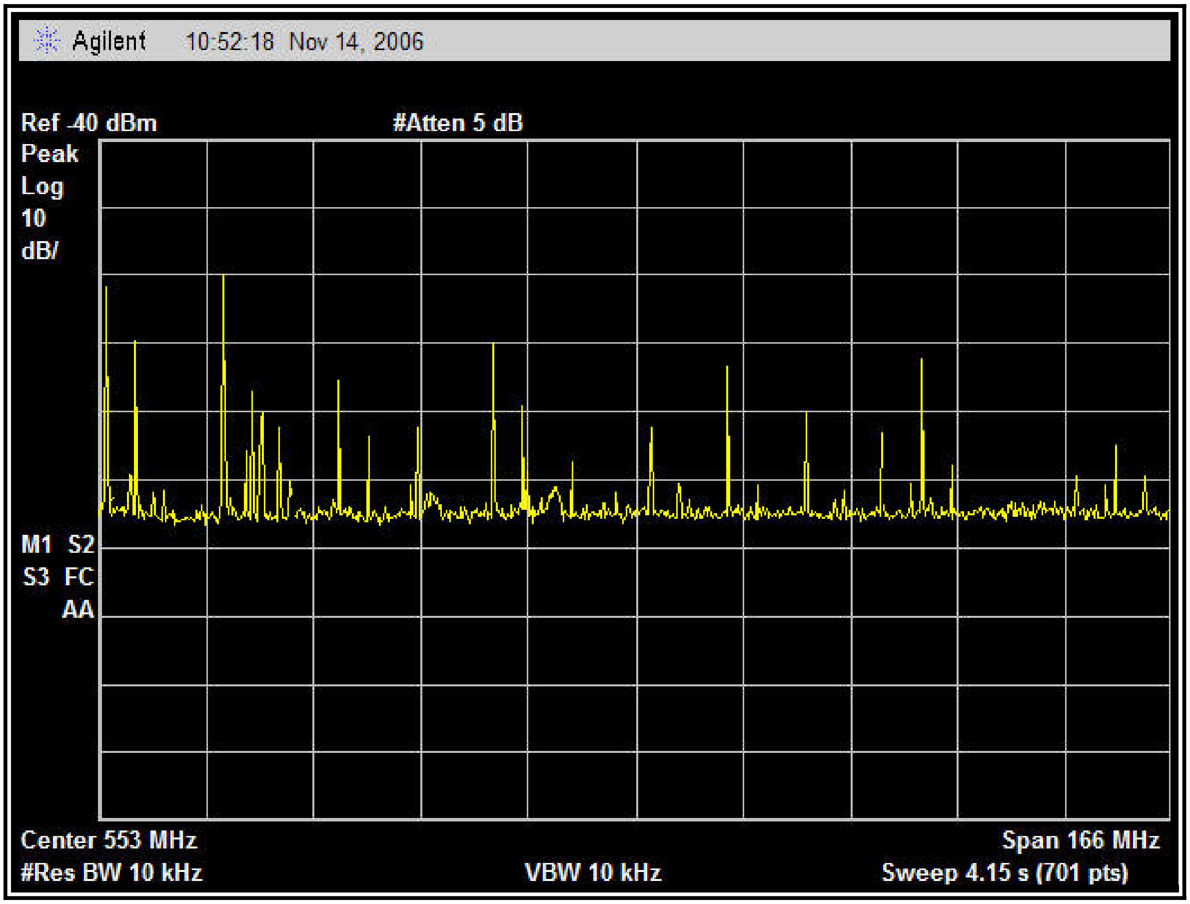
Azimuth: 0-360°

Figure 3.8-3 Spectrum Photographs

TP8: Bellmont Center, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 50' 55.89" W74° 07' 50.25"

UHF Band Channels 14-41

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
489	-61.25

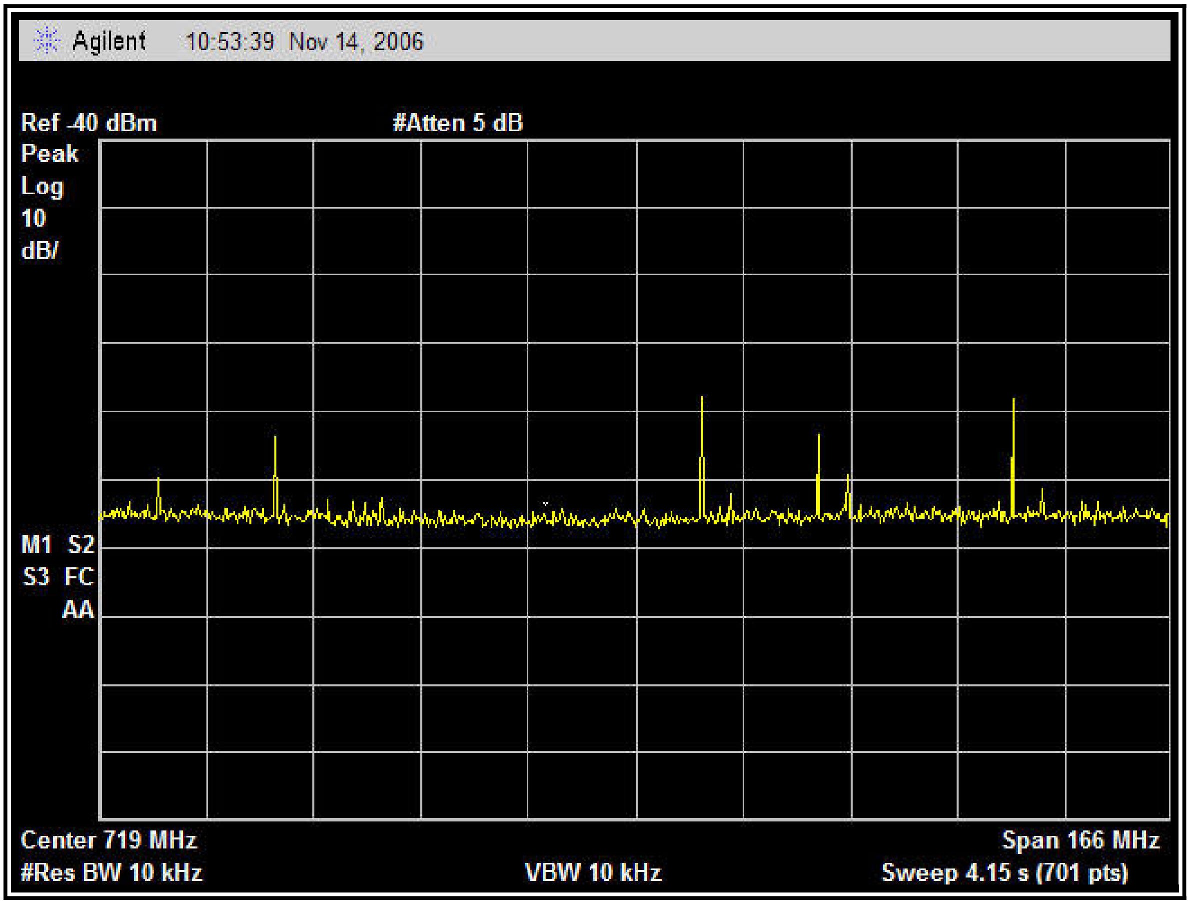
Azimuth: 0-360°

Figure 3.8-4 Spectrum Photographs

TP8: Bellmont Center, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 50' 55.89" W74° 07' 50.25"

UHF Band Channels 42-69

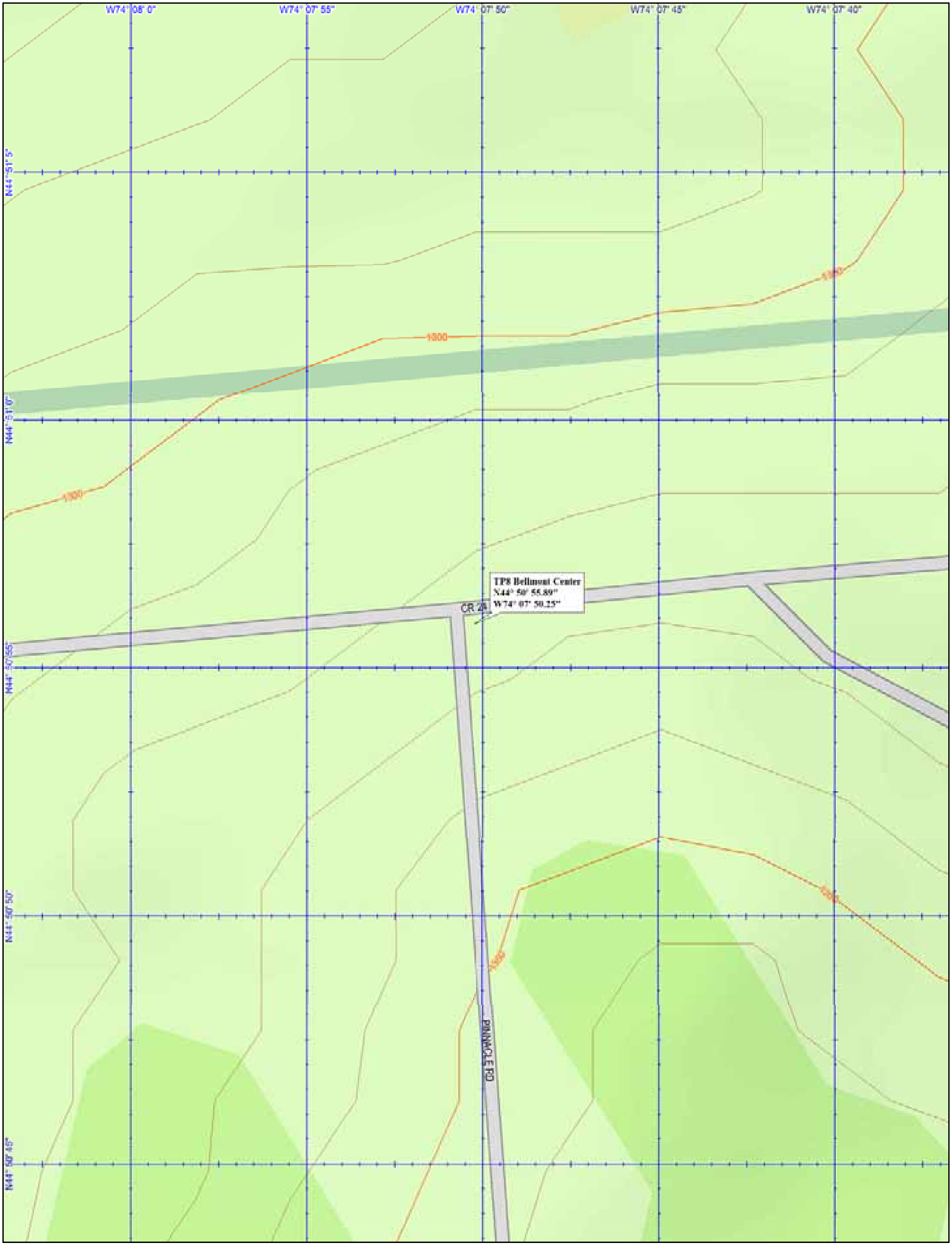
TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
729	-78.0

Azimuth: 0-360°

Figure 3.8-5 Spectrum Photographs



Scale 1 : 3,200

1" = 266.7 ft Data Zoom 16-0

FIGURE 3.8-6

TP9: Inside Adirondack State Park, NY

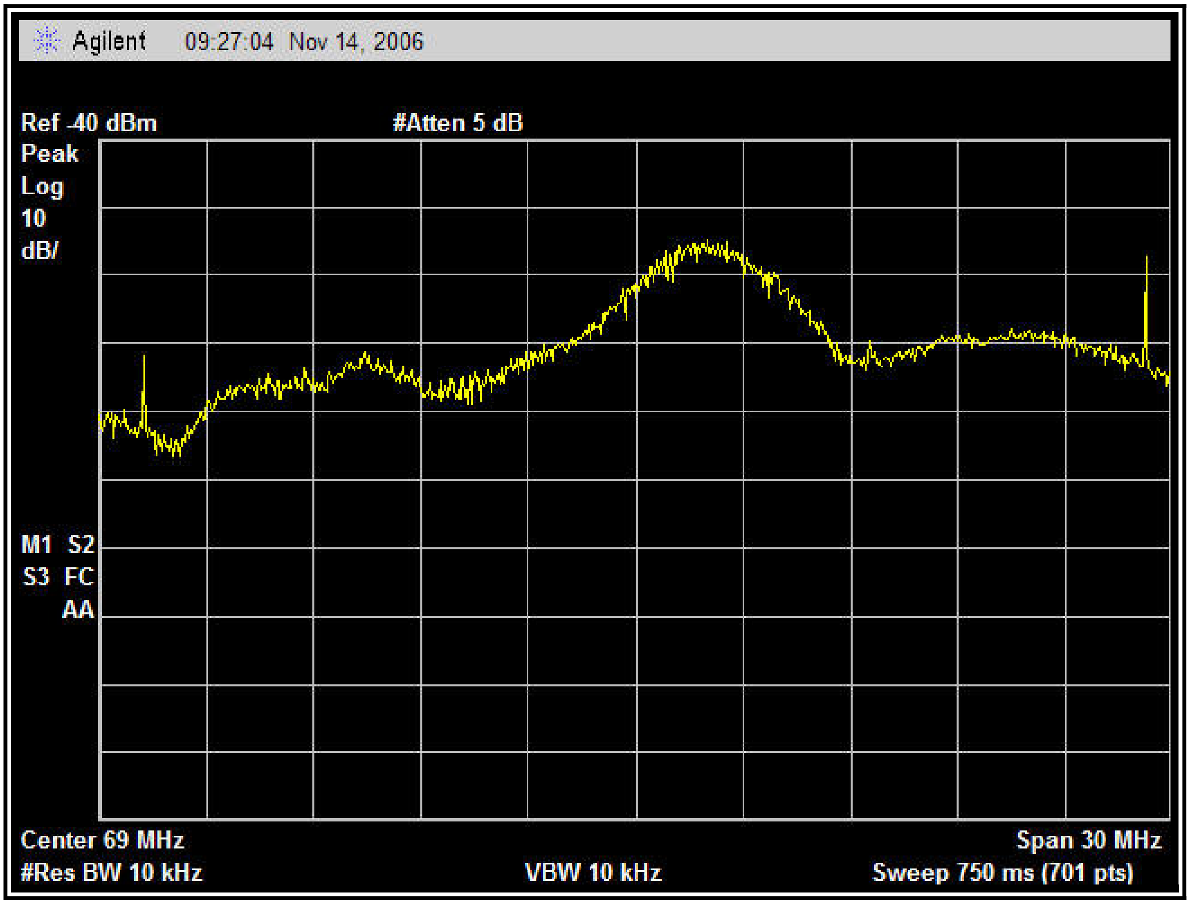
Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY

Figure 3.9-1 Site Photograph

TP9: Inside Adirondack State Park, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 50' 28.19" W74° 05' 24.34"

VHF Low Band Channels 2-6

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
83.3	-57.9

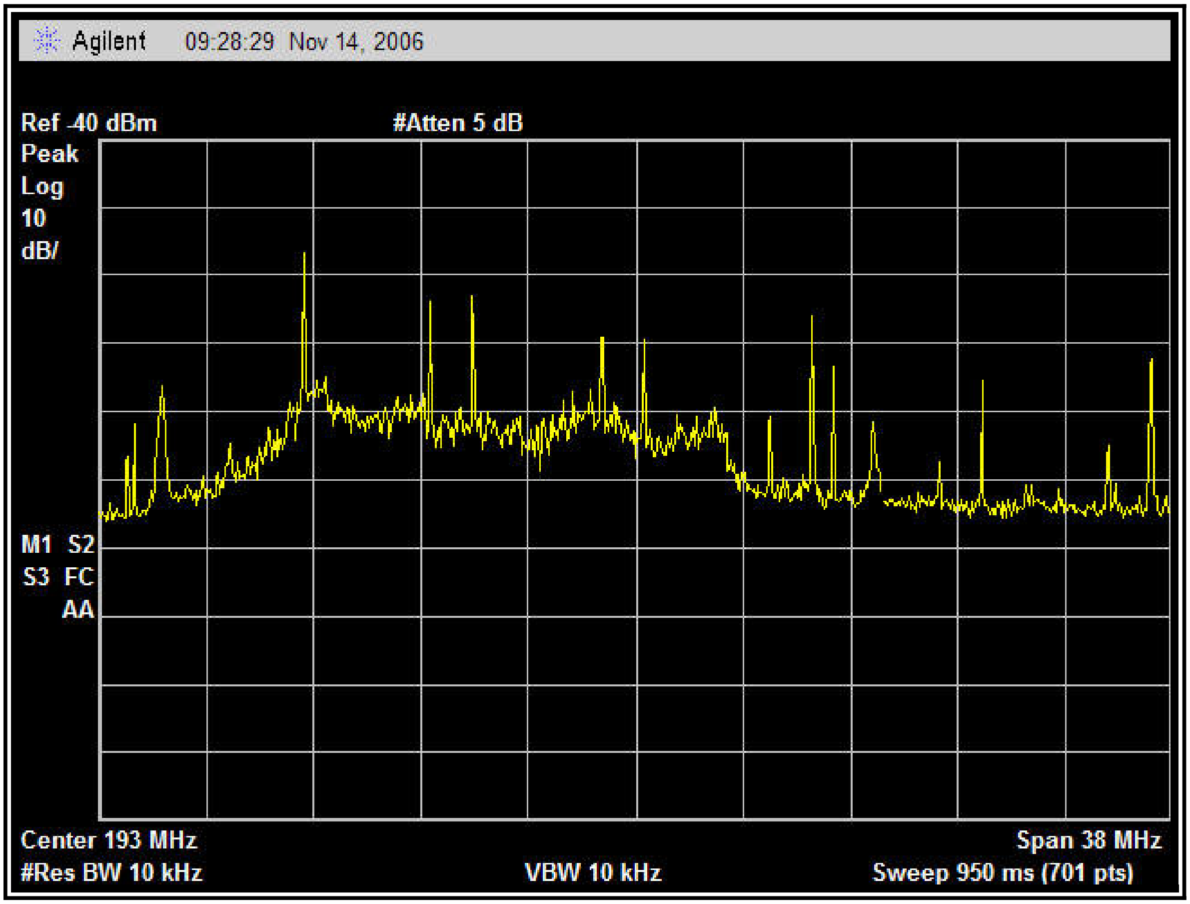
Azimuth: 0-360°

Figure 3.9-2 Spectrum Photographs

TP9: Inside Adirondack State Park, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 50' 28.19" W74° 05' 24.34"

VHF High Band Channels 7-13

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
181	-56.6

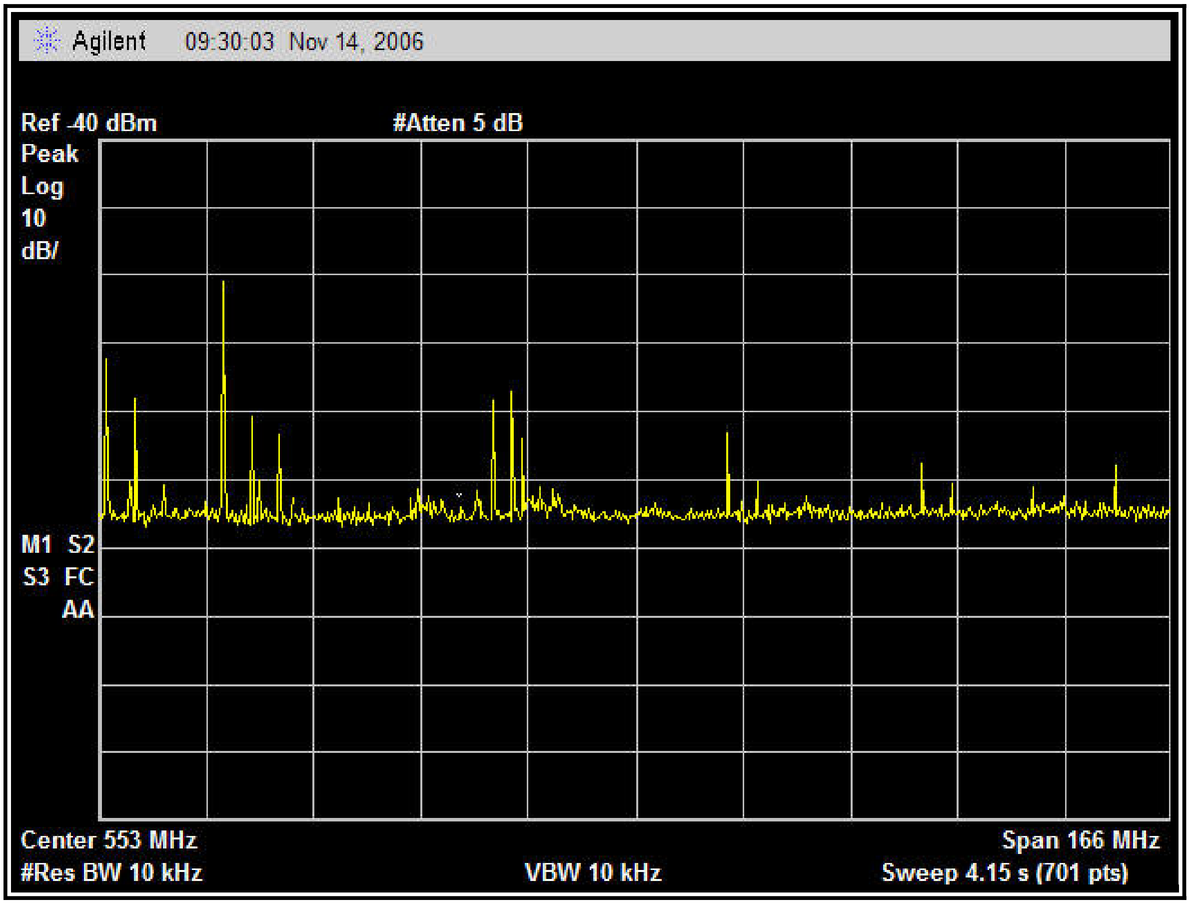
Azimuth: 0-360°

Figure 3.9-3 Spectrum Photographs

TP9: Inside Adirondack State Park, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 50' 28.19" W74° 05' 24.34"

UHF Band Channels 14-41

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
489	-62.7

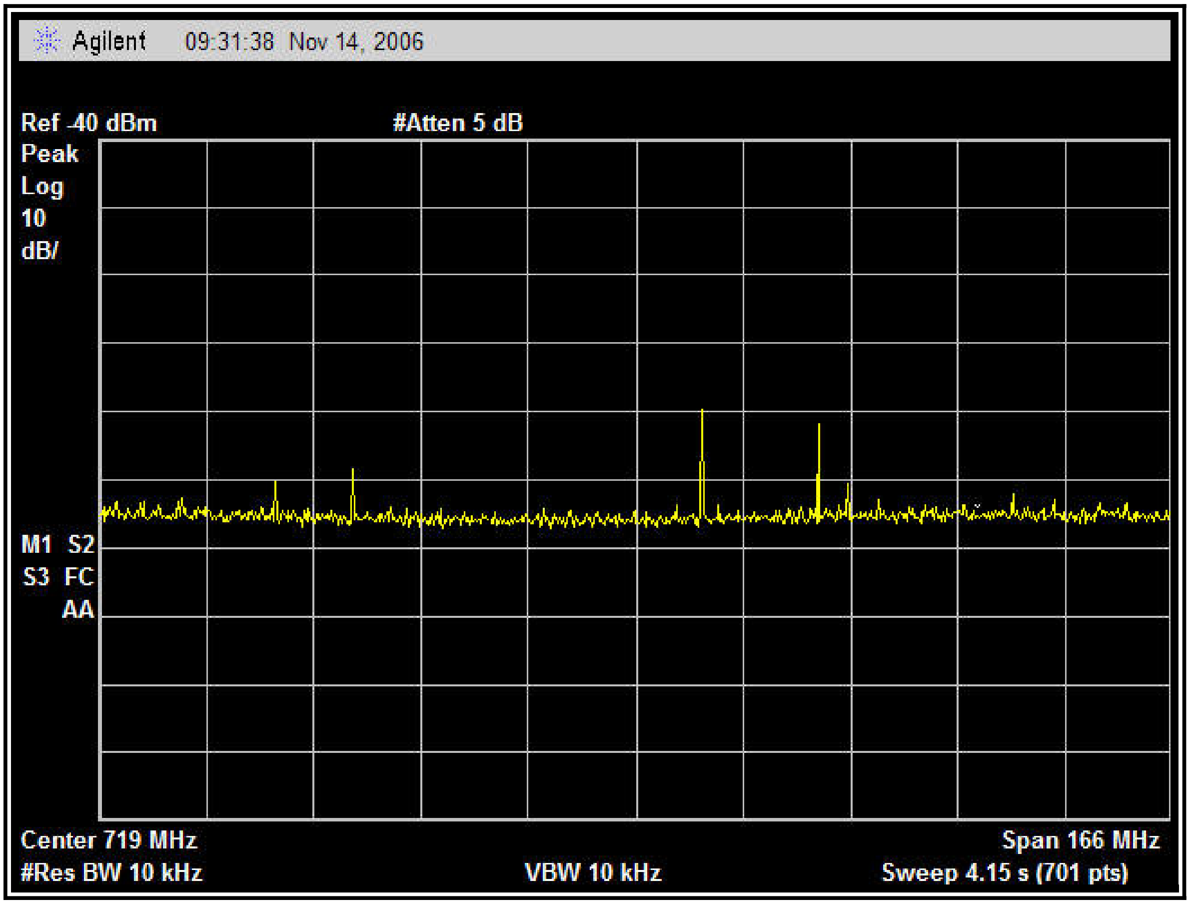
Azimuth: 0-360°

Figure 3.9-4 Spectrum Photographs

TP9: Inside Adirondack State Park, NY

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 50' 28.19" W74° 05' 24.34"

UHF Band Channels 42-69

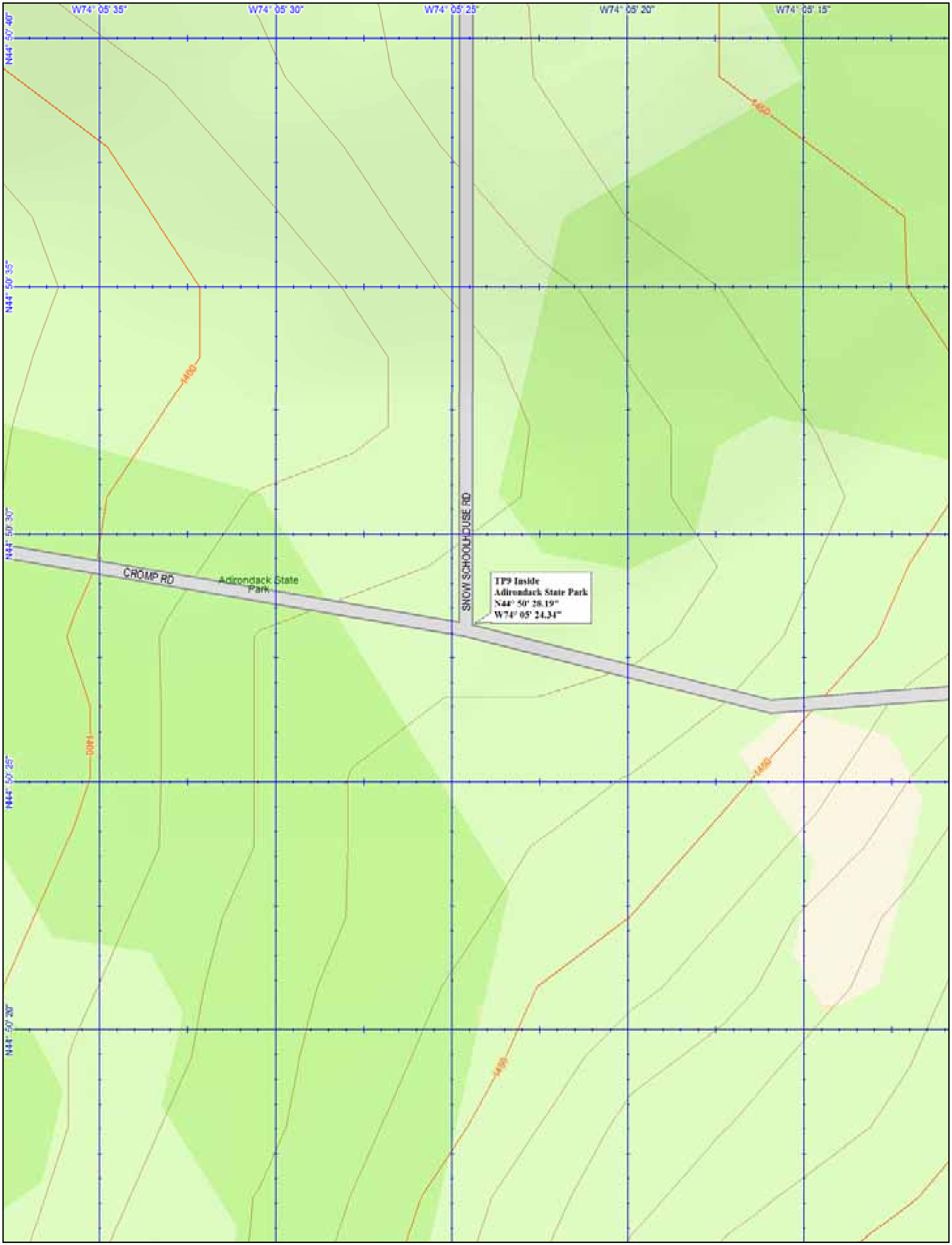
TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
747	-81.8

Azimuth: 0-360°

Figure 3.9-5 Spectrum Photographs



TN
MN (14.6°W)

FIGURE 3.9-6

Scale 1 : 3,200

0	80	160	240	320	400	ft
0	20	40	60	80	100	m

1" = 266.7 ft

Data Zoom 16-0

TP10: Inside Area of Interest

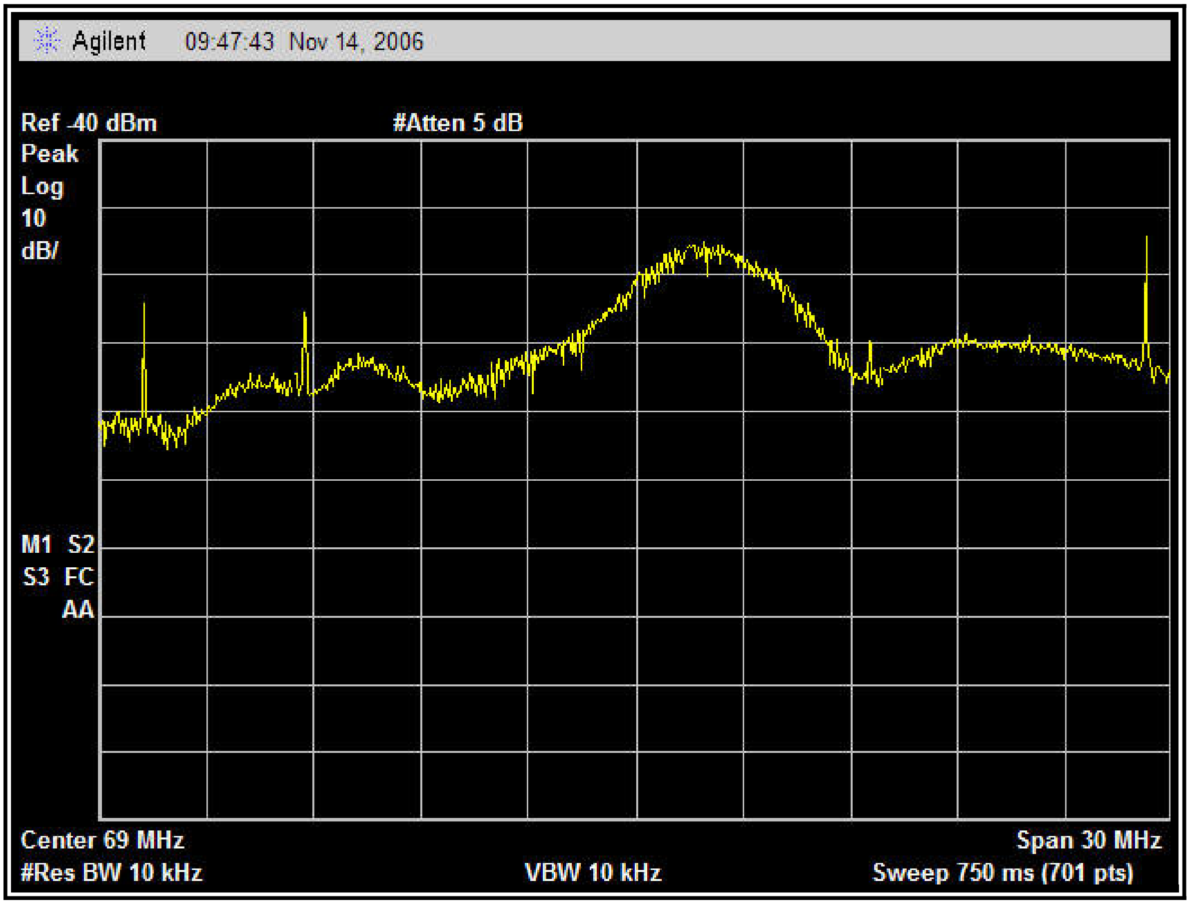
Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY

Figure 3.10-1 Site Photograph

TP10: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY


Agilent 09:47:43 Nov 14, 2006

Ref -40 dBm #Atten 5 dB

Center 69 MHz Span 30 MHz

#Res BW 10 kHz VBW 10 kHz Sweep 750 ms (701 pts)

Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 52' 44.39" W74° 05' 30.39"

VHF Low Band Channels 2-6

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
83.3	-54.7

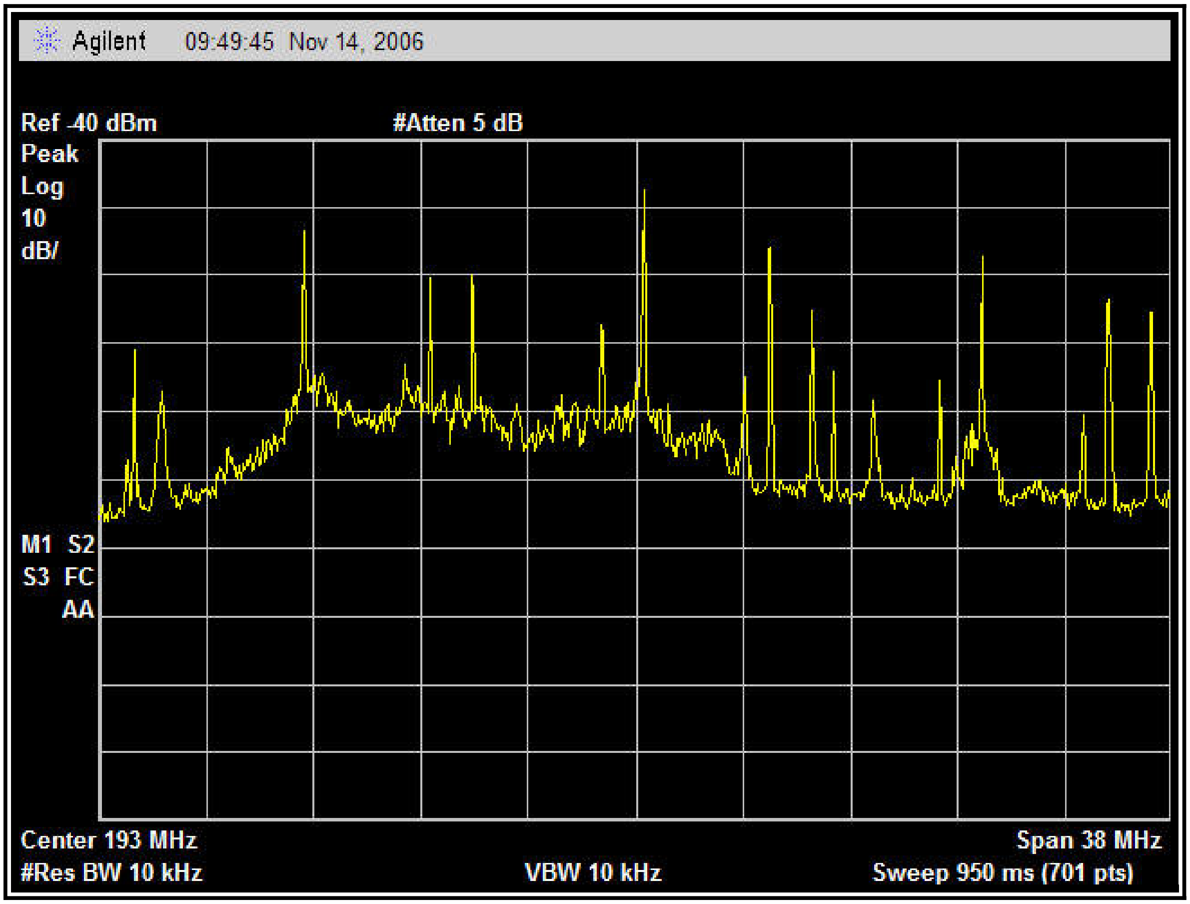
Azimuth: 0-360°

Figure 3.10-2 Spectrum Photographs

TP10: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 52' 44.39" W74° 05' 30.39"

VHF High Band Channels 7-13

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
193	-49.9

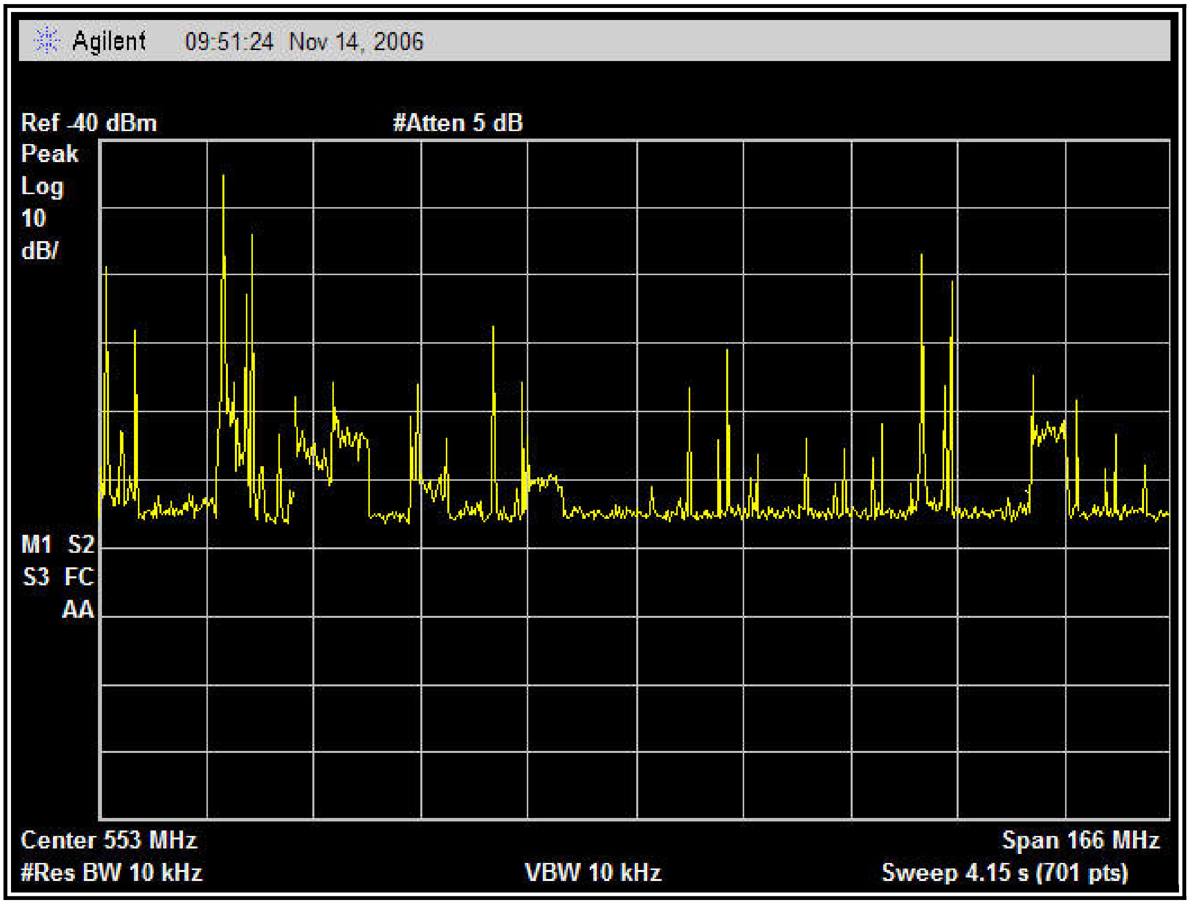
Azimuth: 0-360°

Figure 3.10-3 Spectrum Photographs

TP10: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Ref -40 dBm
#Atten 5 dB
Peak
Log
10
dB/
Center 553 MHz
Span 166 MHz
#Res BW 10 kHz
VBW 10 kHz
Sweep 4.15 s (701 pts)

Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 52' 44.39" W74° 05' 30.39"

UHF Band Channels 14-41

TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
489	-47.7

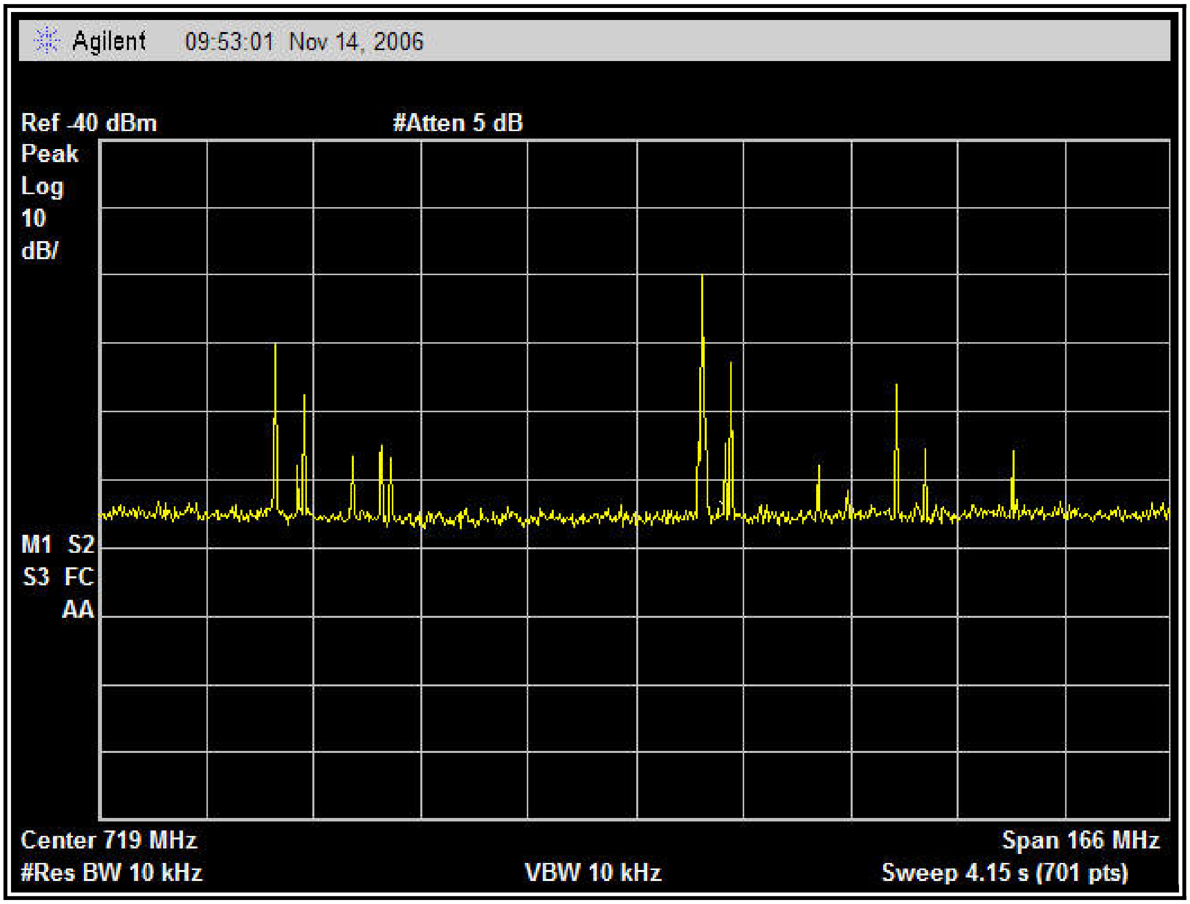
Azimuth: 0-360°

Figure 3.10-4 Spectrum Photographs

TP10: Inside Area of Interest

TV Broadcast

Jericho Rise Wind Farm, Towns of Chateaugay and Bellmont, Franklin County, NY



Date: 11/14/2006
Antenna Polarization: Horizontal
Antenna Centerline: 12 Feet
Coordinates: N44° 52' 44.39" W74° 05' 30.39"

UHF Band Channels 42-69

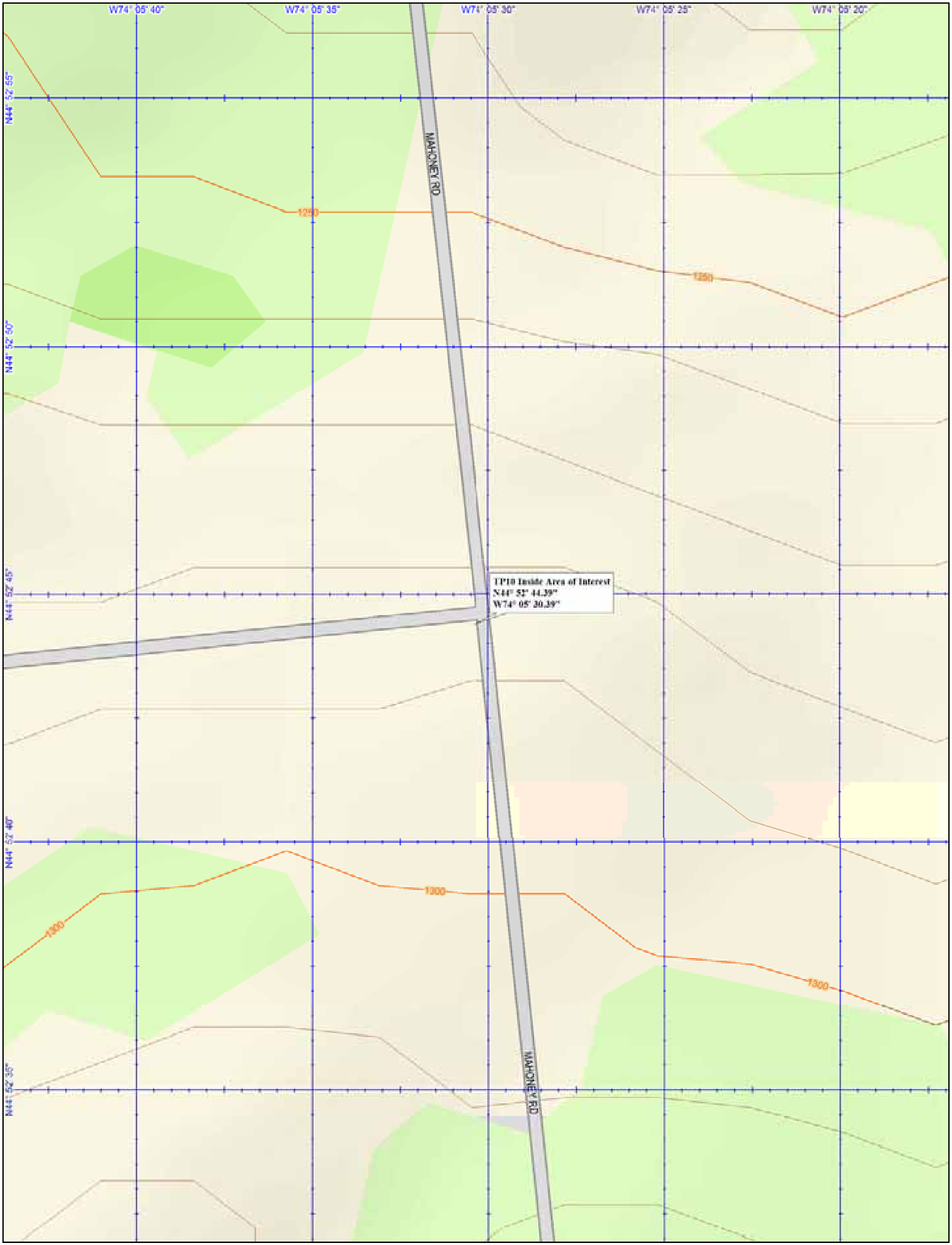
TV Broadcast

Highest Recorded Video Signal:

MHz	Level (dBmi)
729	-60.4

Azimuth: 0-360°

Figure 3.10-5 Spectrum Photographs



TN

MN (14.6°W)

Scale 1 : 3,200

0 80 160 240 320 400 ft

0 20 40 60 80 100 m

FIGURE 3.10-6

1" = 266.7 ft

Data Zoom 16-0

SECTION

FOUR

SECTION 4

SUMMARY OF RESULTS

The following is the summary of results for each test measurement location. The overall area is heavy forest with average elevations of 850-1500 feet AMSL. Cable Television is only available in communities along US highways and State highways. All other areas have to rely on either Off-air reception or Satellite reception. Off-air reception was generally limited to a minimum of four channels to a maximum of twenty channels. The primary transmitters are from Montreal, Canada. The Canadian Broadcast Corporation is available in all areas. U. S. nationwide broadcasters were not received at any of the Test Points except for Test Point 7 where all of the broadcaster were measured (ABC, CBS, NBC and Fox). All other channels are Independents and or City controlled low power transmitters. There are quite a few translators in use and is a compounding factor in determining a correct channel count. Off-air antennas were visible on approximately 40% of the residences and 40% were utilizing satellite systems. See Section 3 for the Site and Spectrum Photographs. Table 4.1-1 through Table 4.1-10 lists the results of the measurements.

4.1 TP1: Brainardsville, NY
Coordinates: N44° 51' 29.50” W74° 01' 53.81"

This test point was outside of the area of interest to the Southeast. The community is split between Tourism, Forestry and Farming. The site received six analog channels, four of which are suitable for viewing and two unsuitable for viewing. The four analog channels suitable for viewing are channels 9, 13, 17 and 57. The two analog channels unsuitable for viewing are channels 30 and 35. The primary transmitters are emanating from the Montreal, Canada area. The site received no digital channels. See table 4.1-1 for results of these measurements.

4.2 TP2: Inside Area of Interest
Coordinates: N44° 53' 10.10" W74° 03' 38.20"

This test point was inside the area of interest. The area is primarily Farming with some Forestry. The site received eight analog stations four of which are suitable for viewing and four unsuitable for viewing. The analog stations that are suitable for viewing are channels 10, 17, 35 and 57. The four analog channels unsuitable for viewing are channels 12, 14, 46 and 48. The primary transmitters are emanating from the Montreal, Canada area. The measurement site received one digital channel and was suitable for viewing. The digital channel that is suitable for viewing is channel 38. See table 4.2-1 for results of these measurements.

4.3 TP3: Chateaugay, NY
Coordinates: N44° 55' 26.22" W74° 04' 47.00"

This test point is outside of the area of interest. It is located to the North of the area of interest. It is a modest community primarily Farming with some Recreational influence. The site received eight analog channels five of which are suitable for viewing and three unsuitable for viewing. The analog channels that are suitable for viewing are channels 8, 10, 12, 17 and 35. The analog channels unsuitable for viewing are 14, 39 and 62. The primary transmitters are emanating from the Montreal, Canada area. The site received no digital channels. See table 4.4-1 for results of these measurements.

4.4 TP4: Thayer Corners, NY
Coordinates: N44° 55' 18.33" W74° 08' 26.64"

This test point is outside of the area of interest. It is located to the Northwest of the area of interest. It is a small community primarily Farming with some Recreational influence. The site received thirteen analog stations seven of which are suitable for viewing and six channels unsuitable for viewing. The seven analog channels that are suitable for viewing are 8, 10, 12, 14, 17, 35 and 57. The six analog channels unsuitable for viewing are 13, 18, 24, 39, 40 and 65. The primary transmitters are emanating from Montreal, Canada area. The site received one digital channel, it was suitable for viewing and that channel is 38. See table 4.4-1 for results of these measurements.

4.5 TP5: Burke, NY
Coordinates: N44° 54' 16.59" W74° 10' 9.27"

This test point is outside the area of interest. It is located to the WNW of the area of interest. It is a small community of Light Industry with some Farming. The site received fourteen analog stations seven of which are suitable for viewing and seven unsuitable for viewing. The seven analog channels that are suitable for viewing are 8, 10, 12, 17, 35, 46 and 57. The analog channels that are unsuitable for viewing are 14, 18, 24, 29, 48, 62 and 65. The primary transmitters are emanating from Montreal, Canada area. The site received one digital channel and it was suitable for viewing. The one digital channel suitable for viewing is channel 38. See table 4.5-1 for results of these measurements.

4.6 TP6: Malone Junction, NY
Coordinates: N44° 51' 31.86" W74° 15' 29.37"

This test point is outside the area of interest located to the West. The community is on the outskirts of Malone, NY and is a bustling little community with Light Industry and some Farming influence. The test site received nineteen analog stations with nine of them being suitable for viewing and ten unsuitable for viewing. The analog channels that are suitable for viewing are 8, 14, 17, 24, 30, 32, 39, 48 and 65. The analog channels unsuitable for viewing are channels 12, 13, 20, 28, 34, 35, 40, 43, 57 and 60. The primary transmitters are emanating from Montreal, Canada area. The site received two digital channels suitable for viewing. The two digital channels suitable for viewing are channels 25 and 62. See table 4.6-1 for results of these measurements.

4.7 TP7: Inside Area of Interest
Coordinates: N44° 51' 29.81" W74° 08' 38.69"

This test point is inside the test area and is primarily Farming. The site received twenty-three analog stations with eleven analog channels being suitable for viewing and twelve were unsuitable for viewing. The analog channels suitable for viewing are channels 8, 9, 10, 13, 14, 17, 30, 35, 39, 46 and 57. The analog channels unsuitable for viewing were analog channels 2, 4, 6, 12, 18, 24, 32, 43, 48, 60, 62 and 65. The primary transmitters are emanating from Montreal, Canada area. The site received two digital channels one of which is suitable for viewing and one was unsuitable for viewing. The digital channel suitable for viewing is channel 25 and the one digital channel unsuitable for viewing is channel 64. See table 4.7-1 for results of these measurements.

4.8 TP8: Bellmont Center, NY
Coordinates: N44° 50' 55.89" W74° 07' 50.25"

This test point is outside of the area of interest to the South. The community is primarily Farming with some Forestry and Tourism. The test site received twenty-two analog channels with six suitable for viewing and sixteen unsuitable for viewing. The analog channels suitable for viewing are 8, 12, 13, 14, 17 and 35. The analog channels unsuitable for viewing are 2, 6, 9, 10, 11, 24, 28, 30, 32, 34, 39, 40, 46, 47, 60 and 65. The primary transmitters are emanating from Montreal, Canada area. The site did not receive any digital channels. See table 4.8-1 for results of these measurements.

4.9 TP9: Inside Adirondack State Park, NY
Coordinates: N44° 50' 28.19" W74° 05' 24.34"

This test point is outside the area of interest inside the Adirondack State Park to the South of the area of interest. The area is primarily Farming with some Recreational influence. The site received nine analog stations none of which was suitable for viewing. The nine analog channels unsuitable for viewing are 8, 9, 11, 13, 14, 17, 40, 57 and 65. The primary transmitters are emanating from Montreal, Canada area. The test site did not receive any digital channels. See table 4.9-1 for results of these measurements.

4.10 TP10: Inside Area of Interest
Coordinates: N44° 52' 44.39" W74° 05' 30.39"

This test point is inside the area of interest. The test site is primarily farming. The site received nineteen analog stations, eleven of which are suitable for viewing and eight unsuitable for viewing. The analog channels suitable for viewing are 8, 10, 12, 13, 14, 17, 30, 35, 46, 57 and 62. The analog channels unsuitable for viewing are 2, 9, 29, 34, 39, 40, 48 and 65. The primary transmitters are emanating from Montreal, Canada area. The site received three digital channels all of which are unsuitable for viewing. The three digital channels that are unsuitable for viewing are 20, 38 and 64. See table 4.10-1 for results of these measurements.

Table 4.1-1
Numerical OFF-AIR Channel Results
TP1: Brainardsville, NY
Coordinates: N44° 51' 29.50" W74° 01' 53.81"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBmi)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
9	187.25	CKSH	325	69.61	-92.98	12	-63.0	15.5	-1.9	0	**-80.42**	0.00013	42.24142	3
13	211.25	W13DG	0.999	261.9	69.32	12	-64.8	15.5	-1.9	0	**-82.20**	0.00012	41.50892	3
17	489.25	CIVM	1334	25.41	49.59	12	-60.3	19.5	-3.9	0	**-83.70**	0.00023	47.30360	3
30	567.25	CFKS	92.3	69.61	92.98	12	-79.7	19.5	-3.9	0	**-103.10**	0.00003	29.18847	5
35	597.25	CFJP	697	25.41	49.59	12	-87.0	19.5	-3.9	0	**-110.40**	0.00001	22.33611	5
57	729.25	WCFE	794	147.08	13.41	12	-61.0	19.5	-3.9	0	**-84.40**	0.00032	50.07051	3

Table 4.2-1
Numerical OFF-AIR Channel Results
TP2: Inside Area of Interest
Coordinates: N44° 53' 10.10" W74° 03' 38.20"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
10	193.25	CFTM	325	27.89	48.5	12	-61.2	15.5	-1.9	0	**-78.60**	0.00016	44.33537	3
12	205.25	CFCF	325	27.89	48.5	12	-70.9	15.5	-1.9	0	**-88.30**	0.00006	35.15865	4
14	471.25	CJMT	595	287.83	77.06	12	-68.5	19.5	-3.9	0	**-91.91**	0.00009	38.76801	4
17	489.25	CIVM	1334	27.89	48.5	12	-47.7	19.5	-3.9	0	**-71.11**	0.00099	59.89360	1
35	597.25	CFJP	697	27.89	38.5	12	-63.6	19.5	-3.9	0	**-87.01**	0.00019	45.72611	2
38 Digital	615.25	WCFE	100	145.55	15.8	12	-52.7	19.5	-3.9	7.8	**-68.31**	0.00171	64.68402	1
46	663.25	NEW	10	251.07	66.5	12	-80.5	19.5	-4.6	0	**-104.60**	0.00003	29.04653	5
48	675.25	NEW	10	324.65	52.43	12	-87.7	19.5	-4.6	0	**-111.80**	0.00001	22.00228	5
57	729.25	WCFE	794	146.55	15.8	12	-38.2	19.5	0.0	7.8	**-49.90**	0.01692	84.57051	1

Table 4.3-1

Numerical OFF-AIR Channel Results

TP3: Chateaugay, NY

Coordinates: N44° 55' 26.22" W74° 04' 47.00"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
8	181.3	CJOH	260	308.76	28	12	-58.5	15.5	-1.9	0	**-75.90**	0.00021	46.48094	3
10	193.3	CFTM	325	30.39	46.68	12	-51.0	15.5	-1.9	0	**-68.40**	0.00053	54.53762	2
12	205.3	CFCF	325	30.39	46.68	12	-56.8	15.5	-1.9	0	**-74.20**	0.00029	49.26076	3
14	471.3	CJMT	595	286.14	75.41	12	-71.2	19.5	-3.9	0	**-94.60**	0.00006	36.07893	4
17	489.3	CIVM	1334	30.39	46.68	12	-42.8	19.5	-3.9	0	**-66.20**	0.00174	64.80449	1
35	597.3	CFJP	697	30.39	46.68	12	-53.7	19.5	-3.9	0	**-77.10**	0.00061	55.63684	1
39	621.3	CHLF	10	323.78	49.77	12	-40.9	19.5	-3.9	0	**-64.30**	0.00275	68.77901	4
62	759.3	NEW	5.5	283.54	32.91	12	-85.7	19.5	-4.6	0	**-109.83**	0.00002	24.99125	5

Table 4.4-1
Numerical OFF-AIR Channel Results
TP4: Thayer Corners, NY
Coordinates: N44° 55' 18.33" W74° 08' 26.64"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
8	181.3	CJOH	260	313.13	25.83	12	-49.3	15.5	-1.9	0	**-66.70**	0.00061	55.68094	2
10	193.3	CFTM	325	33.31	48.4	12	-52.2	15.5	-1.9	0	**-69.60**	0.00046	53.33762	3
12	205.3	CFCF	325	33.31	48.4	12	-60.3	15.5	-1.9	0	**-77.70**	0.00019	45.76076	3
13	211.3	CJOH	325	296.37	92.61	12	-74.0	15.5	-1.9	0	**-91.40**	0.00004	32.31097	5
14	471.3	CJMT	595	286.87	72.58	12	-65.4	19.5	-3.9	0	**-88.80**	0.00012	41.87893	3
17	489.3	CIVM	1334	33.31	48.4	12	-55.2	19.5	-3.9	0	**-78.60**	0.00042	52.40449	2
18	495.3	WNPI	661	230.1	46.15	12	-74.7	19.5	-3.9	0	**-98.10**	0.00004	33.01035	5
24	531.3	CICO	1495	296.37	92.61	12	-76.0	19.5	-3.9	0	**-99.40**	0.00004	32.31978	4
35	597.3	CFJP	697	33.31	48.4	12	-67.0	19.5	-3.9	0	**-90.40**	0.00013	42.33684	3

Table 4.4-1

Numerical OFF-AIR Channel Results

TP4: Thayer Corners, NY

Coordinates: N44° 55' 18.33" W74° 08' 26.64"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
38 Digital	615.3	WCFE	100	141.03	20.12	12	-76.6	19.5	-3.9	7.8	**-92.20**	0.00011	40.79472	1
39	621.3	CHLF	10	326.7	48.18	12	-93.0	19.5	-3.9	0	**-116.40**	0.00001	16.67901	6
40	627.3	WCWF	155	197.53	55.16	12	-87.4	19.5	-3.9	0	**-110.80**	0.00001	22.36249	6
57	729.3	WCFE	794	141.03	20.12	12	-61.4	19.5	-4.6	0	**-85.50**	0.00028	48.97111	2
65	777.3	W65CR	0.836	268.32	36.47	12	-84.0	19.5	-4.6	7.8	**-100.30**	0.00005	34.72476	4

Table 4.5-1
Numerical OFF-AIR Channel Results

TP5: Burke, NY

Coordinates: N44° 54' 16.59" W74° 10' 9.27"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
8	181.3	CJOH	260	317.18	25.68	12	-43.5	15.5	-1.9	0	**-60.90**	0.00119	61.48094	1
10	193.3	CFTM	325	33.87	50.16	12	-56.9	15.5	-1.9	0	**-74.30**	0.00027	48.63762	2
12	205.3	CFCF	325	33.87	50.16	12	-58.2	15.5	-1.9	0	**-75.60**	0.00025	47.86076	3
14	471.3	CJMT	595	288.08	71.6	12	-68.6	19.5	3.9	0	**-84.20**	0.00021	46.47893	4
17	489.3	CIVM	1334	33.87	50.16	12	-45.0	19.5	3.9	0	**-60.60**	0.00331	70.40449	1
18	495.3	WNPI	661	230.1	44.32	12	-79.3	19.5	3.9	0	**-94.90**	0.00006	36.21035	5
24	531.3	CICO	1495	297.4	91.9	12	-80.0	19.5	3.9	0	**-95.60**	0.00006	36.11978	5
29	561.3	CFTU	10	32.93	39.37	12	-77.6	19.5	3.9	0	**-93.20**	0.00009	38.99689	5
35	597.3	CFJP	697	33.87	50.16	12	-55.5	19.5	3.9	0	**-71.10**	0.00121	61.63684	1

Table 4.5-1

Numerical OFF-AIR Channel Results

TP5: Burke, NY

Coordinates: N44° 54' 16.59" W74° 10' 9.27"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
38 Digital	615.3	WCFE	100	135.8	20.16	12	-79.6	19.5	3.9	7.8	**-87.40**	0.00019	45.59472	1
46	663.3	NEW	10	247.28	45.38	12	-70.8	19.5	4.6	0	**-85.70**	0.00025	47.94718	3
48	675.3	NEW	10	328.83	48.44	12	-83.1	19.5	4.6	0	**-98.00**	0.00006	35.80292	5
57	729.3	WCFE	794	135.8	20.16	12	-51.5	19.5	4.6	0	**-66.40**	0.00253	68.07111	1
62	759.3	NEW	5.5	33.89	51.49	12	-85.8	19.5	4.6	0	**-100.70**	0.00005	34.12125	5
65	777.3	W65CR	0.836	288.08	71.6	12	-87.5	19.5	4.6	0	**-102.40**	0.00004	32.62476	5

Table 4.6-1

Numerical OFF-AIR Channel Results

TP6: Malone Junction, NY

Coordinates: N44° 51' 31.86" W74° 15' 29.37"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
8	181.3	CJOH	260	329.17	25.58	12	-43.3	15.5	-1.9	0	**-60.70**	0.00121	61.68094	2
12	199.3	CFCF	325	35.74	55.25	12	-70.4	15.5	-1.9	0	**-87.80**	0.00006	35.40313	4
13	211.3	CJOH	325	300.42	89.6	12	-70.6	15.5	-1.9	0	**-88.00**	0.00006	35.71097	4
14	471.3	CJMT	595	291.67	68.56	12	-54.9	19.5	-3.9	0	**-78.30**	0.00042	52.37893	2
17	489.3	CIVM	1334	35.74	55.25	12	-59.0	19.5	-3.9	0	**-82.40**	0.00027	48.60449	2
20	507.3	NEW	0.4	260.31	60.35	12	-71.1	19.5	-3.9	0	**-94.50**	0.00007	36.81828	5
24	531.3	CICO	1495	300.42	89.6	12	-77.1	19.5	-3.9	0	**-100.50**	0.00004	31.21978	2
25 Digital	537.3	CBOT	165	300.42	89.6	12	-70.9	19.5	-3.9	7.8	**-86.50**	0.00018	45.31732	1
28	555.3	WNYF	0.95	276.02	30.86	12	-84.4	19.5	-3.9	0	**-107.80**	0.00002	24.30354	5

Table 4.6-1
Numerical OFF-AIR Channel Results
TP6: Malone Junction, NY
Coordinates: N44° 51' 31.86" W74° 15' 29.37"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
30	567.3	CIVO	1543	300.42	89.6	12	-68.1	19.5	-3.9	0	**-91.50**	0.00011	40.78924	2
32	579.3	NEW	100	291.67	68.56	12	-71.1	19.5	-3.9	0	**-94.50**	0.00008	37.97106	3
34	591.3	NEW	20	300.42	89.6	12	-76.6	19.5	-3.9	0	**-100.00**	0.00004	32.64914	4
35	597.3	CFJP	697	35.74	55.25	12	-76.3	19.5	-3.9	0	**-99.70**	0.00004	33.03684	4
39	621.3	CHLF	10	335.03	49.16	12	-66.6	19.5	-3.9	0	**-90.00**	0.00014	43.07901	3
40	627.3	WCWF	155	192.61	49.46	12	-78.1	19.5	-3.9	0	**-101.50**	0.00004	31.66249	4
43	645.3	NEW	NA	291.67	68.56	12	-77.7	19.5	-4.6	0	**-101.80**	0.00004	31.60822	4
48	675.3	NEW	10	335.03	49.16	12	-71.0	19.5	-4.6	0	**-95.10**	0.00009	38.70292	3
57	729.3	WCFE	794	121.45	21.62	12	-69.3	19.5	-4.6	0	**-93.40**	0.00011	41.07111	4

Table 4.6-1

Numerical OFF-AIR Channel Results

TP6: Malone Junction, NY

Coordinates: N44° 51' 31.86" W74° 15' 29.37"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
60	747.3	CFMT	1275	291.67	68.56	12	-72.4	19.5	-4.6	0	**-96.50**	0.00008	38.18288	4
62 Digital	759.3	CBOFT	550	300.42	89.6	12	-89.8	19.5	-4.6	7.8	**-106.10**	0.00003	28.72125	1
65	777.3	W65CR	0.836	276.02	30.86	12	-70.2	19.5	-4.6	0	**-94.30**	0.00011	40.72476	3

Table 4.7-1

Numerical OFF-AIR Channel Results

TP7: Inside Area of Interest

Coordinates: N44° 51' 29.81" W74° 08' 38.69"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
2	55.3	WGBH (PBS)	72.4	189	12.35	12	-67.0	15.5	-2.0	0	**-84.50**	0.00002	27.56749	5
4	67.3	WBZ (CBS)	60.3	189	12.35	12	-66.0	15.5	-2.0	0	**-83.50**	0.00003	30.27329	5
6	83.3	WCVB (ABC)	61.7	189	12.35	12	-56.5	15.5	-2.0	0	**-74.00**	0.00012	41.62588	5
8	181.3	WHDH (NBC)	316	184	12.17	12	-57.2	15.5	-1.9	0	**-74.60**	0.00024	47.78094	2
9	187.3	WMUR (ABC)	282	330	39.57	12	-60.4	15.5	-1.9	0	**-77.80**	0.00018	44.86374	3
10	193.3	WJAR (NBC)	316	186	43.17	12	-54.8	15.5	-1.9	0	**-72.20**	0.00034	50.73762	3
12	205.3	WENH (NHP TV)	316	359	47.55	12	-70.0	15.5	-1.9	0	**-87.40**	0.00006	36.06076	4
13	211.3	WPRI (CBS)	316	186	42.32	12	-68.5	15.5	-1.9	0	**-85.90**	0.00008	37.81097	3
14	471.3	WPRI (CBS)	18 (in ?)	186	42.34	12	-56.2	19.5	-3.9	0	**-79.60**	0.00036	51.07893	2

Table 4.7-1
Numerical OFF-AIR Channel Results
TP7: Inside Area of Interest
Coordinates: N44° 51' 29.81" W74° 08' 38.69"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
17	489.3	WMFP (SAH)	1000	186	12.45	12	-53.9	19.5	-3.9	0	**-77.30**	0.00048	53.70449	1
18	495.3	WGBH (PBS)	700	189	12.35	12	-77.2	19.5	-3.9	0	**-100.60**	0.00003	30.51035	5
24	531.3	WCVB (ABC)	625	189	12.35	12	-72.1	19.5	-3.9	0	**-95.50**	0.00006	36.21978	4
25 Digital	537.3	WPXG (*i*)	2300	353	48.53	12	-75.4	19.5	-3.9	7.8	**-91.00**	0.00011	40.81732	1
30	567.3	WLWC (CBS)	350	164	50.91	12	-75.4	19.5	-3.9	0	**-98.80**	0.00005	33.48924	3
32	579.3	WUTF (Tele futura)	100	245	16.66	12	-76.7	19.5	-3.9	0	**-100.10**	0.00004	32.37106	4
35	597.3	WFXZ-CA (HSH)	26	186	12.45	12	-59.9	19.5	-3.9	0	**-83.30**	0.00030	49.43684	2
39	621.3	WFXT (FOX)	1950	185	12.72	12	-73.7	19.5	-3.9	0	**-97.10**	0.00006	35.97901	3
43	645.3	WUNI (UNI)	1150	249	28.42	12	-81.4	19.5	-4.6	0	**-105.50**	0.00002	27.90822	4

Table 4.7-1
Numerical OFF-AIR Channel Results
TP7: Inside Area of Interest
Coordinates: N44° 51' 29.81" W74° 08' 38.69"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
46	663.3	WLWC (CBS)	5000	164	50.91	12	-74.8	19.5	-4.6	0	**-98.90**	0.00005	34.74718	3
48	675.3	WUNI (UNI)	200	248	28.39	12	-83.3	19.5	-4.6	0	**-107.40**	0.00002	26.40292	4
57	729.3	WBZ (CBS)	825	189	12.35	12	-64.4	19.5	-4.6	0	**-88.50**	0.00020	45.97111	2
60	747.3	WFXT (FOX)	78	185	12.72	12	-75.4	19.5	-4.6	0	**-99.50**	0.00006	35.18288	4
62	759.3	WBPX (*i*)	300	186	12.45	12	-81.9	19.5	-4.6	0	**-106.00**	0.00003	28.82125	5
64 Digital	771.3	WPXG (*i*)	100	353	48.53	12	-95.0	19.5	-4.6	7.8	**-111.30**	0.00002	23.65745	3
65	777.3	WNEU (Telemundo)	80	330	39.62	12	-79.6	19.5	-4.6	0	**-103.70**	0.00004	31.32476	4

Table 4.8-1
Numerical OFF-AIR Channel Results
TP8: Bellmont Center, NY
Coordinates: N44° 50' 55.89" W74° 07' 50.25"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
2	55.3	CBFT	100	29.83	52.42	12	-64.5	15.5	-2.0	0	**-82.00**	0.00003	30.06749	5
6	83.3	CBMT	100	29.83	52.42	12	-54.8	15.5	-2.0	0	**-72.30**	0.00015	43.32588	5
8	181.3	CJOH	260	319.58	29.82	12	-38.4	15.5	-1.9	0	**-55.80**	0.00213	66.58094	2
9	187.3	W09AZ	0.013	163.3	70.84	12	-61.4	15.5	-1.9	0	**-78.80**	0.00016	43.86374	4
10	193.3	CFTM	325	29.83	52.42	12	-61.1	15.5	-1.9	0	**-78.50**	0.00017	44.43762	5
11	199.3	W11AW	0.006	176.02	82.7	12	-65.0	15.5	-1.9	0	**-82.40**	0.00011	40.80313	6
12	205.3	CFCF	325	29.83	52.42	12	-61.7	15.5	-1.9	0	**-79.10**	0.00017	44.36076	2
13	211.3	W13DG	0.999	261.78	64.42	12	-69.3	15.5	-1.9	0	**-86.70**	0.00007	37.01097	3
14	471.3	CJMT	595	290.47	74.66	12	-62.3	19.5	-3.9	0	**-85.70**	0.00018	44.97893	3

Table 4.8-1
Numerical OFF-AIR Channel Results
TP8: Bellmont Center, NY
Coordinates: N44° 50' 55.89" W74° 07' 50.25"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
17	489.3	CIVM	1334	29.83	52.42	12	-61.3	19.5	-3.9	0	**-84.70**	0.00021	46.30449	2
24	531.3	NEW	100	297.77	>100	12	-69.9	19.5	-3.9	0	**-93.30**	0.00008	38.41978	4
28	555.3	WNYF	0.95	276.15	37.17	12	-82.4	19.5	-3.9	0	**-105.80**	0.00002	26.30354	5
30	567.3	WBVT	30	94.57	52.64	12	-73.4	19.5	-3.9	0	**-96.80**	0.00006	35.48924	4
32	579.3	NEW	100	290.47	74.66	12	-80.4	19.5	-3.9	0	**-103.80**	0.00003	28.67106	5
34	591.3	NEW	617	172.53	41.01	12	-82.9	19.5	-3.9	0	**-106.30**	0.00002	26.34914	5
35	597.3	CFJP	697	29.83	52.42	12	-74.8	19.5	-3.9	0	**-98.20**	0.00005	34.53684	3
39	621.3	CHLF	10	329.27	52.71	12	-91.1	19.5	-3.9	0	**-114.50**	0.00001	18.57901	6
40	627.3	WCWF	155	199.8	50.55	12	-86.0	19.5	-3.9	0	**-109.40**	0.00002	23.76249	5

Table 4.8-1

Numerical OFF-AIR Channel Results

TP8: Bellmont Center, NY

Coordinates: N44° 50' 55.89" W74° 07' 50.25"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
46	663.3	NEW	10	252.68	45.85	12	-84.5	19.5	-4.6	0	**-108.60**	0.00002	25.04718	5
47	669.3	W14CK	50	108.5	68.44	12	-90.0	19.5	-4.6	0	**-114.10**	0.00001	19.62540	4
60	747.3	CFMT	1275	290.47	74.66	12	-86.5	19.5	-4.6	0	**-110.60**	0.00002	24.08288	5
65	777.3	W65CR	0.836	276.15	37.17	12	-78.3	19.5	-4.6	0	**-102.40**	0.00004	32.62476	4

Table 4.9-1
Numerical OFF-AIR Channel Results

TP9: Inside Adirondack State Park, NY

Coordinates: N44° 50' 28.19" W74° 05' 24.34"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
8	181.3	CJOH	260	317.48	31.53	12	-56.6	15.5	-1.9	0	**-74.04**	0.00026	48.34094	4
9	187.3	NEW	0.475	242.74	76.09	12	-63.1	15.5	-1.9	0	**-80.54**	0.00013	42.12374	5
11	199.3	W11AW	0.006	177.41	82.06	12	-67.6	15.5	-1.9	0	**-85.00**	0.00008	38.20313	6
13	211.3	W13DG	0.999	262.51	66.32	12	-72.4	15.5	-1.9	0	**-89.80**	0.00005	33.91097	4
14	471.3	NEW	435	290.35	76.71	12	-74.0	19.5	-3.9	0	**-97.41**	0.00005	33.26893	4
17	489.3	CIVM	1334	27.67	51.93	12	-62.0	19.5	-3.9	0	**-85.41**	0.00019	45.59449	4
40	627.3	WCWF	155	202.14	50.77	12	-88.0	19.5	-3.9	0	**-111.41**	0.00001	21.75249	5
57	729.3	WCFE	794	134.75	14.32	12	-82.0	19.5	4.6	0	**-96.90**	0.00008	37.57111	5
65	777.3	W65CR	0.836	276.64	39.2	12	-91.0	19.5	4.6	0	**-105.90**	0.00003	29.12476	5

Table 4.10-1
Numerical OFF-AIR Channel Results

TP10: Inside Area of Interest
Coordinates: N44° 52' 44.39" W74° 05' 30.39"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
2	55.3	CBFT	100	29.15	49.67	12	-65.4	15.5	-2.0	0	**-82.90**	0.00003	29.16749	4
8	181.3	CJOH	260	314.17	29.6	12	-53.9	15.5	-1.9	0	**-71.30**	0.00036	51.08094	3
9	187.3	W099B	0.013	165.27	72.32	12	-62.7	15.5	-1.9	0	**-80.10**	0.00013	42.56374	5
10	193.3	CFTM	325	29.15	49.67	12	-49.9	15.5	-1.9	0	**-67.30**	0.00061	55.63762	2
12	205.3	CFCF	325	29.15	49.67	12	-58.0	15.5	-1.9	0	**-75.40**	0.00025	48.06076	2
13	211.3	W13DG	0.999	260.27	66.63	12	-65.4	15.5	-1.9	0	**-82.80**	0.00011	40.91097	3
14	471.3	NEW	435	288.52	75.76	12	-60.4	19.5	-3.9	0	**-83.84**	0.00022	46.83893	3
17	489.3	CIVM	1334	29.15	49.67	12	-47.6	19.5	-3.9	0	**-71.00**	0.00100	60.00449	1
20 Digital	507.3	W20BA	9	272.82	38.91	12	-75.0	19.5	-3.9	7.8	**-90.60**	0.00011	40.71828	2

Table 4.10-1

Numerical OFF-AIR Channel Results

TP10: Inside Area of Interest

Coordinates: N44° 52' 44.39" W74° 05' 30.39"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
29	561.3	CFTU	10	28.13	48.96	12	-76.7	19.5	-3.9	0	**-100.10**	0.00004	32.09689	4
30	567.3	WBVT	30	97.11	50.95	12	-74.5	19.5	-3.9	0	**-97.90**	0.00005	34.38924	3
34	591.3	NEW	617	175.44	42.88	12	-81.6	19.5	-3.9	0	**-105.00**	0.00002	27.64914	5
35	597.3	CFJP	697	29.15	49.67	12	-56.9	19.5	-3.9	0	**-80.30**	0.00042	52.43684	1
38 Digital	615.3	WCFE	100	141.08	16.31	12	-75.4	19.5	-3.9	7.8	**-91.00**	0.00013	41.99472	2
39	621.3	CHLF	10	326.32	51.97	12	-82.0	19.5	-3.9	0	**-105.40**	0.00002	27.67901	4
40	627.3	WCWF	155	200.99	53.17	12	-83.6	19.5	-3.9	0	**-107.00**	0.00002	26.16249	5
46	663.3	NEW	10	251.02	48.31	12	-71.3	19.5	-4.6	0	**-95.43**	0.00008	38.21718	3

Table 4.10-1

Numerical OFF-AIR Channel Results

TP10: Inside Area of Interest

Coordinates: N44° 52' 44.39" W74° 05' 30.39"

TV Chan#	Video Freq (MHz)	Call Sign	Transmit Power (kW)	Azimuth (Degrees)	Distance (Miles)	Measured Height (Feet)	Measured Signal (dBm)	Ant. Gain (dB)	System Losses (dB)	Digital Correction (dB)	Adjusted Signal Level (dBm)	Field Strength (V/m)	Field Strength (dBuV/m)	Video Quality Rating
48	675.3	NEW	10	326.32	51.97	12	-86.0	19.5	-4.6	0	**-110.13**	0.00002	23.67292	4
57	729.3	WCFE	794	141.08	16.31	12	-60.4	19.5	-4.6	0	**-84.53**	0.00031	49.94111	2
62	759.3	NEW	5.5	29.17	49.68	12	-79.1	19.5	-4.6	0	**-103.23**	0.00004	31.59125	3
64 Digital	771.3	CBFT	1000	29.15	49.67	12	-95.0	19.5	-4.6	7.8	**-111.33**	0.00002	23.62745	2
65	777.3	W65CR	0.836	272.82	38.91	12	-86.0	19.5	-4.6	0	**-110.13**	0.00002	24.89476	5

SECTION

FIVE

SECTION FIVE

CONCLUSIONS

The proposed Jericho Rise Wind Farm is located in the Towns of Chateauguay and Bellmont in Franklin County, NY. The area is hilly with a predominance of forest cover and some farmland. The average elevation is 750 - 1500 feet AMSL. The Ten sites selected provide a broad coverage area around the Wind Energy Facility. The immediate communities surrounding the Wind Turbine Facility have small population densities and most of the communities contain less than 1000 people. Several conclusions about the area, around and in, the proposed Wind Energy Facility with respect to off-air TV reception are as follows.

- Cable television has penetrated some of the area. In those areas where cable is available it appears that most homes are utilizing the system. The cable television programming provided is considered very good.

- The majority of the off-air transmitters are located in the Montreal, Canada area. The other off-air TV transmitters that service the area are either low power or translators. Other full service transmitters are at distances in excess of 75 miles.

- Observations in the area indicated that approximately forty percent of the homes had off-air TV antennas and forty percent had Satellite antennas. Another observation noted most of the off-air antennas in use align to an azimuth towards Montreal. The off-air antennas in use appear to be installed below tree level and in need of repair. The four major networks are not represented (ABC, CBS, NBC and FOX) at any test sites with the exception of Test Point 7 where all the networks were received. The Canadian Broadcast Corporation (CBC) is available in all areas. The measurement sites, on average received eight analog stations and one digital station.

- The placement of the turbines inside the area of interest should produce very little affect to off-air reception in the communities to the North and West. Communities to the South and East may experience some issues receiving all of the channels they now receive. These areas are already limited with regard to off-air TV reception because of the hilly terrain and trees in the area.

Typically, a recommended solution for off-air TV reception issues caused by wind turbines is to advocate the use of cable television. In this case, this solution appears to be impractical for all areas that are affected because in many instances the homes are spread out by great distances. Cable television will only be a solution in the larger communities in the area. For the remote and sparsely populated areas that may be affected, satellite television systems would be the recommended choice given the topography and separation distance between homes of the areas. Satellite television reception is unaffected by the presence of wind turbines or hilly topography.

ATTACHMENTS

ATTACHMENT 1

CITE: 47CFR73.685

[Page 222-224]

TITLE 47--TELECOMMUNICATION

PART 73--RADIO BROADCAST SERVICES--Table of Contents

Subpart E--Television Broadcast Stations

Sec. 73.**685** Transmitter location and antenna system.

(a) The transmitter location shall be chosen so that, on the basis of the effective radiated power and antenna height above average terrain employed, the following minimum field strength in dB above one uV/m will be provided over the entire principal community to be served:

Channels 2-6	Channels 7-13	Channels 14-69
74 dBu	77 dBu	80 dBu

(b) Location of the antenna at a point of high elevation is necessary to reduce to a minimum the shadow effect on propagation due to hills and buildings which may reduce materially the strength of the station's signals. In general, the transmitting antenna of a station should be located at the most central point at the highest elevation available. To provide the best degree of service to an area, it is usually preferable to use a high antenna rather than a low antenna with increased transmitter power. The location should be so chosen that line-of- sight can be obtained from the antenna over the principal community to be served; in no event should there be a major obstruction in this path. The antenna must be constructed so that it is as clear as possible of surrounding buildings or objects that would cause shadow problems. It is recognized that topography, shape of the desired service area, and population distribution may make the choice of a transmitter location difficult. In such cases, consideration may be given to the use of a directional antenna system, although it is generally preferable to choose a site where a nondirectional antenna may be employed.

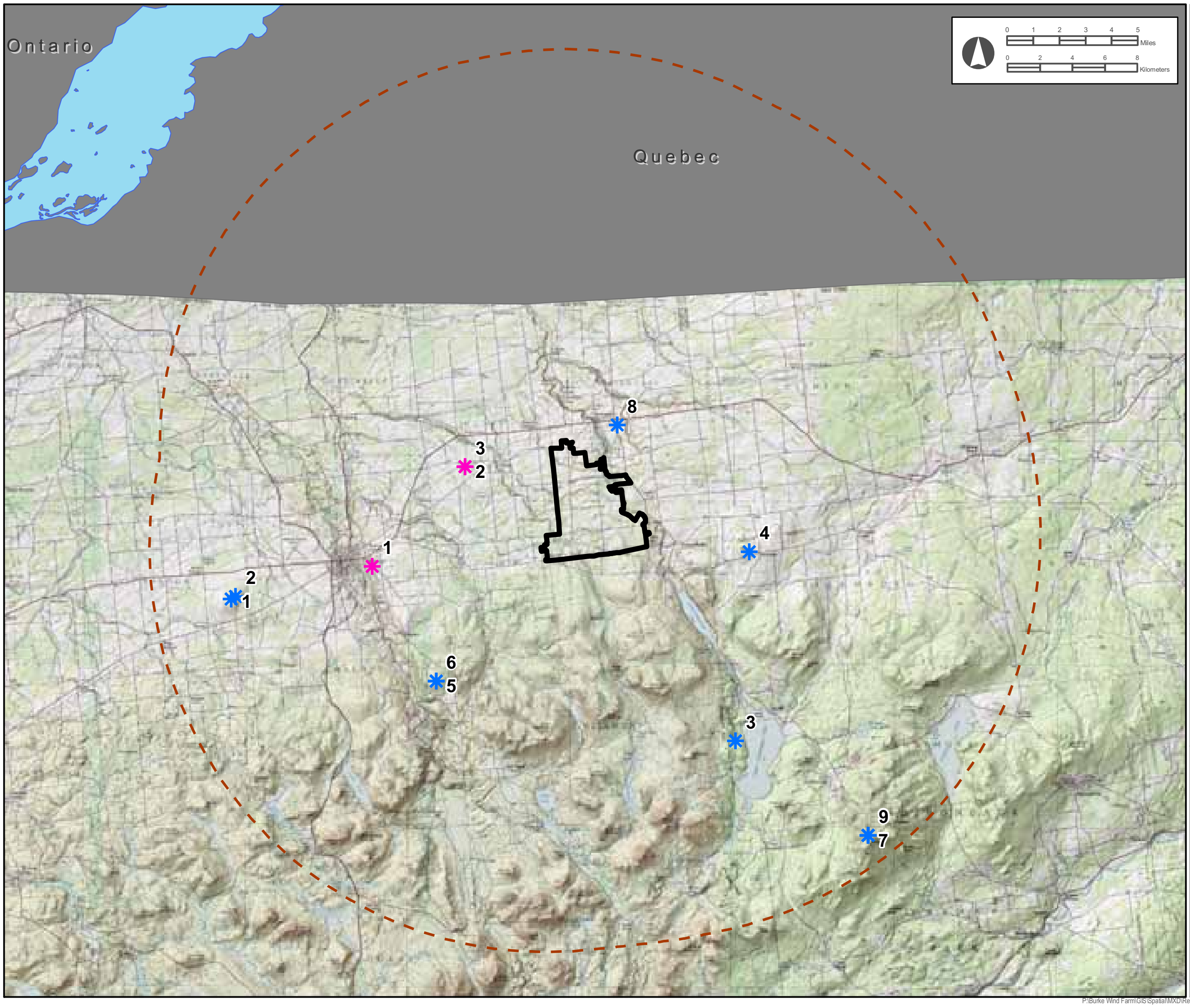
(c) In cases of questionable antenna locations it is desirable to conduct propagation tests to indicate the field strength expected in the principal community to be served and in other areas, particularly where severe shadow problems may be expected. In considering applications proposing the use of such locations, the Commission may require site tests to be made. Such tests should be made in accordance with the measurement procedure in Sec.
73.686, and full data thereon must be supplied to the Commission. Test transmitters should employ an antenna having a height as close as possible to the proposed antenna height, using a balloon or other support if necessary and feasible. Information concerning the authorization of site tests may be obtained from the Commission upon request.

(d) Present information is not sufficiently complete to establish ``blanket areas'' of television broadcast stations. A ``blanket area'' is that area adjacent to a transmitter in which the reception of other stations is subject to interference due to the strong signal from this station. The authorization of station construction in areas where blanketing is found to be excessive will be on the basis that the applicant will assume full responsibility for the adjustment of reasonable complaints arising from excessively strong signals of the applicant's station or take other corrective action.

(Secs. 4, 5, 303, 48 Stat., as amended, 1066, 1068, 1082 (47 U.S.C. 154, 155, 303))

[28 FR 13660, Dec. 14, 1963, as amended at 35 FR 5693, Apr. 8, 1970; 40 FR 25461, June 16, 1975; 43 FR 53740, Nov. 17, 1978; 44 FR 22740, Apr. 17, 1979; 45 FR 26065, Apr. 17, 1980; 47 FR 35990, Aug. 18, 1982; 48 FR 21486, May 12, 1983; 50 FR 23701, June 5, 1985; 58 FR 44951, Aug. 25, 1993; 62 FR 51059, Sept. 30, 1997]

AM/FM BROADCAST STATION IDENTIFICATION WITHIN 15 MILES OF JERICHO RISE WIND FARM



▭ Project Area Boundary

⌐ ¬ 15 mile Project Area Buffer

Stations

✳ FM

✳ AM

SOURCE:
COMSEARCH - WIND POWER
GEOPLANNER (TM) DECEMBER 2007.

USGS 100K TOPO
MASSENA, 1985; LAKE CHAMPLAIN
NORTH, 1986; N OF MASSENA;
N OF LAKE CHAMPLAIN NORTH

JERICHO RISE

TETRA TECH EC, INC.

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

AM/FM STATIONS

JERICHO RISE WIND FARM LLC
DECEMBER 2007

P:\Burke Wind Farm\GIS\Spatial\MXD\Revision_A01_101107\DEIS Figures\Comsearch\JRWF_AM_FM_8x11.mxd

AM/FM Stations Identified within 15 miles of the Jericho Rise Wind Farm

Table 1 Location of AM Radio Stations in Franklin County, NY within 15 miles of the Jericho Rise Wind Farm

Map ID	Call Sign	Frequency	CLASS	City	State	Tx-ERP	Distance
1	WICY	1490 kHz	C	MALONE	NY	1.0 kW	8.58 mi
2	WICY	1500 kHz	D	MALONE	NY	50.0 kW	4.86 mi
3	WICY	1500 kHz	D	MALONE	NY	43.0 kW	4.86 mi

Table 2 Location of FM Radio Stations in Franklin County, NY within 15 miles of the Jericho Rise Wind Farm

Map ID	Call Sign	Frequency	CLASS	City	State	Tx-ERP	Distance
1	WMHQ	90.1 MHz	A	MALONE	NY	2.7 kW	14.14 mi
2	WSLO	90.9 MHz	A	MALONE	NY	0.2 kW	13.96 mi
3	990809TB	91.9 MHz	D	WEEHAWKEN	NJ	0.01 kW	10.77 mi
4	WYUL	94.7 MHz	C2	CHATEAUGAY	NY	1.4 kW	6.49 mi
5	WYUL	94.7 MHz	C2	CHATEAUGAY	NY	50. kW	8.99 mi
6	WVNV	96.5 MHz	C3	MALONE	NY	16. kW	8.99 mi
7	W266AP	101.1 MHz	D	DANNEMORA	NY	0.004 kW	16.70 mi
8	W271BH	102.1 MHz	D	CHATEAUGAY	NY	0.01 kW	3.17 mi
9	WYZY	106.3 MHz	C2	SARANAC	NY	1.5 kW	16.71 mi

Data Source: Comsearch Wind Power GeoPlanner^{tm} 12/07

Appendix N
Complaint Resolution Procedure

Jericho Rise Wind Farm
Complaint Resolution Procedure

Prior to commencement of construction, the Applicant will communicate to neighboring residents, the Town, and permitting agencies the contact name and address of the Manager responsible for Community Relations and the Construction Manager (and, prior to the end of construction, the Operations Manager). The Applicant will also publish to the community its 1-800 number that will be accessed within 24 hours by constructions or operations personnel. The Applicant will consult with the Town Boards to determine the location of all areas where information regarding the Project, Project activities and Project contact information will be posted. These areas may include, but not be limited to, the respective Town Halls, local libraries, and Project construction trailers/offices.

Complaints by neighboring residents or others may be made through the following channels:

1. By calling the local or 1-800 number and speaking directly with construction and operations personnel in the field;
2. By writing to the Applicant at its local address or at its principal place of business; or
3. By making the complaint in person at the Applicant’s construction or operations building.

In the event that the Town receives complaints directly about unanticipated effects of operations of the wind facility following completion of the environmental review and the securing of all permits, the Town shall notify the Applicant within five (5) days in writing of the details of such complaint.

A log will be kept locally of the name and contact details of the complainant and the actions taken to resolve the complaint. This log will be available to the Town Board for inspection upon request.

In the event that the Applicant receives complaints, the Applicant will promptly investigate such complaints. Verification that a problem does exist will be determined by the Applicant within 60 days of receipt of the complaint. A report of each investigation shall be made available to the Town Board. In the event that the investigation determines that the complaint has identified a problem attributable to the construction, operation or maintenance of the Project, the Applicant will promptly work directly with the complainant and, in appropriate circumstances, the Town to resolve the identified problem. In the event that the identified problem is not resolved, or that a plan to resolve the problem is not under development within 30 days of the determination that a problem exists, the complainant may refer the matter to the Town Board. In such event the Town Board may by majority vote determine that no further measures are necessary or may require the Applicant and complainant to proceed with non-binding mediation with a mutually acceptable mediator. The Applicant will make every reasonable effort to resolve the complaint.

The Applicant shall implement the agreed-upon resolution actions.

Appendix O
Town of Bellmont Local Law

Local Law No. 2 of 2006

Be it hereby enacted by the Town Board of the Town of Bellmont as follows:

Section 1: Local Law No. 2 of 2006, entitled **"WIND ENERGY FACILITIES,"** is hereby adopted to read in its entirety as follows:

WIND ENERGY FACILITIES

Article I

§1 Title

This Local Law may be cited as the "Wind Energy Facility Law of the Town of Bellmont, New York."

§2 Purpose.

The Town Board of the Town of Bellmont adopts this Local Law to promote the effective and efficient use of the Town's wind energy resource through Wind Energy Conversion Systems (WECS), and to regulate the placement of such systems so that the public health, safety, and welfare will not be jeopardized.

§3 Authority

The Town Board of the Town of Bellmont enacts this Local Law under the authority granted by;

1. Article IX of the New York State Constitution, §2(c)(6) and (10).

2. New York Statute of Local Governments, § 10(1) and (7).

3. New York Municipal Home Rule Law, § 10 (1)(i) and (ii) and §10 (1)(a)(6), (11), (12), and (14).

4. New York Town Law §130(1)(Building Code), (3)(Electrical Code), (5)(Fire Prevention), (7)(Use of streets and highways), (7-a)(Location of Driveways), (11)(Peace, good order and safety), (15)(Promotion of public welfare), (15-a)(Excavated Lands), (16)(Unsafe buildings), (19)(Trespass), and (25)Building lines).

5. New York Town Law §135 and 138.

6. New York Town Law §64(17-a) protection of aesthetic interests), (23)(General powers).

§4. Findings.

The Town Board of the Town of Bellmont finds and declares that:

1. Wind energy is an abundant, renewable and nonpolluting energy resource of the Town and its conversion to electricity may reduce dependence on nonrenewable energy sources and decrease the air and water pollution that results from the use of conventional energy sources.

2. The generation of electricity from properly sited wind turbines, including small systems, can be cost effective, and in many cases existing power distribution systems can be used to transmit electricity produced.

3. Regulations of the siting and installation of wind turbines is necessary for the purpose of protecting the health, safety, and welfare of neighboring property owners and the general public.

4. Wind Energy Facilities represent significant potential aesthetic impacts because of their large size, lighting, and shadow flicker effects, if not properly sited.

5. If not properly regulated, installation of Wind Energy Facilities can create drainage problems through erosion and lack of sediment control for facility and access road sites, and harm farmlands through improper construction methods

6. Wind Energy Facilities may present a risk to bird and bat populations if not properly sited.

7. If not properly sited, Wind Energy Facilities may present risks to the property values of adjoining property owners.

8. Wind Energy Facilities may be significant sources of noise, which, if unregulated, can negatively impact adjoining properties.

9. Without proper planning, construction of Wind Energy Facilities can create traffic problems and damage local roads.

10. If improperly sited, Wind Energy Facilities can cause electromagnetic interference issues with various types of communications.

§5. Permits Required; Transfer; Modifications

A. All construction and any restoration or modifications of any Wind Energy Facility, WECS, Small Wind Energy Conversion System, Wind Measurement Tower or part thereof that is located in agricultural areas will be done to the extent practicable according to the New York State Dept. of Agriculture and Market Guidelines for Agricultural Mitigation for Windpower Projects, subject to landowner approval.

B. No Wind Energy Facility shall be constructed, reconstructed, modified, or operated in the Town of Bellmont except in compliance with this Local Law.

C. No WECS shall be constructed, reconstructed, modified, or operated in the Town of Bellmont except with a Wind Energy Permit approved pursuant to this Local Law.

D. No Wind Measurement Tower shall be constructed, reconstructed, modified, or operated in the Town of Bellmont except pursuant to a Wind Energy Permit issued pursuant to this local law.

E. No Small Wind Energy Conversion System shall be constructed, reconstructed, modified, or operated in the Town of Bellmont except pursuant to a Wind Energy Permit issued pursuant to this local law.

F. Exemptions. No permit or other approval shall be required under this Local Law for mechanical non-electrical WECS utilized solely for agricultural operations, provided the Town Board finds such proposed system or structure exempt or otherwise issues a waiver pursuant to provisions of Article V hereof. In considering an exemption, the Town Board shall find that the proposed location and height of such structure/system does not adversely affect the public health, safety and welfare of the adjoining parcels and property owners.

G. Transfer. No transfer of any Wind Energy Facility, Wind Energy Permit or sale of the entity holding the permit for such facility or the sale of more than 15% of the stock of said Permittee (not counting sales of shares on a public exchange), to a third party, will occur without prior approval of the Town. Said approval shall be granted only upon the Town Board finding that the Transferee has provided a written assumption of all the Transferor obligations under this Local Law of the Wind Energy Permit, including but not limited to the Host Agreement, Pilot Agreement, Decommission Fund and such other agreements relative to the Wind Energy Facility, in a form acceptable to the Town Attorney. No transfer shall reduce the Permitee or any other party total obligations owed to the Town under this Local Law, except in the manner as provided herein.,

H. Notwithstanding the requirements of this Section, replacement in kind or modification of a Wind Energy Facility may occur without Town Board approval when (1) there will no increase in Total Height; (2) no change in the location of the WECS; (3) no additional lighting or change in facility color; and (4) no increase in noise produced by the WECS.

§6 Definitions.

As used in this Local Law, the following terms shall have the meanings indicated:

EAF - Environmental Assessment Form used in the implementation of the SEQRA as that term is defined in Part 617 of Title 6 of the New York Codes, Rules and Regulations.

RESIDENCE - means any dwelling suitable for habitation existing in the Town of Bellmont on the date an application is received. A Residence may be part of a multi-dwelling or multipurpose building, but shall not include buildings such as hunting camps, hotels, hospitals, motels, dormitories, sanitariums, nursing homes, schools or other buildings used for educational purposes, or correctional institutions.

SEQRA - the New York State Environmental Quality Review Act and its implementing regulations in Title 6 of the New York Codes, Rules and Regulations, Part 617.

SOUND PRESSURE LEVEL -- means the level which is equaled or exceeded a stated percentage of time. An L_{10} - 50 dBA indicates that in any hour of the day 50 dBA can be equaled or exceeded only 10% of the time, or for 6 minutes. The measurement of the sound pressure level can be done according to the International Standard for Acoustic Noise Measurement Techniques for Wind Generators (IEC 6 1400-1 1), or other accepted procedures.

SITE - The parcel(s) of land where a Wind Energy Facility is to be placed. The Site can be publicly or privately owned by an individual or a group of individuals controlling single or adjacent properties. Where multiple lots are in joint ownership, the combined lots shall be considered as one for purposes of applying setback requirements. Any property, which has a Wind Energy Facility or has entered an agreement for said Facility or a setback agreement shall not be considered off-site.

SMALL WIND ENERGY CONVERSION SYSTEM ("Small WECS")-- A wind energy conversion system consists of a wind turbine, a tower, and associated control or conversion electronics, which has a rated capacity of not more than 100 kW and which is intended to primarily reduce consumption of utility power at that location.

TOTAL HEIGHT-- The height of the tower and the furthest vertical extension of the WECS. This is to be measured from pre-existing original grade.

WIND ENERGY CONVERSION SYSTEM (WECS)-- A machine that converts the kinetic energy in the wind into a usable form (commonly known as a wind turbine or windmill).

WIND ENERGY FACILITY--- Any Wind Energy Conversion System, Small Wind Energy Conversion System or Wind Measurement Tower, including all related infrastructure, electrical lines and substations, access roads and accessory structures to such systems.

WIND MEASUREMENT TOWER — a tower used for the measurement of meteorological data such as temperature, wind speed and wind direction.

WIND ENERGY PERMIT — A permit granted pursuant to this Local Law granting the holder the right to construct, maintain and operate a Wind Energy Facility.

§7. Applicability

A. The requirements of this Local Law shall apply to all Wind Energy Facilities proposed, operated, modified, or constructed after the effective date of this Local Law.

B. Wind Energy Facilities for which a required permit has been properly issued and upon which construction has commenced prior to the effective date of this Local Law, shall not be required to meet the requirements of this Local Law; provided, however, that

1. Any such preexisting Wind Energy Facility, which does not provide energy for a continuous period of twelve (12) months, shall meet the requirements of this Local Law prior to recommencing production of energy.

2. No modification or alteration to an existing Wind Energy Facility shall be allowed without full compliance with this Local Law.

3. Any Wind Measurement Tower existing on the effective date of this Local Law shall be removed no later than twenty-four (24) months after said effective date, unless a Wind Energy Permit for said Wind Energy Facility is obtained.

§~8-9 Reserved for Future Use

Article II

Wind Energy Conversion Systems

§10. Applications for Wind Energy Permits for Wind Energy Conversion Systems

An application for a Wind Energy Permit for individual WECS shall include the following:

1. Name, address, telephone number of the Applicant. If the Applicant is represented by an agent, the application shall include the name, address and telephone number of the agent as well as an original signature of the Applicant authorizing the representation.

2. Name, address, telephone number of the property owner. If the property owner is not the Applicant, the application shall include a letter or other written permission signed by the property owner (i) confirming that the property owner is familiar with the proposed applications and (ii) authorizing the submission of the application.

3. Address, or other property identification, of each proposed tower location, including Tax Map section, block and lot number.

4. A description of the project, including the number and maximum rated capacity of each WECS.

5. A plot plan prepared by a licensed surveyor or engineer drawn in sufficient detail to clearly describe the following.

(a) Property lines and physical dimensions of the Site;

(b) Location, approximate dimensions and types of major existing structures and uses on the Site, public roads, and adjoining properties within five hundred (500) feet of the boundaries of the proposed WECS Site.

(c) Location and elevation of each proposed WECS identified by specific I.D. #.

(d) Location of all above ground utility lines on the Site or within one radius of the Total Height of the WECS, transformers, power lines, interconnection point with transmission lines, and other ancillary facilities or structures.

(e) Location and size of structures above 35 feet within a five-hundred-foot radius of the proposed WECS. For purposes of this requirement, electrical transmission and distribution lines, antennas and slender or open lattice towers are not considered structures.

(f) To demonstrate compliance with the setback requirements of this Article, circles drawn around each proposed tower location equal to:

(i) One and a half time the tower height.
(ii) Five hundred foot perimeter/radius.
(iii) One Thousand foot perimeter/radius.

(g) Location of the all structures with dwelling units on the Site.

(h) Location of all structures with dwelling units located off-Site and within 1000 feet of the proposed WECS.

(i) All proposed facilities, including access roads, electrical lines, substations, storage or maintenance units, and fencing.

6. Vertical drawing of the WECS showing Total Height, turbine dimensions, tower and turbine colors, ladders, distance between ground and lowest point of any blade, location of climbing pegs, and access doors. One drawing must be submitted for each WECS of the same type and total height.

7. Landscaping Plan depicting existing vegetation and describing any areas to be cleared and the specimens proposed to be added, identified by species and size of specimen at installation and their locations.

8. Lighting Plan showing any FAA-required lighting and other proposed lighting. The application should include a copy of the determination by the Federal Aviation Administration to establish required markings and/or lights for the structure, but if such determination is not available at the time of the application, the Wind Energy Permit shall require the determination be provided prior to commencement of construction of the WECS.

9. List of property owners, with their mailing address, within 500 feet of the boundaries of the proposed Site. The Applicant must submit this list with the application.

10. Decommissioning Plan: The Applicant shall submit a decommissioning plan, which shall include: 1) the anticipated life of the WECS; 2) the estimated decommissioning costs in current dollars; 3) how said estimate was determined; 4) the method of ensuring that funds will be available for decommissioning and restoration; 5*)* acknowledgement that the decommissioning costs shall be re-estimated, by a licensed engineer, every three years, and that the decommissioning cost will be kept current indexed to inflation,; 6) the manner in which the WECS will be decommissioned and the Site restored, which shall include removal of all structures and debris to a depth of 4 feet, restoration of the soil, and restoration of vegetation (consistent and compatible with surrounding vegetation), except any fencing or residual minor improvements requested by the landowner and approved by the Town Board.

11. Complaint Resolution: The application will include a complaint resolution process to address complaints from nearby residents. The process may use an independent mediator or arbitrator and shall include a time limit for acting on a complaint. The Applicant shall make every reasonable effort to resolve any complaint.

12. An application shall include information relating to the construction/installation of the wind energy conversion facility as follows:
   (1) A construction schedule describing commencement and completion dates; and
   (2) Blasting schedule, if know and applicable at the time of application; and
   (3) A description of the routes to be used by construction and delivery vehicles, the gross weights and heights of those loaded vehicles.

13. Completed Part I of the Full EAF. (Environmental Assessment Form)

14. Applications for Wind Energy Permits for Wind Measurement Towers subject to this Local Law may be jointly submitted with the WECS application.

15. For each proposed WECS, include make, model, picture and manufacturers specifications, including noise decibel data. Include Manufacturers' Material Safety Data Sheet documentation for the type and quantity of all materials used in the operation of all equipment including, but not limited to, all lubricants and coolants.

16. If the Applicant agrees in writing in the application that the proposed WECS may have a significant adverse impact on the environment, the Town Board may issue a positive declaration of environmental significance.

17. If a positive declaration of environmental significance is determined by the SEQRA lead agency, the following information shall be included in the Draft Environmental Impact Statement (DEIS) prepared for a Wind Energy Facility. Otherwise, the following studies shall be submitted with the application:

   A. Shadow Flicker: The Applicant shall conduct a study on potential shadow flicker. The study shall identify locations where shadow flicker may be caused by the WECSs and the expected duration of the flicker at these locations. The study shall identify areas where shadow flicker may interfere with residential structures or dwellings and describe measures that shall be taken to eliminate or mitigate the problems.

B. Visual Impact: Applications shall include a visual impact study of the proposed WECS as installed, which may include a computerized photographic simulation, demonstrating any visual impacts from strategic vantage points. Color photographs of the proposed Site from at least two locations accurately depicting the existing conditions shall be included. The visual analysis shall also indicate the color treatment of the systems components and any visual screening incorporated into the project that is intended to lessen the system's visual prominence.

C. A fire protection and emergency response plan created in consultation with the fire department(s) having jurisdiction over the proposed Site.

D. Noise Analysis: A noise analysis by a competent acoustical consultant documenting the noise levels associated with the proposed WECS. The study shall document noise levels at property lines and at the nearest structures with dwelling units not on the Site (if access to the nearest such structures is not available, the Town Board may modify this requirement). The noise analysis shall include low frequency noise.

E. Property value analysis prepared by a licensed appraiser in accordance with industry standards, regarding the potential impact of values of properties neighboring WECS Sites.

F. An assessment of potential electromagnetic interference with microwave, radio, television, personal communication systems and other wireless communication.

18. The Applicant shall, prior to the receipt of a Wind Energy Permit, provide proof that it has a System Reliability Impact Study (SRIS) approved by the Operating Committee of the New York Independent System Operator

19. A statement, signed under penalties of perjury, that the information contained in the application is true and accurate.

§11. Application Review Process

A. Applicants may request a pre-application meeting with the Town Board or with any consultants retained by the Town Board for application review. Meetings with the Town Board shall be conducted in accordance with the Open Meetings Law.

B. Six copies of the application shall be submitted to the Town Clerk. Payment of all application fees shall be made at the time of application submission. If any waiver of any provision of this Article is requested then an application for a waiver and fee shall be submitted, together with the application for a WECS. The waiver application shall comply with Article V and provide in detail the requirement that is being requested to be waived and address the factors in Article V. All waiver requests shall be publicly noticed and shall be heard and may be considered with, prior to or concurrently with the Application for a Wind Energy Permit.

C. Town Clerk shall forward notice of the Application to the Town Board. The Town Board shall designate a Consultant to review the Application and direct the Clerk to forward a copy of the application to the Consultant. The Consultant shall, within 45 days of receipt review the application to determine if all information required under this local law has been provided. If the application is found not to comply the Consultant shall provide the Town Board a written statement detailing the missing information.

D. If the application is incomplete, the Town Board shall provide the Applicant with a written statement listing the missing information. No refund of application fees shall be made, but no additional application fee shall be required upon submittal of the additional information unless the number of WECS proposed is increased or the application is substantially changed, for the purpose of this provision adding additional properties to the WECS Site shall be deemed a substantial change. Upon a resubmission, the application shall be returned to the Consultant for his determination as provided subparagraph 11 (C) hereof, any additional fees for review by the Consultant, shall be paid by the Applicant.

E. Upon receipt of a notice from its Consultant that the application is complies with the requirements of this Article the Town Clerk shall transmit the application to the Town Board to schedule a hearing as required hereunder. No application shall be Noticed for Hearing until it has been found to comply with the provisions of this Article. The Consultant's finding that the application comply with the filing requirement of this Article shall be not a finding on the merits or sufficiency of the content in the application or otherwise preclude a review of the EAF or DEIS for SEQR process on the application, nor shall it restrict the need for further information for said SEQR process determination.

F. The Town Board shall hold at least one public hearing on the Application. The public hearing shall be held only after the Consultant has advised the Town Board that the application is complies with filing requirement of this article and the Town Board accepts the application. Notice of the application being found compliant, together with a summary of the application shall be given by first class mail to all property owners within 500 feet of the boundaries of any property where a WECSs is proposed (Site), and published in the Town's official newspaper, no less than ten nor more than twenty days before any public hearing, but, where any public hearing is adjourned by the Town Board to hear additional comments, no further publication or mailing shall be required, but in the discretion of the Town Board such additional notice as the Town Board may direct. The Applicant shall mail the Notice of Public Hearing prepared by the Town to all property owners within 500 feet of the Site, and shall submit an affidavit of service. The assessment roll of the Town shall be used to determine mailing addresses. The Town shall publish the Notice.

G. The public hearing for an Application hereunder may be combined with public hearings on any Environmental Impact Statement, other SEQR Process or requested waivers (see Article V).

H. SEQRA reviews. Applications for WECS are deemed Type I project under SEQRA.

I. The Town shall require an escrow agreement for the engineering and legal review of the applications and any environmental impact statements before commencing its review.

J. At the completion of the SEQRA review process, if a positive declaration of environmental significance has been issued and an environmental impact statement prepared, the Town shall issue a Statement of Findings, which Statement may also serve as the Town's decision on the applications.

K. Once the Town Board has accepted the application, held a public hearing, and completed the SEQRA process, the Town Board may then approve, approve with conditions, or deny the applications, in accordance with the standards in this Article.

§12. Standards for WECS

A. The following standards shall apply to all WECS, unless specifically waived by the Town Board as part of a Wind Energy Permit.

1. All power transmission lines from the tower to any building or other structure shall be located underground to the maximum extent practicable.

2. No television, radio or other communication antennas may be affixed or otherwise made part of any WECS, except pursuant to the Town Code. Applications may be jointly submitted for WECS and telecommunications facilities.

3. No advertising signs are allowed on any part of the Wind Energy Facility, including fencing and support structures.

4. Lighting of tower. No tower shall be lit except to comply with FAA requirements. Minimum security lighting for ground level facilities shall be allowed as approved on the Wind Energy Facility development plan.

5. All Applicants shall use measures to reduce the visual impact of WECS to the extent possible. WECS shall use tubular towers. All structures in a project shall be finished in a single, non-reflective matte finished color or a camouflage scheme. WECSs within a multiple WECS project shall be constructed using wind turbines whose appearance, with respect to one another, is similar within and throughout the Project, to provide reasonable uniformity in overall size, geometry, and rotational speeds. No lettering, company insignia, advertising, or graphics shall be on any part of the tower, hub, or blades.

6. The use of guy wires is prohibited.

7. No WECS shall be installed in any location where its proximity with existing fixed broadcast, retransmission, or reception antenna for radio, television, or wireless phone or other personal communication systems would produce electromagnetic interference with signal transmission or reception. No WECS shall be installed in any location along the major axis of an existing microwave communications link where its operation is likely to produce electromagnetic interference in the link's operation. If it is determined that a WECS is causing electromagnetic interference, the operator shall take the necessary corrective action to eliminate this interference including relocation or removal of the

facilities, or resolution of the issue with the impacted parties. Failure to remedy electromagnetic interference is grounds for revocation of the Wind Energy Permit for the specific WECS or WECS causing the interference.

8. All solid waste and hazardous waste and construction debris shall be removed from the Site and managed in a manner consistent with all appropriate rules and regulations.

9. WECS shall be designed to minimize the impacts of land clearing and the loss of open space areas. Land protected by conservation easements shall be avoided when feasible. The use of previously developed areas will be given priority wherever possible.

10. WECS shall be located in a manner that minimizes significant negative impacts on rare animal species in the vicinity, particularly bird and bat species.

11. Wind energy conversion facilities shall be located in a manner consistent with all applicable state and Federal wetland laws and regulations.

12. Storm-water run-off and erosion control shall be managed in a manner consistent with all applicable state and Federal laws and regulations.

13. The maximum Total Height of any WECS shall not exceed 400 feet from existing/original grade.

14. Construction of the WECS shall be limited to the hours of 7 a.m. to 7 p.m., except for certain activities that require work at other times during the day. The Town Board may impose reasonable conditions to any such change in work hours.

§13 Required Safety Measures

A. Each WECS shall be equipped with both manual and automatic controls to limit the rotational speed of the rotor blade so it does not exceed the design limits of the rotor.

B. Fencing: A six-foot-high (6’) fence with a locking portal shall be required to enclose each substation and each tower or group of towers, unless the applicant demonstrates in its Application that the Tower(s) is non-climbable and otherwise safe. The color and type of fencing for each WECS installation shall be determined on the basis of individual applications, as safety needs dictate.

C. Appropriate warning signs shall be posted. At least one sign shall be posted at the base of the tower warning of electrical shock or high voltage. A sign shall be posted on the entry area of fence around each tower or group of towers and any building (or on the tower or building if there is no fence), containing emergency contact information. The Town Board may require additional signs based on safety needs.

D. No climbing pegs or tower ladders shall be located closer than twelve (12’) feet to the ground level at the base of the structure for freestanding single pole or guyed towers.

E. The minimum distance between the ground and any part of the rotor or blade system shall be thirty (30') feet, provided it complies with all other provisions of this law.

F. WECSs shall be designed to prevent unauthorized external access to electrical and mechanical components and shall have access doors that are kept securely locked at all times.

§14 Traffic Routes

A. Construction of WECSs poses potential risks because of the large size construction vehicles and their impact on traffic safety and their physical impact on local roads. Construction and delivery vehicles for WECSs or the associated facilities shall use traffic routes established as part of the application review process. Factors in establishing such corridors shall include (1) minimizing traffic impacts from construction and delivery vehicles; (2) minimizing WECS related traffic during times of school bus activity; (3) minimizing wear and tear on local roads; and (4) minimizing impacts on local business operations. Wind Energy Permit conditions may limit WECS-related traffic to specified routes, and include a plan for disseminating traffic route information to the public.

B. The Applicant is responsible for remediation of damaged roads upon completion of the installation or maintenance of a WECS. A public improvement bond shall be posted prior to the issuance of any Wind Energy Permit in an amount, determined by the Town Board, sufficient to compensate the Town for any damage to local roads.

§15 Setbacks for Wind Energy Conversion Systems

A. The statistical sound pressure level generated by a WECS shall not exceed L_{10} - 50 dBA measured at the nearest Residence located off the Site. Sites can include more than one piece of property and the requirement shall apply to the combined properties. If the ambient sound pressure level exceeds 50 dBA, the standard shall be ambient dBA plus 5 dBA. Independent certification shall be provided before and after construction demonstrating compliance with this requirement.

B. In the event audible noise due to Wind Energy Facility operations contains a steady pure tone, such as a whine, screech, or hum, the standards for audible noise set forth in subparagraph 1) of this subsection shall be reduced by five (5) dBA. A pure tone is defined to exist if the one-third (1/3) octave band sound pressure level in the band, including the tone, exceeds the arithmetic average of the sound pressure levels of the two (2) contiguous one third (1/3) octave bands by five (5) dBA for center frequencies of five hundred (500) Hz and above, by eight (8) dBA for center frequencies between one hundred and sixty (160) Hz and four hundred (400) Hz, or by fifteen (15) dBA for center frequencies less than or equal to one hundred and twenty-five (125) Hz.

C. In the event the ambient noise level (exclusive of the development in question) exceeds the applicable standard given above; the applicable standard shall be adjusted so as to equal the ambient noise level. The ambient noise level shall be expressed in terms of the highest whole number sound pressure level in dBA, which is exceeded for more than five (5) minutes per hour. Ambient noise levels shall be measured at the exterior of potentially affected existing Residences, schools, hospitals, churches and public libraries. Ambient noise level measurement techniques shall employ all practical means of reducing the effect of wind generated noise at the microphone. Ambient noise level measurements may be performed when wind velocities at the proposed project Site are sufficient to allow wind turbine operation, provided that the wind velocity does not exceed thirty (30) mph at the ambient noise measurement location.

D. Any noise level falling between two whole decibels shall be the lower of the two.

E. Each WECS shall be setback from Site boundaries. All measurements shall be from the perimeter of the proposed Site, or from each proposed WECS, as applicable, and each of the following setbacks shall be met and maintained;

1. 500 feet from all Site Boundary lines, of which the first 100 feet shall be a green buffer zone to provide natural screening. For the purpose of this law a green buffer zone shall be defined as an area without structures and left naturally vegetated or *in an agricultural use.* Cutting and clearing within the green buffer zone is prohibited except *in connection with agricultural uses* or as necessary to construct and maintain Wind Energy Facility access roads and electric lines; and

2. 1200 feet from US Route 11 and NYS Route 374, and 500 feet from all other public roads; and

3. 1000 feet from the nearest off-Site Residence, measured from the exterior of such Residence. Notwithstanding any other provision of this Local Law regarding waivers or setback easements, no WECS shall be within 1000 feet of any Residence, whether or not said Residence is located in the Town of Bellmont; and

4. 1,200 feet from the property line of any Church (not to include church owned cemetery); school, hospital or nursing facility; and.

5. One and a half time the Total Height of the WECS from any existing non-WECS structure or any existing aboveground utilities, unless otherwise approved by the Town Board: and

§16. Issuance of Wind Energy Permits

A. Upon completion of the review process, the Town Board shall, upon consideration of the standard in this Local Law and the record of the SEQRA review, issue a written decision with the its findings in support of its approval, approval with conditions or disapproval, fully stated.

B. If approved, the Town Board will issue a Wind Energy Permit upon satisfaction of all conditions for said Permit, and upon Applicant demonstrating compliance with the Uniform Fire Prevention and Building Code and the other pre-construction conditions of this Local Law.

C. The decision of the Town Board shall be filed within 5 days in the office of the Town Clerk and a copy mailed to the Applicant by first class mail.

D. If any approved Wind Energy Facility is not substantially commenced within one year of issuance of the Wind Energy Permit, the Wind Energy Permit shall expire. Upon written request of the Owner, the Wind Energy Permit may be extended for one year so long as the the project has not significantly changed.

§17 Abatement

A. If any WECS fails to generate electricity for a continuous period of one year the Town Board may determine that it is "non-functional or inoperative", and require the Owner *(or the purpose of this Section 17 an Owner is the holder of the Wind Energy Permit)* to remove said WECS at its own expense. Removal of the WECS shall include at least the entire above ground structure and connected facilities down to 4 feet below grade, including transmission equipment and fencing and such other associated parts as the Town Board may direct. This provision shall not apply if the Town finds that the Owner has been making good faith efforts to restore the WECS to an operable condition, or if the non-functional or inoperative condition is the result of a force majeure event beyond the Owner's control. Nothing in this provision shall limit the Town's ability to order a remedial action plan after hearing. The Town shall provide Owner with at least 15 days notice of the hearing. The Owner may present evidence at the hearing on the functioning or operation of the system, or explanation for delay in repair during such period. At such hearing, in order to warrant decommissioning of the system or any part thereof, the Town must first find by a preponderance of the evidence submitted and presented, that the WECS or any part thereof has been non-functional or inoperative continuously for 12 months. The Town after such hearing may order the removal of the WECS system or any part thereof (down to 4 feet below grade) that it finds has been non-functional or inoperative. Upon any direction by the Town Board to an Owner of a WECS to remove any system or part thereof and the failure of the Owner to comply with such directive or to substantially commence such removal within 30 days of the directive, then the Town may proceed against the Decommissioning Bond or Fund as established hereinafter in compliance with paragraph 17(3) hereof.

B. Generation of electricity (or lack thereof) by a WECS may be proven by reports or documents provided to the Public Service Commission, NYSERDA, New York Independent System Operator, or other reporting agencies or by lack of generation of revenues from the sale of energy. The Owner shall make available (subject to a non-disclosure agreement) to the Town Board all reports to and from the purchaser of energy from the Wind Energy Conversion Systems, if requested, and such other reports it finds necessary to prove the WECS is functioning. All such reports submitted by the Owner may be redacted as necessary to protect proprietary information.

C. Decommissioning Fund. The Owners shall continuously maintain a fund, letter of credit or bond payable to the Town, in a form and from a Provider approved by the Town for the removal of non-functional towers and appurtenant facilities, in an amount to be determined by the Town, for the period of the life of the facility. This Decommission Fund shall be adjusted every three years for changes in costs of decommissioning and restoration as well as adjusted for inflation. The Fund shall be issued or maintained by bank licensed and authorized to do business in the State of New York or such other financial institution so authorized and approved by the Town Board. All costs of the financial security shall be borne by the Owner. All decommissioning fund requirements shall be fully funded before commencement of construction of any portion of WECS. Any Wind Energy Permit issued shall restrict construction until the Fund has been approved and accepted by the Town Board.

§18 Limitations on Approvals; Easements on Town Property

A. Nothing in this Local Law shall be deemed to give any Owner or Operator the right to cut down surrounding trees and vegetation on any property to reduce turbulence and increase wind flow to the Wind Energy Facility.

B. Nothing in this Local Law shall be deemed a guarantee against any future construction or Town approvals of future construction that may in any way impact the wind flow to any Wind Energy Facility. It shall be the sole responsibility of the Facility operator or owner to acquire any necessary wind flow or turbulence easements, or rights to remove vegetation.

C. Future construction of Residence or dwellings within a distance of one and half times the tower height from any Tower on an approved Site shall be restricted and not allowed unless an application for a waiver and modification of such Approved Site is made and approved by the Town Board. The application for the Waiver shall comply with Article V hereof.

D.. Pursuant to the powers granted to the Town to manage its own property, the Town may enter into noise, setback, or wind flow easements on such terms as the Town Board deems appropriate, as long as said agreements are not otherwise prohibited by state or local law.

§19 Permit Revocation

A. Testing fund. A Wind Energy Permit shall contain a requirement that the Owner fund periodic noise testing by a qualified independent third-party acoustical measurement consultant, which may be required as often as bi-annually, or more frequently upon request of the Town Board in response to complaints by neighbors. The scope of the noise testing shall be to demonstrate compliance with the terms and conditions of the Wind Energy Permit and this Local Law and shall also include an evaluation of any complaints received by the Town. The Owner shall have 90 days after written notice from the Town Board, to cure any deficiency. An extension of the 90-day period may be considered by the Town Board, but the total period may not exceed 180 days.

B. Operation. A WECS shall be maintained in operational condition at all times, subject to reasonable maintenance and repair outages. Operational condition includes meeting all noise requirements and other permit conditions. Should a WECS become inoperable, or should any part of the WECS be damaged, or should a WECS violate a permit condition, the owner or operator shall remedy the situation within 90 days after written notice from the Town Board. The Owner shall have 90 days after written notice from the Town Board, to cure any deficiency. An extension of the 90-day period may be considered by the Town Board, but the total period may not exceed 180 days.

C. Notwithstanding any other abatement provision under this Local Law, and consistent with §19(A) and §21(B), if the WECS is not repaired or made operational or brought into permit compliance after said notice, the Town may, after a public meeting at which the operator or owner shall be given opportunity to be heard and present evidence, including a plan to come into compliance: (1) order either remedial action within a particular time frame, or (2) order revocation of the Wind Energy Permit for the

WECS and require the removal of the WECS within 90 days. If the WECS is not removed, the Town Board shall have the right to use the security posted as part of the Decommission Plan to remove the WECS.

Article III

Wind Measurement Towers

§20 Wind Site Assessment

The Town Board acknowledges that prior to construction of a WECS, a wind site assessment is conducted to determine the wind speeds and the feasibility of using particular Sites. Installation of Wind Measurement Towers, also known as anemometer ("Met") towers, shall be permitted on the issuance of a Wind Energy Permit in accordance with this Article.

§21 Applications for Wind Measurement Towers

A. An application for a Wind Measurement Tower shall include

I. Name, address, telephone number of the Applicant. If the Applicant is represented by an agent, the application shall include the name, address and telephone number of the agent as well as an original signature of the Applicant authorizing the representation.

2. Name, address, telephone number of the property owner. If the property owner is not the Applicant, the application shall include a letter or other written permission signed by the property owner (i) confirming that the property owner is familiar with the proposed applications and (ii) authorizing the submission of the application.

3. Address of each proposed tower location, including Tax Map section, block and lot number.

4. Proposed Development Plan and Map.

5. Decommissioning Plan, including a security bond for removal.

§22 Standards for Wind Measurement Towers

A. The distance between a Wind Measurement Tower and the property line of the Site shall be at least one and a half times the Total Height of the tower. The tower shall not be located nearer than one and half times the Total Height of the tower to any Residence. Site can include more than one piece of property. Exceptions for neighboring property are also allowed with the written consent of those property owners.

B. Wind Energy Permits for Wind Measurement Towers may be issued for a period of up to two years. Permits shall be renewable upon application to the Town Board in accordance with the procedure of § 1-20.

Article IV

Small Wind Energy Conversion Systems

§23 Purpose and Intent

The purpose of this Article is to provide standards for Small Wind Energy Conversion Systems ("Small WECS") designed for home, farm, and small commercial use on the same parcel, and that are primarily used to reduce consumption of utility power at that location. The intent of this Article is to encourage the development of Small WECS and to protect the public health, safety, and community welfare.

§24 Applications.

A. Applications for Small WECS Wind Energy Permits shall include:

1. Name, address, telephone number of the Applicant. If the Applicant will be represented by an agent, the name, address and telephone number of the agent as well as an original signature of the Applicant authorizing the agent to represent the Applicant.

2. Name, address, telephone number of the property owner. If the property owner is not the Applicant, the application shall include a letter or other written permission signed by the property owner (i) confirming that the property owner is familiar with the proposed applications and (ii) authorizing the submission of the application.

3. Address of each proposed tower location, including Tax Map section, block and lot number.

4. Evidence that the proposed tower height does not exceed the height recommended by the manufacturer or distributor of the system.

5. A line drawing of the electrical components of the system in sufficient detail to allow for a determination that the manner of installation conforms to the Uniform Fire Prevention and Building Code.

6. Sufficient information demonstrating that the system will be used primarily to reduce consumption of electricity at that location.

7. Written evidence that the electric utility service provider that serves the proposed Site has been informed of the Applicant's intent to install an interconnected customer-owned electricity generator, unless the Applicant does not plan, and so states so in the application, to connect the system to the electricity grid.

8. A visual analysis of the Small WECS as installed, which may include a computerized photographic simulation, demonstrating the visual impacts from nearby strategic vantage points. The visual analysis shall also indicate the color treatment of the system's components and any visual screening incorporated into the project that is intended to lessen the system's visual prominence.

§25 Development Standards.

All Small WECS shall comply with the following standards. Additionally, such systems shall also comply with all the requirements established by other sections of this Article that are not in conflict with the requirements contained in this section.

1. A system shall be located on a lot having a minimum of one acre in size, however, this requirement can be met by multiple owners submitting a joint application. For the purpose of this provision a lot is tax parcel identified on the town tax assessment rolls. If a lot is smaller than one acre then adjoining lands under control of the Applicant can be included in the system application to met setback and size requirements. Proof of such control shall be submitted with the application.

2. Only one small wind energy system tower per legal lot shall be allowed, unless there are multiple Applicants, in which their joint lots shall be treated as one lot for purposes of this Article.

3. Small Wind energy systems shall be used primarily to reduce the on-site consumption of electricity.

4. The maximum allowable height for a Small WECS shall be 150 feet. The allowed height shall be reduced if necessary to comply with all applicable Federal Aviation Requirements, including Subpart B (commencing with Section 7.11) of Part 77 of Title 14 of the Code of Federal Regulations regarding installations close to airports.

5. The maximum turbine power output is limited to 100KW.

6. The system's tower and blades shall be painted a non-reflective, unobtrusive color that blends the system and its components into the surrounding landscape to the greatest extent possible and incorporate non-reflective surfaces to minimize any visual disruption.

7. The system shall be designed and located in such a manner to minimize adverse visual impacts from public viewing areas.

8. Exterior lighting on any structure associated with the system shall not be allowed except that which is specifically required by the Federal Aviation Administration.

9. All on-site electrical wires associated with the system shall be installed underground except for "tie-ins" to a public utility company and public utility company transmission poles, towers and lines. This standard may be modified by the decision-maker if the project terrain is determined to be unsuitable due to reasons of excessive grading, biological impacts, or similar factors.

10. The system shall be operated such that no disruptive electromagnetic interference is caused. If it has been demonstrated that a system is causing harmful interference, the system operator shall promptly mitigate the harmful interference or cease operation of the system.

11. At least one sign shall be posted on the tower at a height of five feet warning of electrical shock or

high voltage and harm from revolving machinery. No brand names, logo or advertising shall be placed or painted on the tower, rotor, generator or tail vane where it would be visible from the ground, except that a system or tower's manufacturer's logo may be displayed on a system generator housing in an unobtrusive manner

12. Towers shall be constructed to provide one of the following means of access control, or other appropriate method of access:
    a. Tower-climbing apparatus located no closer than 12 feet from the ground.
    b. A locked and-climb device installed on the tower.
    c. A locked, protective fence at least six feet in height that encloses the tower.

13. Anchor points for any guy wires for a system tower shall be located within the property that the system is located on and not on or across any above-ground electric transmission or distribution lines. The point of attachment for the guy wires shall be enclosed by a fence six feet high or sheathed in bright orange or yellow covering from three to eight feet above the ground.

14. Construction of on-site access roadways shall be minimized. Temporary access roads utilized for initial installation shall be re-graded and re-vegetated to the pre-existing natural condition after completion of installation.

15. To prevent harmful wind turbulence from existing structures, the minimum height of the lowest part of any horizontal axis wind turbine blade shall be at least 30 feet above the highest structure or tree within a 300 foot radius. Modification of this standard may be made when the Applicant demonstrates that a lower height will not jeopardize the safety of the wind turbine structure, or the public health, safety or welfare.

16. All small wind energy system tower structures shall be designed and constructed to be in compliance with pertinent provisions of the Uniform Fire Prevention and Building Code.

17. All small wind energy systems shall be equipped with manual and automatic over-speed controls. The conformance of rotor and over-speed control design and fabrication with good engineering practices shall be certified by the manufacture.

§26 Standards

A Small Wind Energy System shall comply with the following standards:

1. Setback requirements. A Small WECS shall not be located less than one and half times the Total Height of the small WECS to a property line or a Residence, unless the Residence is that of the owner and Applicant of the Small WECS site. .

2. Noise. Except during short-term events including utility outages and severe wind storms, a Small WECS shall be designed, installed, and operated so that noise generated by the system shall not exceed the 50 decibels (dBA), as measured at the closest neighboring inhabited dwelling.

§27 Abandonment of Use

A Small WECS which is not used for twelve (12) successive months shall be deemed abandoned and shall be dismantled and removed from the property at the expense of the property owner. Failure to abide by and faithfully comply with this section or with any and all conditions that may be attached to the granting of any Wind Energy Permit shall constitute grounds for the revocation of the permit by the Town.

B. All Small WECS shall be maintained in good condition and in accordance with all requirements of this section.

Article V

Waivers

§28 Waivers.

A. The Town Board may, after a public hearing (which may be combined with other public hearings on Wind Energy Facilities, so long as the waiver request is detailed in the public notice and the Application), grant a waiver, except as otherwise expressly provided for herein, from the strict application of the provisions of this Local Law if, in the opinion of the Town Board, the grant of said waiver is in the best interests of the Town.

B. The Town Board in making its determination on a waiver request shall consider the benefit to the Owner if the waiver is granted, as weighed against the detriment to the health, safety and welfare of the neighborhood or community by such grant. In making such determination the board shall also consider: (1) whether an undesirable change will be produced in the character of the neighborhood or a detriment to nearby properties will be created by the granting of the waiver; (2) whether the benefit sought by the Owner can be achieved by some method, feasible for the Owner to pursue, other than waiver; (3) whether the requested waiver is substantial; (4) whether the proposed waiver will have an adverse effect or impact on the physical or environmental conditions in the neighborhood or district; and the scope of the request.

C. The Board , in the granting of waivers, shall grant the minimum waiver that it shall deem necessary and adequate and at the same time preserve and protect the character of the neighborhood and the health, safety and welfare of the community.

D. The Town Board may attach such conditions, as it deems appropriate to waiver approvals as it deems necessary to minimize the impact of the waiver.

Article VI

Miscellaneous

§29 Fees

A. Non-refundable Application Fees shall be as follows:

1. WECS Wind Energy Permit: $200 per megawatt of rated maximum capacity;
2. Wind Measurement Towers Wind Energy Permit: $200 per tower, and $200 for any other structure or part thereof not a tower;
3. Small WECS Wind Energy Permit: $150 per WECS;
4. Wind Measurement Tower or Wind Energy Permits renewals/extensions {16(D)}: $200 per Permit/WECS;
5. The fee for an Article 5 Waiver application (shall be $250.00).

B. Wind Energy Permits; review, inspection, and approval fees. The Town believes the review of applications for Wind Energy Facilities and compliance monitoring of issued Wind Energy Permit requires specific third party expertise. In addition to the permit fees for the WECS system as provided in 29(A) above, the Owner of the WECS shall pay the costs of such review as follows:

1. An outside consultant, approved by the Town, to review the plans submitted by the Applicant or its representative for compliance with this regulation and inspection of work, together with monitoring compliance with any issued permit for any WECS. All such expense shall be made by the Applicant, or Holder of such issued permit, if different, providing a cash advance payment to the Town Clerk prior to issuing such permit or such other form of advance payment as the Town Board may direct and approve..

2. Annual Report. The Owner shall file annually a report of all repair work to the WECS system, detailing any improvements, alterations or changes to any WECS or other structure of the systems or any of its components, together with a review fee of $200.00 each WECS. The report shall be certified by a licensed engineer that such work has not change any permit condition. The Town, upon notice to the Owner, may refer the report to consultant if it reasonably believes that any work may change or adversely impact a permit condition. The Owner shall be responsible for any costs of any outside consultant, if necessary, to review the report.

3. Any costs associated with reviewing materials submitted by the Owner or the review of any condition of a permit, including, but not limited to, ensuring the system continues to be safe and compliant with the terms of such permit issued shall be expense of the owner of the system. Such expense shall be paid by the Applicant/Owner. Prior to incurring such costs, the Town agrees to provide the Applicant/Owner of the system with notice of such costs and reason for the same. The Applicant/owner may protest the costs by filing a protest with the Town Clerk within ten days of such notice. Said protest shall contain a statement of what is protested, and if a cost item is protested then an estimate from an independent person for the costs protested shall be included. Notwithstanding a protest the Town may engage a consultant to review any submission by the Applicant/Owner of the system prior to approving the submission and all such expense and costs shall be an expense of the project (Applicant/Owner of the system). If any such expense shall not be paid the same shall constitute a violation of the permit and be deemed an expense in decommissioning the system or any part thereof in question.

4. The permit fee for Town Board approval for cutting or clearing in green buffer area within a Site shall be $100.00 per permit, no permit fee is necessary for maintaining agricultural uses within a green buffer zone.

5. Applications for approval of Transfer of ownership or control pursuant to section 5(G) shall be submitted to the Town Board together with information explaining the proposed change of control or the transfer. Such information shall include the names of the parties whose interest is being change or transferred together with their percentage of ownership being transferred and the names of each person, shareholder, member, partner or individual receiving such interest, together with a fee of $500 and such consultant fees as the Town Board finds necessary to review any financial information submitted therewith. The Town Board reserve the right to request such other information it may reasonably request and finds necessary to complete it review of such application.

C. Nothing in this Local Law shall be read as limiting the ability of the Town to enter into Host Community Agreements with any Applicant to compensate the town for expenses or impacts on the community. The Town shall require any Applicant to enter into an escrow agreement to pay the engineering and legal costs of any application review, including the review required by SEQRA. Notwithstanding anything to the contrary provided herein, any and all Town agreements or permit conditions pertaining to a WECS shall be filed with the Town and in place prior to the issuance of the Wind Energy Permit, unless the approval for such WECS permit expressly provides otherwise, including Host Community Agreement, Decommission Plan and proof of Funds or escrow accounts, if required, related to the WECS.

§30 Tax Exemption.

The Town hereby exercises its right to opt out of the Tax Exemption provisions of Real Property Tax Law §487, pursuant to the authority granted by paragraph 8 of that law.

§31 Enforcement; Penalties and remedies for violations.

A. The Town Board shall appoint such Town staff or outside consultants as it sees fit to enforce this Local Law.

B. Any person owning or operating a Wind Energy Facility shall be responsible for the continued compliance of such facility with this local law and the terms and conditions of the Wind Energy Permit issued for such facility.

C. A violation of this local law or any provision of the Wind Energy Permit shall be subject the Owner or Operator of the facility to a civil penalty of One Thousand ($1,000.00) Dollars. In lieu of proceeding with enforcement of this law as an offense the Town may institute a civil proceeding to collect civil penalties in the amount of $1000 for each violation. Each week's continued violation shall constitute and be deemed a separate additional violation

C. Revocation of Wind Energy Permit; Upon a finding of three separate violations by a court of competent jurisdiction by an Owner or Operator of the facility of a material provision of this Local Law in any one year period,, the Town Board may hold a hearing for a revocation of any Wind Energy Permit issued by such Board.

D. In lieu of a civil proceeding for enforcement of this local law, the Town Board may elect to proceed to charge any Owner or Operator who intentionally violates any material provision of this Local Law or be in noncompliance with any material term or condition of any permit issued pursuant to this Local Law, or any order of the enforcement officer with an offense, Each week such offense shall continue shall be a a separate offense . Each such offense shall be punishable by a fine not exceeding three hundred fifty dollars or imprisonment for a period not to exceed six months, or both for conviction of a first offense; for conviction of a second offense both of which were committed within a period of five years, punishable by a fine not less than three hundred fifty dollars nor more than seven hundred dollars or imprisonment for a period not to exceed six months, or both; and, upon conviction for a third or subsequent offense all of which were committed within a period of five years, punishable by a fine not less than seven hundred dollars nor more than one thousand dollars or imprisonment for a period not to exceed six months, or both. However, for the purpose of conferring jurisdiction upon courts and judicial officers generally, violations of this local law shall be deemed misdemeanors and for such purpose only all provisions of law relating to misdemeanors shall apply to such violations.

E. In case of any violation or threatened violation of any of the provisions of this local law, including the terms and conditions imposed by any permit issued pursuant to this local law, in addition to other remedies and penalties herein provided, the Town may institute any appropriate action or proceeding to prevent such unlawful erection, structural alteration, reconstruction, moving and/or use, and to restrain, correct or abate such violation, to prevent the illegal act.

§32 Severability

Should any provision of this Local Law be declared by the courts to be unconstitutional or invalid, such decision shall not affect the validity of this Local Law as a whole or any part thereof other than the part so decided to be unconstitutional or invalid.

§33 Supercession. This Local Law shall supercede all Town local laws and other land use regulations and specifically New York Town Law §131, §133, §266 and §268 that are contrary and in conflict with the provisions of this Local Law to the extent necessary to give this Local Law full force and effect.

§34 Effective Date

This Local Law shall be effective immediately upon its filing with the Secretary of State in accordance with the Municipal Home Rule Law.

Appendix P
Town of Chateaugay Local Law

Local Law {Introductory} No. 7 of 2006

Be it hereby enacted by the Town Board of the Town of Chateaugay as follows:

Section 1: Local Law No. 7 of 2006, entitled **"WIND ENERGY FACILITIES,"** is hereby adopted to read in its entirety as follows:

WIND ENERGY FACILITIES

Article I

§1 Title

This Local Law may be cited as the "Wind Energy Facility Law of the Town of Chateaugay, New York."

§2 Purpose.

The Town Board of the Town of Chateaugay adopts this Local Law to promote the effective and efficient use of the Town's wind energy resource through Wind Energy Conversion Systems (WECS), and to regulate the placement of such systems so that the public health, safety, and welfare will not be jeopardized.

§3 Authority

The Town Board of the Town of Chateaugay enacts this Local Law under the authority granted by;

1. Article IX of the New York State Constitution, §2(c)(6) and (10).

2. New York Statute of Local Governments, § 10(1) and (7).

3. New York Municipal Home Rule Law, § 10 (1)(i) and (ii) and §10 (1)(a)(6), (11), (12), and (14).

4. New York Town Law §130(1)(Building Code), (3)(Electrical Code), (5)(Fire Prevention), (7)(Use of streets and highways), (7-a)(Location of Driveways), (11)(Peace, good order and safety), (15)(Promotion of public welfare), (15-a)(Excavated Lands), (16)(Unsafe buildings), (19)(Trespass), and (25)Building lines).

5. New York Town Law §135 and 138.

6. New York Town Law §64(17-a) protection of aesthetic interests), (23)(General powers).

§4. Findings.

The Town Board of the Town of Chateaugay finds and declares that

1. Wind energy is an abundant, renewable and nonpolluting energy resource of the Town and its conversion to electricity may reduce dependence on nonrenewable energy sources and decrease the air and water pollution that results from the use of conventional energy sources.

2. The generation of electricity from properly sited wind turbines, including small systems, can be cost effective, and in many cases existing power distribution systems can be used to transmit electricity produced.

3. Regulations of the siting and installation of wind turbines is necessary for the purpose of protecting the health, safety, and welfare of neighboring property owners and the general public.

4. Wind Energy Facilities represent significant potential aesthetic impacts because of their large size, lighting, and shadow flicker effects, if not properly sited.

5. If not properly regulated, installation of Wind Energy Facilities can create drainage problems through erosion and lack of sediment control for facility and access road sites, and harm farmlands through improper construction methods

6. Wind Energy Facilities may present a risk to bird and bat populations if not properly sited.

7. If not properly sited, Wind Energy Facilities may present risks to the property values of adjoining property owners.

8. Wind Energy Facilities may be significant sources of noise, which, if unregulated, can negatively impact adjoining properties.

9. Without proper planning, construction of Wind Energy Facilities can create traffic problems and damage local roads.

10. If improperly sited, Wind Energy Facilities can cause electromagnetic interference issues with various types of communications.

§5. Permits Required; Transfer; Modifications

A. All construction and any restoration or modifications of any Wind Energy Facility, WECS, Small Wind Energy Conversion System, Wind Measurement Tower or part thereof that is located in agricultural areas will be done to the extent practicable according to the New York State Dept. of Agriculture and Market Guidelines for Agricultural Mitigation for Windpower Projects, subject to landowner approval.

B. No Wind Energy Facility shall be constructed, reconstructed, modified, or operated in the Town of Chateaugay except in compliance with this Local Law.

C. No WECS shall be constructed, reconstructed, modified, or operated in the Town of Chateaugay except with a Wind Energy Permit approved pursuant to this Local Law.

D. No Wind Measurement Tower shall be constructed, reconstructed, modified, or operated in the Town of Chateaugay except pursuant to a Wind Energy Permit issued pursuant to this local law.

E. No Small Wind Energy Conversion System shall be constructed, reconstructed, modified, or operated in the Town of Chateaugay except pursuant to a Wind Energy Permit issued pursuant to this local law.

F. Exemptions. No permit or other approval shall be required under this Local Law for mechanical non-electrical WECS utilized solely for agricultural operations, provided the Town Board finds such proposed system or structure exempt or otherwise issues a waiver pursuant to provisions of Article V hereof. In considering an exemption, the Town Board shall find that the proposed location and height of such structure/system does not adversely affect the public health, safety and welfare of the adjoining parcels and property owners.

G. Transfer. No transfer of any Wind Energy Facility, Wind Energy Permit or sale of the entity holding the permit for such facility or the sale of more than 15% of the stock of said Permittee (not counting sales of shares on a public exchange), to a third party, will occur without prior approval of the Town. Said approval shall be granted only upon the Town Board finding that the Transferee has provided a written assumption of all the Transferor obligations under this Local Law of the Wind Energy Permit, including but not limited to the Host Agreement, Pilot Agreement, Decommission Fund and such other agreements relative to the Wind Energy Facility, in a form acceptable to the Town Attorney. No transfer shall reduce the Permitee or any other party total obligations owed to the Town under this Local Law, except in the manner as provided herein.,

H. Notwithstanding the requirements of this Section, replacement in kind or modification of a Wind Energy Facility may occur without Town Board approval when (1) there will no increase in Total Height; (2) no change in the location of the WECS; (3) no additional lighting or change in facility color; and (4) no increase in noise produced by the WECS.

§6 Definitions.

As used in this Local Law, the following terms shall have the meanings indicated:

EAF - Environmental Assessment Form used in the implementation of the SEQRA as that term is defined in Part 617 of Title 6 of the New York Codes, Rules and Regulations.

RESIDENCE - means any dwelling suitable for habitation existing in the Town of Chateaugay on the date an application is received. A Residence may be part of a multi-dwelling or multipurpose building, but shall not include buildings such as hunting camps, hotels, hospitals, motels, dormitories, sanitariums, nursing homes, schools or other buildings used for educational purposes, or correctional institutions.

SEQRA - the New York State Environmental Quality Review Act and its implementing regulations in Title 6 of the New York Codes, Rules and Regulations, Part 617.

SOUND PRESSURE LEVEL -- means the level which is equaled or exceeded a stated percentage of time. An L_{10} - 50 dBA indicates that in any hour of the day 50 dBA can be equaled or exceeded only 10% of the time, or for 6 minutes. The measurement of the sound pressure level can be done according to the International Standard for Acoustic Noise Measurement Techniques for Wind Generators (IEC 6 1400-1 1), or other accepted procedures.

SITE - The parcel(s) of land where a Wind Energy Facility is to be placed. The Site can be publicly or privately owned by an individual or a group of individuals controlling single or adjacent properties. Where multiple lots are in joint ownership, the combined lots shall be considered as one for purposes of applying setback requirements. Any property, which has a Wind Energy Facility or has entered an agreement for said Facility or a setback agreement shall not be considered off-site.

SMALL WIND ENERGY CONVERSION SYSTEM ("Small WECS")-- A wind energy conversion system consists of a wind turbine, a tower, and associated control or conversion electronics, which has a rated capacity of not more than 100 kW and which is intended to primarily reduce consumption of utility power at that location.

TOTAL HEIGHT-- The height of the tower and the furthest vertical extension of the WECS. This is to be measured from pre-existing original grade.

WIND ENERGY CONVERSION SYSTEM (WECS)-- A machine that converts the kinetic energy in the wind into a usable form (commonly known as a wind turbine or windmill).

WIND ENERGY FACILITY--- Any Wind Energy Conversion System, Small Wind Energy Conversion System or Wind Measurement Tower, including all related infrastructure, electrical lines and substations, access roads and accessory structures to such systems.

WIND MEASUREMENT TOWER — a tower used for the measurement of meteorological data such as temperature, wind speed and wind direction.

WIND ENERGY PERMIT — A permit granted pursuant to this Local Law granting the holder the right to construct, maintain and operate a Wind Energy Facility.

§7. Applicability

A. The requirements of this Local Law shall apply to all Wind Energy Facilities proposed, operated, modified, or constructed after the effective date of this Local Law.

B. Wind Energy Facilities for which a required permit has been properly issued and upon which construction has commenced prior to the effective date of this Local Law, shall not be required to meet the requirements of this Local Law; provided, however, that

1. Any such preexisting Wind Energy Facility, which does not provide energy for a continuous period of twelve (12) months, shall meet the requirements of this Local Law prior to recommencing production of energy.

2. No modification or alteration to an existing Wind Energy Facility shall be allowed without full compliance with this Local Law.

3. Any Wind Measurement Tower existing on the effective date of this Local Law shall be removed no later than twenty-four (24) months after said effective date, unless a Wind Energy Permit for said Wind Energy Facility is obtained.

§~8-9 Reserved for Future Use

Article II

Wind Energy Conversion Systems

§10. Applications for Wind Energy Permits for Wind Energy Conversion Systems

An application for a Wind Energy Permit for individual WECS shall include the following:

1. Name, address, telephone number of the Applicant. If the Applicant is represented by an agent, the application shall include the name, address and telephone number of the agent as well as an original signature of the Applicant authorizing the representation.

2. Name, address, telephone number of the property owner. If the property owner is not the Applicant, the application shall include a letter or other written permission signed by the property owner (i) confirming that the property owner is familiar with the proposed applications and (ii) authorizing the submission of the application.

3. Address, or other property identification, of each proposed tower location, including Tax Map section, block and lot number.

4. A description of the project, including the number and maximum rated capacity of each WECS.

5. A plot plan prepared by a licensed surveyor or engineer drawn in sufficient detail to clearly describe the following.

   (a) Property lines and physical dimensions of the Site;

   (b) Location, approximate dimensions and types of major existing structures and uses on the Site, public roads, and adjoining properties within five hundred (500) feet of the boundaries of the proposed WECS Site.

   (c) Location and elevation of each proposed WECS identified by specific I.D. #.

   (d) Location of all above ground utility lines on the Site or within one radius of the Total Height of the WECS, transformers, power lines, interconnection point with transmission lines, and other ancillary facilities or structures.

   (e) Location and size of structures above 35 feet within a five-hundred-foot radius of the proposed WECS. For purposes of this requirement, electrical transmission and distribution lines, antennas and slender or open lattice towers are not considered structures.

   (f) To demonstrate compliance with the setback requirements of this Article, circles drawn around each proposed tower location equal to:

      (i) One and a half time the tower height.
      (ii) Six hundred foot perimeter/radius.
      (iii) Twelve hundred foot perimeter/radius.
      (iv) Thirteen hundred twenty foot perimeter/radius.

   (g) Location of the all structures with dwelling units on the Site

   (h) Location of all structures with dwelling units located off-Site and within 1320 feet of the proposed WECS.

   (i) All proposed facilities, including access roads, electrical lines, substations, storage or maintenance units, and fencing.

6. Vertical drawing of the WECS showing Total Height, turbine dimensions, tower and turbine colors, ladders, distance between ground and lowest point of any blade, location of climbing pegs, and access doors. One drawing must be submitted for each WECS of the same type and total height.

7. Landscaping Plan depicting existing vegetation and describing any areas to be cleared and the specimens proposed to be added, identified by species and size of specimen at installation and their locations.

8. Lighting Plan showing any FAA-required lighting and other proposed lighting. The application should include a copy of the determination by the Federal Aviation Administration to establish required markings and/or lights for the structure, but if such determination is not available at the time of the application, the Wind Energy Permit shall require the determination be provided prior to commencement

of construction of the WECS.

9. List of property owners, with their mailing address, within 500 feet of the boundaries of the proposed Site. The Applicant must submit this list with the application.

10. Decommissioning Plan: The Applicant shall submit a decommissioning plan, which shall include: 1) the anticipated life of the WECS; 2) the estimated decommissioning costs in current dollars; 3) how said estimate was determined; 4) the method of ensuring that funds will be available for decommissioning and restoration; 5*)* acknowledgement that the decommissioning costs shall be re-estimated, by a licensed engineer, every three years, and that the decommissioning cost will be kept current indexed to inflation,; 6) the manner in which the WECS will be decommissioned and the Site restored, which shall include removal of all structures and debris to a depth of 4 feet, restoration of the soil, and restoration of vegetation (consistent and compatible with surrounding vegetation), except any fencing or residual minor improvements requested by the landowner and approved by the Town Board.

11. Complaint Resolution: The application will include a complaint resolution process to address complaints from nearby residents. The process may use an independent mediator or arbitrator and shall include a time limit for acting on a complaint. The Applicant shall make every reasonable effort to resolve any complaint.

12. An application shall include information relating to the construction/installation of the wind energy conversion facility as follows:
   (1) A construction schedule describing commencement and completion dates; and
   (2) Blasting schedule, if know and applicable at the time of application; and
   (3) A description of the routes to be used by construction and delivery vehicles, the gross weights and heights of those loaded vehicles.

13. Completed Part I of the Full EAF. (Environmental Assessment Form)

14. Applications for Wind Energy Permits for Wind Measurement Towers subject to this Local Law may be jointly submitted with the WECS application.

15. For each proposed WECS, include make, model, picture and manufacturers specifications, including noise decibel data. Include Manufacturers' Material Safety Data Sheet documentation for the type and quantity of all materials used in the operation of all equipment including, but not limited to, all lubricants and coolants.

16. If the Applicant agrees in writing in the application that the proposed WECS may have a significant adverse impact on the environment, the Town Board may issue a positive declaration of environmental significance.

17. If a positive declaration of environmental significance is determined by the SEQRA lead agency, the following information shall be included in the Draft Environmental Impact Statement (DEIS) prepared for a Wind Energy Facility. Otherwise, the following studies shall be submitted with the application:

A. Shadow Flicker: The Applicant shall conduct a study on potential shadow flicker. The study shall identify locations where shadow flicker may be caused by the WECSs and the expected duration of the flicker at these locations. The study shall identify areas where shadow flicker may interfere with residential structures or dwellings and describe measures that shall be taken to eliminate or mitigate the problems.

B. Visual Impact: Applications shall include a visual impact study of the proposed WECS as installed, which may include a computerized photographic simulation, demonstrating any visual impacts from strategic vantage points. Color photographs of the proposed Site from at least two locations accurately depicting the existing conditions shall be included. The visual analysis shall also indicate the color treatment of the systems components and any visual screening incorporated into the project that is intended to lessen the system's visual prominence.

C. A fire protection and emergency response plan created in consultation with the fire department(s) having jurisdiction over the proposed Site.

D. Noise Analysis: A noise analysis by a competent acoustical consultant documenting the noise levels associated with the proposed WECS. The study shall document noise levels at property lines and at the nearest structures with dwelling units not on the Site (if access to the nearest such structures is not available, the Town Board may modify this requirement). The noise analysis shall include low frequency noise.

E. Property value analysis prepared by a licensed appraiser in accordance with industry standards, regarding the potential impact of values of properties neighboring WECS Sites.

F. An assessment of potential electromagnetic interference with microwave, radio, television, personal communication systems and other wireless communication.

18. The Applicant shall, prior to the receipt of a Wind Energy Permit, provide proof that it has a System Reliability Impact Study (SRIS) approved by the Operating Committee of the New York Independent System Operator

19. A statement, signed under penalties of perjury, that the information contained in the application is true and accurate.

§11. Application Review Process

A. Applicants may request a pre-application meeting with the Town Board or with any consultants retained by the Town Board for application review. Meetings with the Town Board shall be conducted in accordance with the Open Meetings Law.

B. Six copies of the application shall be submitted to the Town Clerk. Payment of all application fees shall be made at the time of application submission. If any waiver of any provision of this Article is requested then an application for a waiver and fee shall be submitted, together with the application for a WECS. The waiver application shall comply with Article V and provide in detail the requirement that is being requested to be waived and address the factors in Article V. All waiver requests shall be publicly noticed and shall be heard and may be considered with, prior to or concurrently with the Application for a Wind Energy Permit.

C. Town Clerk shall forward notice of the Application to the Town Board. The Town Board shall designate a Consultant to review the Application and direct the Clerk to forward a copy of the application to the Consultant. The Consultant shall, within 45 days of receipt review the application to determine if all information required under this local law has been provided. If the application is found not to comply the Consultant shall provide the Town Board a written statement detailing the missing information.

D. If the application is incomplete , the Town Board shall provide the Applicant with a written statement listing the missing information. No refund of application fees shall be made, but no additional application fee shall be required upon submittal of the additional information unless the number of WECS proposed is increased or the application is substantially changed, for the purpose of this provision adding additional properties to the WECS Site shall be deemed a substantial change. Upon a resubmission, the application shall be returned to the Consultant for his determination as provided subparagraph 11 (C) hereof, any additional fees for review by the Consultant, shall be paid by the Applicant.

E. Upon receipt of a notice from its Consultant that the application is complies with the requirements of this Article the Town Clerk shall transmit the application to the Town Board to schedule a hearing as required hereunder. No application shall be Noticed for Hearing until it has been found to comply with the provisions of this Article. The Consultant's finding that the application comply with the filing requirement of this Article shall be not a finding on the merits or sufficiency of the content in the application or otherwise preclude a review of the EAF or DEIS for SEQR process on the application, nor shall it restrict the need for further information for said SEQR process determination.

F. The Town Board shall hold at least one public hearing on the Application. The public hearing shall be held only after the Consultant has advised the Town Board that the application is complies with filing requirement of this article and the Town Board accepts the application. Notice of the application being found compliant, together with a summary of the application shall be given by first class mail to all property owners within 500 feet of the boundaries of any property where a WECSs is proposed (Site), and published in the Town's official newspaper, no less than ten nor more than twenty days before any public hearing, but, where any public hearing is adjourned by the Town Board to hear additional comments, no further publication or mailing shall be required, but in the discretion of the Town Board such additional notice as the Town Board may direct. The Applicant shall mail the Notice of Public Hearing prepared by the Town to all property owners within 500 feet of the Site, and shall submit an affidavit of service. The assessment roll of the Town shall be used to determine mailing addresses. The Town shall publish the Notice.

G. The public hearing for an Application hereunder may be combined with public hearings on any Environmental Impact Statement, other SEQR Process or requested waivers (see Article V).

H. SEQRA reviews. Applications for WECS are deemed Type I project under SEQRA.

I. The Town shall require an escrow agreement for the engineering and legal review of the applications and any environmental impact statements before commencing its review.

J. At the completion of the SEQRA review process, if a positive declaration of environmental significance has been issued and an environmental impact statement prepared, the Town shall issue a Statement of Findings, which Statement may also serve as the Town's decision on the applications.

K. Once the Town Board has accepted the application, held a public hearing, and completed the SEQRA process, the Town Board may then approve, approve with conditions, or deny the applications, in accordance with the standards in this Article.

§12. Standards for WECS

A. The following standards shall apply to all WECS, unless specifically waived by the Town Board as part of a Wind Energy Permit.

1. All power transmission lines from the tower to any building or other structure shall be located underground to the maximum extent practicable.

2. No television, radio or other communication antennas may be affixed or otherwise made part of any WECS, except pursuant to the Town Code. Applications may be jointly submitted for WECS and telecommunications facilities.

3. No advertising signs are allowed on any part of the Wind Energy Facility, including fencing and support structures.

4. Lighting of tower. No tower shall be lit except to comply with FAA requirements. Minimum security lighting for ground level facilities shall be allowed as approved on the Wind Energy Facility development plan.

5. All Applicants shall use measures to reduce the visual impact of WECS to the extent possible. WECS shall use tubular towers. All structures in a project shall be finished in a single, non-reflective matte finished color or a camouflage scheme. WECSs within a multiple WECS project shall be constructed using wind turbines whose appearance, with respect to one another, is similar within and throughout the Project, to provide reasonable uniformity in overall size, geometry, and rotational speeds. No lettering, company insignia, advertising, or graphics shall be on any part of the tower, hub, or blades.

6. The use of guy wires is prohibited.

7. No WECS shall be installed in any location where its proximity with existing fixed broadcast, retransmission, or reception antenna for radio, television, or wireless phone or other personal communication systems would produce electromagnetic interference with signal transmission or reception. No WECS shall be installed in any location along the major axis of an existing microwave communications link where its operation is likely to produce electromagnetic interference in the link's

operation. If it is determined that a WECS is causing electromagnetic interference, the operator shall take the necessary corrective action to eliminate this interference including relocation or removal of the facilities, or resolution of the issue with the impacted parties. Failure to remedy electromagnetic interference is grounds for revocation of the Wind Energy Permit for the specific WECS or WECS causing the interference.

8. All solid waste and hazardous waste and construction debris shall be removed from the Site and managed in a manner consistent with all appropriate rules and regulations.

9. WECS shall be designed to minimize the impacts of land clearing and the loss of open space areas. Land protected by conservation easements shall be avoided when feasible. The use of previously developed areas will be given priority wherever possible.

10. WECS shall be located in a manner that minimizes significant negative impacts on rare animal species in the vicinity, particularly bird and bat species.

11. Wind energy conversion facilities shall be located in a manner consistent with all applicable state and Federal wetland laws and regulations.

12. Storm-water run-off and erosion control shall be managed in a manner consistent with all applicable state and Federal laws and regulations.

13. The maximum Total Height of any WECS shall not exceed 400 feet from existing/original grade.

14. Construction of the WECS shall be limited to the hours of 7 a.m. to 7 p.m., except for certain activities that require work at other times during the day. The Town Board may impose reasonable conditions to any such change in work hours.

§13 Required Safety Measures

A. Each WECS shall be equipped with both manual and automatic controls to limit the rotational speed of the rotor blade so it does not exceed the design limits of the rotor.

B. Fencing: A six-foot-high (6') fence with a locking portal shall be required to enclose each substation and each tower or group of towers, unless the applicant demonstrates in its Application that the Tower(s) is non-climbable and otherwise safe. The color and type of fencing for each WECS installation shall be determined on the basis of individual applications, as safety needs dictate.

C. Appropriate warning signs shall be posted. At least one sign shall be posted at the base of the tower warning of electrical shock or high voltage. A sign shall be posted on the entry area of fence around each tower or group of towers and any building (or on the tower or building if there is no fence), containing emergency contact information. The Town Board may require additional signs based on safety needs.

D. No climbing pegs or tower ladders shall be located closer than twelve (12') feet to the ground level at the base of the structure for freestanding single pole or guyed towers.

E. The minimum distance between the ground and any part of the rotor or blade system shall be thirty (30’) feet, provided it complies with all other provisions of this law.

F. WECSs shall be designed to prevent unauthorized external access to electrical and mechanical components and shall have access doors that are kept securely locked at all times.

§14 Traffic Routes

A. Construction of WECSs poses potential risks because of the large size construction vehicles and their impact on traffic safety and their physical impact on local roads. Construction and delivery vehicles for WECSs or the associated facilities shall use traffic routes established as part of the application review process. Factors in establishing such corridors shall include (1) minimizing traffic impacts from construction and delivery vehicles; (2) minimizing WECS related traffic during times of school bus activity; (3) minimizing wear and tear on local roads; and (4) minimizing impacts on local business operations. Wind Energy Permit conditions may limit WECS-related traffic to specified routes, and include a plan for disseminating traffic route information to the public.

B. The Applicant is responsible for remediation of damaged roads upon completion of the installation or maintenance of a WECS. A public improvement bond shall be posted prior to the issuance of any Wind Energy Permit in an amount, determined by the Town Board, sufficient to compensate the Town for any damage to local roads.

§15 Setbacks for Wind Energy Conversion Systems

A. The statistical sound pressure level generated by a WECS shall not exceed L_{10} - 50 dBA measured at the nearest Residence located off the Site. Sites can include more than one piece of property and the requirement shall apply to the combined properties. If the ambient sound pressure level exceeds 50 dBA, the standard shall be ambient dBA plus 5 dBA. Independent certification shall be provided before and after construction demonstrating compliance with this requirement.

B. In the event audible noise due to Wind Energy Facility operations contains a steady pure tone, such as a whine, screech, or hum, the standards for audible noise set forth in subparagraph 1) of this subsection shall be reduced by five (5) dBA. A pure tone is defined to exist if the one-third (1/3) octave band sound pressure level in the band, including the tone, exceeds the arithmetic average of the sound pressure levels of the two (2) contiguous one third (1/3) octave bands by five (5) dBA for center frequencies of five hundred (500) Hz and above, by eight (8) dBA for center frequencies between one hundred and sixty (160) Hz and four hundred (400) Hz, or by fifteen (15) dBA for center frequencies less than or equal to one hundred and twenty-five (125) Hz.

C. In the event the ambient noise level (exclusive of the development in question) exceeds the applicable standard given above; the applicable standard shall be adjusted so as to equal the ambient noise level. The ambient noise level shall be expressed in terms of the highest whole number sound pressure level in dBA, which is exceeded for more than five (5) minutes per hour. Ambient noise levels shall be measured at the exterior of potentially affected existing Residences, schools, hospitals, churches and public libraries. Ambient noise level measurement techniques shall employ all practical means of reducing the effect of wind generated noise at the microphone. Ambient noise level measurements may be performed when wind velocities at the proposed project Site are sufficient to allow wind turbine operation, provided that the wind velocity does not exceed thirty (30) mph at the ambient noise measurement location.

D. Any noise level falling between two whole decibels shall be the lower of the two.

E. Each WECS shall be setback from Site boundaries. All measurements shall be from the perimeter of the proposed Site, or from each proposed WECS, as applicable, and each of the following setbacks shall be met and maintained;

1. 600 feet from all Site Boundary lines, of which the first 100 feet shall be a green buffer zone to provide natural screening. For the purpose of this law a green buffer zone shall be defined as an area without structures and left naturally vegetated or *in an agricultural use.* Cutting and clearing within the green buffer zone is prohibited except *in connection with agricultural uses* or as necessary to construct and maintain Wind Energy Facility access roads and electric lines; and

2. 1200 feet from US Route 11 and NYS Route 374, and 600 feet from all other public roads; and

3. 1320 feet from the nearest off-Site Residence, measured from the exterior of such Residence. Notwithstanding any other provision of this Local Law regarding waivers or setback easements, no WECS shall be within 1200 feet of any Residence, whether or not said Residence is located in the Town of Chateaugay; and

4. 2500 feet from the property line of any school, hospital or nursing facility; and.

5. 1320 from a Church (not to include church owned cemetery); and

6. One and a half time the Total Height of the WECS from any existing non-WECS structure or any existing aboveground utilities, unless otherwise approved by the Town Board: and

§16. Issuance of Wind Energy Permits

A. Upon completion of the review process, the Town Board shall, upon consideration of the standard in this Local Law and the record of the SEQRA review, issue a written decision with the its findings in support of its approval, approval with conditions or disapproval, fully stated.

B. If approved, the Town Board will issue a Wind Energy Permit upon satisfaction of all conditions for said Permit, and upon Applicant demonstrating compliance with the Uniform Fire Prevention and Building Code and the other pre-construction conditions of this Local Law.

C. The decision of the Town Board shall be filed within 5 days in the office of the Town Clerk and a copy mailed to the Applicant by first class mail.

D. If any approved Wind Energy Facility is not substantially commenced within one year of issuance of the Wind Energy Permit, the Wind Energy Permit shall expire. Upon written request of the Owner, the Wind Energy Permit may be extended for one year so long as the the project has not significantly changed.

§17 Abatement

A. If any WECS fails to generate electricity for a continuous period of one year the Town Board may determine that it is "non-functional or inoperative", and require the Owner *(or the purpose of this Section 17 an Owner is the holder of the Wind Energy Permit)* to remove said WECS at its own expense. Removal of the WECS shall include at least the entire above ground structure and connected facilities down to 4 feet below grade, including transmission equipment and fencing and such other associated parts as the Town Board may direct. This provision shall not apply if the Town finds that the Owner has been making good faith efforts to restore the WECS to an operable condition, or if the non-functional or inoperative condition is the result of a force majeure event beyond the Owner's control. Nothing in this provision shall limit the Town's ability to order a remedial action plan after hearing. The Town shall provide Owner with at least 15 days notice of the hearing. The Owner may present evidence at the hearing on the functioning or operation of the system, or explanation for delay in repair during such period. At such hearing, in order to warrant decommissioning of the system or any part thereof, the Town must first find by a preponderance of the evidence submitted and presented, that the WECS or any part thereof has been non-functional or inoperative continuously for 12 months. The Town after such hearing may order the removal of the WECS system or any part thereof (down to 4 feet below grade) that it finds has been non-functional or inoperative. Upon any direction by the Town Board to an Owner of a WECS to remove any system or part thereof and the failure of the Owner to comply with such directive or to substantially commence such removal within 30 days of the directive, then the Town may proceed against the Decommissioning Bond or Fund as established hereinafter in compliance with paragraph 17(3) hereof.

B. Generation of electricity (or lack thereof) by a WECS may be proven by reports or documents provided to the Public Service Commission, NYSERDA, New York Independent System Operator, or other reporting agencies or by lack of generation of revenues from the sale of energy. The Owner shall make available (subject to a non-disclosure agreement) to the Town Board all reports to and from the purchaser of energy from the Wind Energy Conversion Systems, if requested, and such other reports it finds necessary to prove the WECS is functioning. All such reports submitted by the Owner may be redacted as necessary to protect proprietary information.

C. <u>Decommissioning Fund</u>. The Owners shall continuously maintain a fund, letter of credit or bond payable to the Town, in a form and from a Provider approved by the Town for the removal of non-functional towers and appurtenant facilities, in an amount to be determined by the Town, for the period of the life of the facility. This Decommission Fund shall be adjusted every three years for changes in costs of decommissioning and restoration as well as adjusted for inflation. The Fund shall be issued or maintained by bank licensed and authorized to do business in the State of New York or such other financial institution so authorized and approved by the Town Board. All costs of the financial security shall be borne by the Owner. All decommissioning fund requirements shall be fully funded before commencement of construction of any portion of WECS. Any Wind Energy Permit issued shall restrict construction until the Fund has been approved and accepted by the Town Board.

§18 Limitations on Approvals; Easements on Town Property

A. Nothing in this Local Law shall be deemed to give any Owner or Operator the right to cut down surrounding trees and vegetation on any property to reduce turbulence and increase wind flow to the Wind Energy Facility.

B. Nothing in this Local Law shall be deemed a guarantee against any future construction or Town approvals of future construction that may in any way impact the wind flow to any Wind Energy Facility. It shall be the sole responsibility of the Facility operator or owner to acquire any necessary wind flow or turbulence easements, or rights to remove vegetation.

C. Future construction of Residence or dwellings within a distance of one and half times the tower height from any Tower on an approved Site shall be restricted and not allowed unless an application for a waiver and modification of such Approved Site is made and approved by the Town Board. The application for the Waiver shall comply with Article V hereof.

D.. Pursuant to the powers granted to the Town to manage its own property, the Town may enter into noise, setback, or wind flow easements on such terms as the Town Board deems appropriate, as long as said agreements are not otherwise prohibited by state or local law.

§19 Permit Revocation

A. Testing fund. A Wind Energy Permit shall contain a requirement that the Owner fund periodic noise testing by a qualified independent third-party acoustical measurement consultant, which may be required as often as bi-annually, or more frequently upon request of the Town Board in response to complaints by neighbors. The scope of the noise testing shall be to demonstrate compliance with the terms and conditions of the Wind Energy Permit and this Local Law and shall also include an evaluation of any complaints received by the Town. The Owner shall have 90 days after written notice from the Town Board, to cure any deficiency. An extension of the 90-day period may be considered by the Town Board, but the total period may not exceed 180 days.

B. Operation. A WECS shall be maintained in operational condition at all times, subject to reasonable maintenance and repair outages. Operational condition includes meeting all noise requirements and other permit conditions. Should a WECS become inoperable, or should any part of the WECS be damaged, or should a WECS violate a permit condition, the owner or operator shall remedy the situation within 90 days after written notice from the Town Board. The Owner shall have 90 days after written notice from the Town Board, to cure any deficiency. An extension of the 90-day period may be considered by the Town Board, but the total period may not exceed 180 days.

C. Notwithstanding any other abatement provision under this Local Law, and consistent with §19(A) and §21(B), if the WECS is not repaired or made operational or brought into permit compliance after said notice, the Town may, after a public meeting at which the operator or owner shall be given opportunity to be heard and present evidence, including a plan to come into compliance: (1) order either remedial action within a particular time frame, or (2) order revocation of the Wind Energy Permit for the WECS and require the removal of the WECS within 90 days. If the WECS is not removed, the Town Board shall have the right to use the security posted as part of the Decommission Plan to remove the WECS.

Article III

Wind Measurement Towers

§20 Wind Site Assessment

The Town Board acknowledges that prior to construction of a WECS, a wind site assessment is conducted to determine the wind speeds and the feasibility of using particular Sites. Installation of Wind Measurement Towers, also known as anemometer ("Met") towers, shall be permitted on the issuance of a Wind Energy Permit in accordance with this Article.

§21 Applications for Wind Measurement Towers

A. An application for a Wind Measurement Tower shall include

I. Name, address, telephone number of the Applicant. If the Applicant is represented by an agent, the application shall include the name, address and telephone number of the agent as well as an original signature of the Applicant authorizing the representation.

2. Name, address, telephone number of the property owner. If the property owner is not the Applicant, the application shall include a letter or other written permission signed by the property owner (i) confirming that the property owner is familiar with the proposed applications and (ii) authorizing the submission of the application.

3. Address of each proposed tower location, including Tax Map section, block and lot number.

4. Proposed Development Plan and Map.

5. Decommissioning Plan, including a security bond for removal.

§22 Standards for Wind Measurement Towers

A. The distance between a Wind Measurement Tower and the property line of the Site shall be at least one and a half times the Total Height of the tower. The tower shall not be located nearer than one and half times the Total Height of the tower to any Residence. Site can include more than one piece of property. Exceptions for neighboring property are also allowed with the written consent of those property owners.

B. Wind Energy Permits for Wind Measurement Towers may be issued for a period of up to two years. Permits shall be renewable upon application to the Town Board in accordance with the procedure of § 1-20.

Article IV

Small Wind Energy Conversion Systems

§23 Purpose and Intent

The purpose of this Article is to provide standards for Small Wind Energy Conversion Systems ("Small WECS") designed for home, farm, and small commercial use on the same parcel, and that are primarily used to reduce consumption of utility power at that location. The intent of this Article is to encourage the development of Small WECS and to protect the public health, safety, and community welfare.

§24 Applications.

A. Applications for Small WECS Wind Energy Permits shall include:

1. Name, address, telephone number of the Applicant. If the Applicant will be represented by an agent, the name, address and telephone number of the agent as well as an original signature of the Applicant authorizing the agent to represent the Applicant.

2. Name, address, telephone number of the property owner. If the property owner is not the Applicant, the application shall include a letter or other written permission signed by the property owner (i) confirming that the property owner is familiar with the proposed applications and (ii) authorizing the submission of the application.

3. Address of each proposed tower location, including Tax Map section, block and lot number.

4. Evidence that the proposed tower height does not exceed the height recommended by the manufacturer or distributor of the system.

5. A line drawing of the electrical components of the system in sufficient detail to allow for a determination that the manner of installation conforms to the Uniform Fire Prevention and Building Code.

6. Sufficient information demonstrating that the system will be used primarily to reduce consumption of electricity at that location.

7. Written evidence that the electric utility service provider that serves the proposed Site has been informed of the Applicant's intent to install an interconnected customer-owned electricity generator, unless the Applicant does not plan, and so states so in the application, to connect the system to the electricity grid.

8. A visual analysis of the Small WECS as installed, which may include a computerized photographic simulation, demonstrating the visual impacts from nearby strategic vantage points. The visual analysis shall also indicate the color treatment of the system's components and any visual screening incorporated into the project that is intended to lessen the system's visual prominence.

§25 Development Standards.

All Small WECS shall comply with the following standards. Additionally, such systems shall also comply with all the requirements established by other sections of this Article that are not in conflict with the requirements contained in this section.

1. A system shall be located on a lot having a minimum of one acre in size, however, this requirement can be met by multiple owners submitting a joint application. For the purpose of this provision a lot is tax parcel identified on the town tax assessment rolls. If a lot is smaller than one acre then adjoining lands under control of the Applicant can be included in the system application to met setback and size requirements. Proof of such control shall be submitted with the application.

2. Only one small wind energy system tower per legal lot shall be allowed, unless there are multiple Applicants, in which their joint lots shall be treated as one lot for purposes of this Article.

3. Small Wind energy systems shall be used primarily to reduce the on-site consumption of electricity.

4. The maximum allowable height for a Small WECS shall be 150 feet. The allowed height shall be reduced if necessary to comply with all applicable Federal Aviation Requirements, including Subpart B (commencing with Section 7.11) of Part 77 of Title 14 of the Code of Federal Regulations regarding installations close to airports.

5. The maximum turbine power output is limited to 100KW.

6. The system's tower and blades shall be painted a non-reflective, unobtrusive color that blends the system and its components into the surrounding landscape to the greatest extent possible and incorporate non-reflective surfaces to minimize any visual disruption.

7. The system shall be designed and located in such a manner to minimize adverse visual impacts from public viewing areas.

8. Exterior lighting on any structure associated with the system shall not be allowed except that which is specifically required by the Federal Aviation Administration.

9. All on-site electrical wires associated with the system shall be installed underground except for "tie-ins" to a public utility company and public utility company transmission poles, towers and lines. This standard may be modified by the decision-maker if the project terrain is determined to be unsuitable due to reasons of excessive grading, biological impacts, or similar factors.

10. The system shall be operated such that no disruptive electromagnetic interference is caused. If it has

been demonstrated that a system is causing harmful interference, the system operator shall promptly mitigate the harmful interference or cease operation of the system.

11. At least one sign shall be posted on the tower at a height of five feet warning of electrical shock or high voltage and harm from revolving machinery. No brand names, logo or advertising shall be placed or painted on the tower, rotor, generator or tail vane where it would be visible from the ground, except that a system or tower's manufacturer's logo may be displayed on a system generator housing in an unobtrusive manner

12. Towers shall be constructed to provide one of the following means of access control, or other appropriate method of access:

  a. Tower-climbing apparatus located no closer than 12 feet from the ground.
  b. A locked and-climb device installed on the tower.
  c. A locked, protective fence at least six feet in height that encloses the tower.

13. Anchor points for any guy wires for a system tower shall be located within the property that the system is located on and not on or across any above-ground electric transmission or distribution lines. The point of attachment for the guy wires shall be enclosed by a fence six feet high or sheathed in bright orange or yellow covering from three to eight feet above the ground.

14. Construction of on-site access roadways shall be minimized. Temporary access roads utilized for initial installation shall be re-graded and re-vegetated to the pre-existing natural condition after completion of installation.

15. To prevent harmful wind turbulence from existing structures, the minimum height of the lowest part of any horizontal axis wind turbine blade shall be at least 30 feet above the highest structure or tree within a 300 foot radius. Modification of this standard may be made when the Applicant demonstrates that a lower height will not jeopardize the safety of the wind turbine structure, or the public health, safety or welfare.

16. All small wind energy system tower structures shall be designed and constructed to be in compliance with pertinent provisions of the Uniform Fire Prevention and Building Code.

17. All small wind energy systems shall be equipped with manual and automatic over-speed controls. The conformance of rotor and over-speed control design and fabrication with good engineering practices shall be certified by the manufacture.

§26 Standards

A Small Wind Energy System shall comply with the following standards:

1. Setback requirements. A Small WECS shall not be located less than one and half times the Total Height of the small WECS to a property line or a Residence, unless the Residence is that of the owner and Applicant of the Small WECS site. .

2. Noise. Except during short-term events including utility outages and severe wind storms, a Small

WECS shall be designed, installed, and operated so that noise generated by the system shall not exceed the 50 decibels (dBA), as measured at the closest neighboring inhabited dwelling.

§27 Abandonment of Use

A Small WECS which is not used for twelve (12) successive months shall be deemed abandoned and shall be dismantled and removed from the property at the expense of the property owner. Failure to abide by and faithfully comply with this section or with any and all conditions that may be attached to the granting of any Wind Energy Permit shall constitute grounds for the revocation of the permit by the Town.

B. All Small WECS shall be maintained in good condition and in accordance with all requirements of this section.

Article V

Waivers

§28 Waivers.

A. The Town Board may, after a public hearing (which may be combined with other public hearings on Wind Energy Facilities, so long as the waiver request is detailed in the public notice and the Application), grant a waiver, except as otherwise expressly provided for herein, from the strict application of the provisions of this Local Law if, in the opinion of the Town Board, the grant of said waiver is in the best interests of the Town.

B. The Town Board in making its determination on a waiver request shall consider the benefit to the Owner if the waiver is granted, as weighed against the detriment to the health, safety and welfare of the neighborhood or community by such grant. In making such determination the board shall also consider: (1) whether an undesirable change will be produced in the character of the neighborhood or a detriment to nearby properties will be created by the granting of the waiver; (2) whether the benefit sought by the Owner can be achieved by some method, feasible for the Owner to pursue, other than waiver; (3) whether the requested waiver is substantial; (4) whether the proposed waiver will have an adverse effect or impact on the physical or environmental conditions in the neighborhood or district; and the scope of the request.

C. The Board , in the granting of waivers, shall grant the minimum waiver that it shall deem necessary and adequate and at the same time preserve and protect the character of the neighborhood and the health, safety and welfare of the community.

D. The Town Board may attach such conditions, as it deems appropriate to waiver approvals as it deems necessary to minimize the impact of the waiver.

Article VI

Miscellaneous

§29 Fees

A. Non-refundable Application Fees shall be as follows:

1. WECS Wind Energy Permit: $200 per megawatt of rated maximum capacity;
2. Wind Measurement Towers Wind Energy Permit: $200 per tower, and $200 for any other structure or part thereof not a tower;
3. Small WECS Wind Energy Permit: $150 per WECS;
4. Wind Measurement Tower or Wind Energy Permits renewals/extensions {16(D)}: $200 per Permit/WECS;
5. The fee for an Article 5 Waiver application (shall be $250.00).

B. Wind Energy Permits; review, inspection, and approval fees. The Town believes the review of applications for Wind Energy Facilities and compliance monitoring of issued Wind Energy Permit requires specific third party expertise. In addition to the permit fees for the WECS system as provided in 29(A) above, the Owner of the WECS shall pay the costs of such review as follows:

1. An outside consultant, approved by the Town, to review the plans submitted by the Applicant or its representative for compliance with this regulation and inspection of work, together with monitoring compliance with any issued permit for any WECS. All such expense shall be made by the Applicant, or Holder of such issued permit, if different, providing a cash advance payment to the Town Clerk prior to issuing such permit or such other form of advance payment as the Town Board may direct and approve..

2. Annual Report. The Owner shall file annually a report of all repair work to the WECS system, detailing any improvements, alterations or changes to any WECS or other structure of the systems or any of its components, together with a review fee of $200.00 each WECS. The report shall be certified by a licensed engineer that such work has not change any permit condition. The Town, upon notice to the Owner, may refer the report to consultant if it reasonably believes that any work may change or adversely impact a permit condition. The Owner shall be responsible for any costs of any outside consultant, if necessary, to review the report.

3. Any costs associated with reviewing materials submitted by the Owner or the review of any condition of a permit, including, but not limited to, ensuring the system continues to be safe and compliant with the terms of such permit issued shall be expense of the owner of the system. Such expense shall be paid by the Applicant/Owner. Prior to incurring such costs, the Town agrees to provide the Applicant/Owner of the system with notice of such costs and reason for the same. The Applicant/owner may protest the costs by filing a protest with the Town Clerk within ten days of such notice. Said protest shall contain a statement of what is protested, and if a cost item is protested then an estimate from an independent person for the costs protested shall be included. Notwithstanding a protest the Town may engage a consultant to review any submission by the Applicant/Owner of the system prior to approving the submission and all such expense

and costs shall be an expense of the project (Applicant/Owner of the system). If any such expense shall not be paid the same shall constitute a violation of the permit and be deemed an expense in decommissioning the system or any part thereof in question.

4. The permit fee for Town Board approval for cutting or clearing in green buffer area within a Site shall be $100.00 per permit, no permit fee is necessary for maintaining agricultural uses within a green buffer zone.

5. Applications for approval of Transfer of ownership or control pursuant to section 5(G) shall be submitted to the Town Board together with information explaining the proposed change of control or the transfer. Such information shall include the names of the parties whose interest is being change or transferred together with their percentage of ownership being transferred and the names of each person, shareholder, member, partner or individual receiving such interest, together with a fee of $500 and such consultant fees as the Town Board finds necessary to review any financial information submitted therewith. The Town Board reserve the right to request such other information it may reasonably request and finds necessary to complete it review of such application.

C. Nothing in this Local Law shall be read as limiting the ability of the Town to enter into Host Community Agreements with any Applicant to compensate the town for expenses or impacts on the community. The Town shall require any Applicant to enter into an escrow agreement to pay the engineering and legal costs of any application review, including the review required by SEQRA. Notwithstanding anything to the contrary provided herein, any and all Town agreements or permit conditions pertaining to a WECS shall be filed with the Town and in place prior to the issuance of the Wind Energy Permit, unless the approval for such WECS permit expressly provides otherwise, including Host Community Agreement, Decommission Plan and proof of Funds or escrow accounts, if required, related to the WECS.

§30 Tax Exemption.

The Town hereby exercises its right to opt out of the Tax Exemption provisions of Real Property Tax Law §487, pursuant to the authority granted by paragraph 8 of that law.

§31 Enforcement; Penalties and remedies for violations.

A. The Town Board shall appoint such Town staff or outside consultants as it sees fit to enforce this Local Law.

B. Any person owning or operating a Wind Energy Facility shall be responsible for the continued compliance of such facility with this local law and the terms and conditions of the Wind Energy Permit issued for such facility.

C. A violation of this local law or any provision of the Wind Energy Permit shall be subject the Owner or Operator of the facility to a civil penalty of One Thousand ($1,000.00) Dollars. In lieu of proceeding with enforcement of this law as an offense the Town may institute a civil proceeding to collect civil penalties in the amount of $1000 for each violation. Each week's continued violation shall constitute and be deemed a separate additional violation

C. Revocation of Wind Energy Permit; Upon a finding of three separate violations by a court of competent jurisdiction by an Owner or Operator of the facility of a material provision of this Local Law in any one year period,, the Town Board may hold a hearing for a revocation of any Wind Energy Permit issued by such Board.

D. In lieu of a civil proceeding for enforcement of this local law, the Town Board may elect to proceed to charge any Owner or Operator who intentionally violates any material provision of this Local Law or be in noncompliance with any material term or condition of any permit issued pursuant to this Local Law, or any order of the enforcement officer with an offense, Each week such offense shall continue shall be a a separate offense . Each such offense shall be punishable by a fine not exceeding three hundred fifty dollars or imprisonment for a period not to exceed six months, or both for conviction of a first offense; for conviction of a second offense both of which were committed within a period of five years, punishable by a fine not less than three hundred fifty dollars nor more than seven hundred dollars or imprisonment for a period not to exceed six months, or both; and, upon conviction for a third or subsequent offense all of which were committed within a period of five years, punishable by a fine not less than seven hundred dollars nor more than one thousand dollars or imprisonment for a period not to exceed six months, or both. However, for the purpose of conferring jurisdiction upon courts and judicial officers generally, violations of this local law shall be deemed misdemeanors and for such purpose only all provisions of law relating to misdemeanors shall apply to such violations.

E. In case of any violation or threatened violation of any of the provisions of this local law, including the terms and conditions imposed by any permit issued pursuant to this local law, in addition to other remedies and penalties herein provided, the Town may institute any appropriate action or proceeding to prevent such unlawful erection, structural alteration, reconstruction, moving and/or use, and to restrain, correct or abate such violation, to prevent the illegal act.

§32 Severability

Should any provision of this Local Law be declared by the courts to be unconstitutional or invalid, such decision shall not affect the validity of this Local Law as a whole or any part thereof other than the part so decided to be unconstitutional or invalid.

§33 Supercession. This Local Law shall supercede all Town local laws and other land use regulations and specifically New York Town Law §131, §133, §266 and §268 that are contrary and in conflict with the provisions of this Local Law to the extent necessary to give this Local Law full force and effect.

§34 Effective Date

This Local Law shall be effective immediately upon its filing with the Secretary of State in accordance with the Municipal Home Rule Law.

Appendix Q
Preliminary Fire Protection and Emergency Response Plan

Preliminary
Fire Protection and Emergency Response Plan

Jericho Rise Wind Farm

Towns of Bellmont and Chateaugay

Franklin County, New York

Appendix Q

Prepared for:

Jericho Rise Wind Farm, LLC
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TABLE OF CONTENTS

FIGURES

1.0 INTRODUCTION

Jericho Rise Wind Farm LLC (Jericho Rise) is constructing the Jericho Rise Wind Farm Project (Project) within the Towns of Bellmont and Chateaugay, Franklin County, New York. The project area is located approximately 5 miles south of the United States/Canada border, approximately 1 mile southwest of the Village of Chateaugay, and 2 miles east of the Village of Burke. The project area is roughly bordered by the Burke/Chateauguay Town Line to the west, New York State Highway 374 to the east, the Malone Chateaugay Road to the north, and Brainardsville Road to the south. Jericho Rise has developed this draft, preliminary plan as a means to describe the content and intent of a full Fire Protection and Emergency Response Plan (Plan) to be developed per the Town of Chateaugay and Town of Bellmont Local Laws; Local Law No. 7 of 2006 and Local Law No. 2 of 2006 respectively, and in consultation with local authorities prior to project construction.

The Plan will primarily deal with what actions need to be taken in the event that an incident occurs, it does not deal with the issues and details of a formal Health and Safety Plan. It is based on the assumption that all contractors and subcontractors working on the site, like Jericho Rise, have their own Health and Safety Plan and their staff are trained and experienced in the daily implementation of that Plan and the procedures and recommendations that it provides. As part of Jericho Rise's due diligence when appointing its own subcontractors, such Health and Safety Plans and the subcontractors' Safety Records are reviewed.

A copy of this Plan will be located on site in the operation and maintenance (O&M) facility in plain view as well as provided to the local emergency services to apprise them of the construction of this facility and to enable them to formulate their own response plan. The local emergency services will be invited to visit and make their own assessment of the site and to suggest any improvements and additions to this plan.

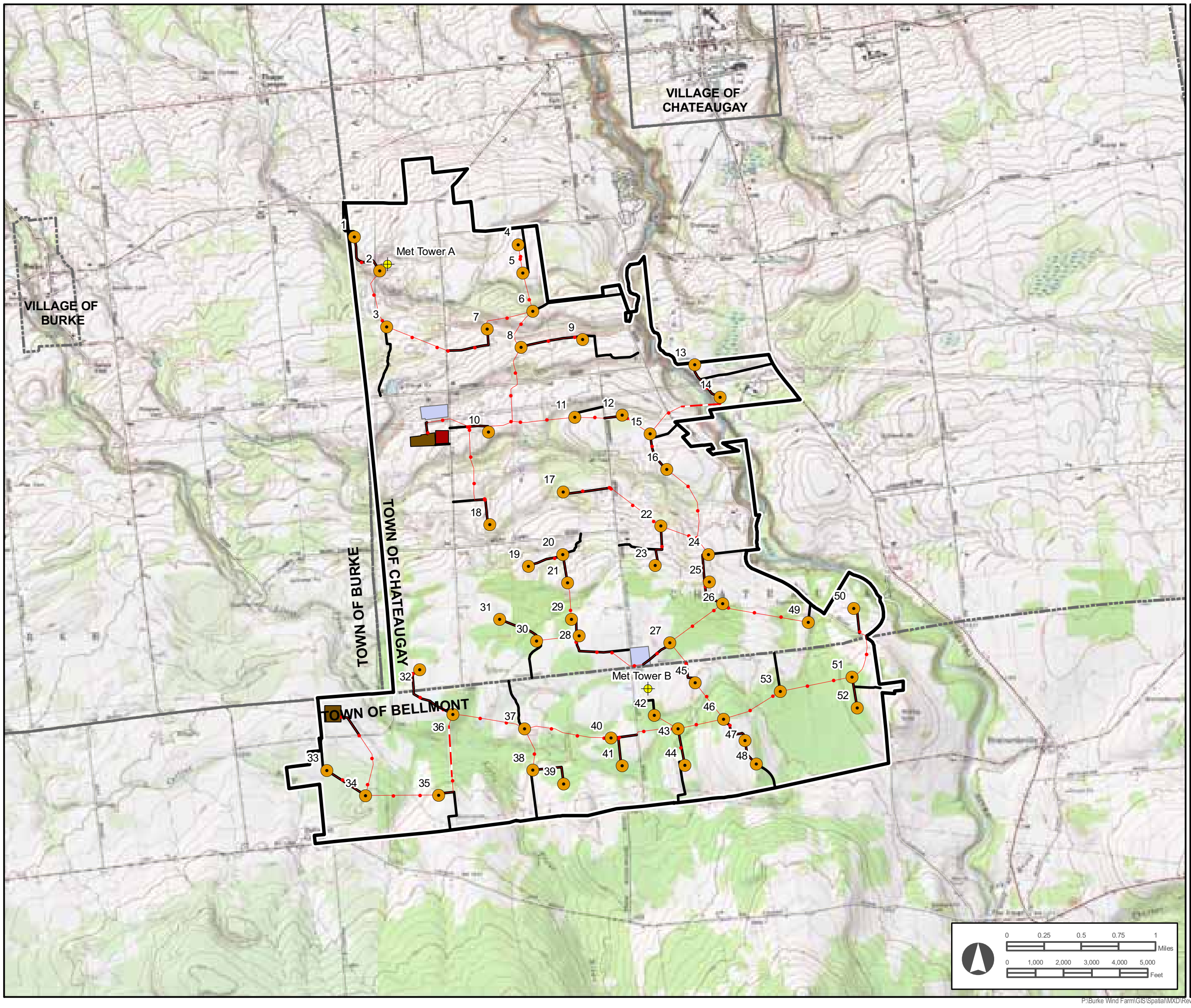
This document will form part of the site safety induction for all site personnel, prior to issuance of the Site Safety Passport which is given to all site workers to evidence their bona fide presence on site and that they have been through a formal site induction.

An overall map of the site showing where emergency response equipment will be stored for the duration of construction will be developed after meetings and input from emergency providers and contractors. This map will be submitted to emergency responders prior to site preparation. This map will also show the location(s) of gated/locked entrances.

2.0 PROJECT DESCRIPTION

The proposed Project would consist of up to 53 turbines, each with a nameplate generating capacity of 1.65 megawatts for a total nameplate capacity of 87.45 megawatts. The wind turbine generator model proposed for this Project is the 1.65-megawatt Vestas V82, or an alternative wind turbine model of equivalent size and generating capacity. In addition to the wind turbines, the Project involves construction of associated components including approximately 15 miles of access roads, electrical collection and communication cable networks, an operation and maintenance building, an on-site project step-up substation, and an interconnection substation. Additionally, two or three permanent meteorological towers are anticipated to be located within the project area.

Figure 1.1-1 shows the overall site layout and site location. Signs will be placed on site to direct individuals to specific locations.



SOURCE:
USGS 7.5 MINUTE QUADRANGLES
BRAINARDSVILLE, 1964; BURKE, 1993;
CHATEAUGAY, 1993; CHASM FALLS, 1980

TETRA TECH EC, INC.

JERICHO RISE WIND FARM

FRANKLIN COUNTY, NEW YORK

FIGURE 1.
SITE LOCATION AND
PROJECT AREA

JERICHO RISE WIND FARM LLC
DECEMBER 2007

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3.0 EMERGENCY INFORMATION

3.1 Notification Procedure

All emergency situations should immediately be reported.

The following seven-step Emergency Notification Procedure should be used:

1. **Notify 911 Immediately**

   Give the site name, address, and directions to the operator.

2. **Describe the type of emergency situation**.

   Typically the categories include:

   - Medical Emergency
   - Fire
   - Construction Emergency
     - Equipment Failure—Specify
     - Hazardous Spillage—Specify
     - Turbine Structural Failure—Specify
     - Power Failure
   - Extreme Weather Conditions
     - Thunderstorm/Electrical Storm
     - Extreme High Winds
     - Severe Hail
     - Snow/Ice Storm
   - Transport Incident
     - Passenger Vehicle
     - Heavy Hauler
     - Heavy Plant
     - Aircraft Impact
   - Extreme Site Conditions
     - Flood
     - Earthquake
   - Act of Sabotage/Vandalism
     - Act of Terrorist
     - Bomb Threat

When describing personnel involved, indicate the numbers affected and the following initial assessment:

a. Fatality
b. Major Illness (e.g., heart attack, not breathing, unconscious, etc.)
c. Major Injury (e.g., broken bone, loss of limb, severe cuts/bleeding, etc.)
d. Minor Injury (e.g., twisted ankle, foreign body in eyes, minor cuts, etc.)
e. Bite/Sting (e.g., snake, scorpion, etc.)
f. Weather Effect (e.g., effects of heat, sun, cold, wind chill, lightning strike, etc.)
g. Incident Type (e.g., fall, crush, vehicle crash, fire, electric shock, etc.)

3. **Location**

Give the operator the location of the emergency, by referring to the nearest turbine, structure, or road junction. Also let the operator know whether casualties are in the open, trapped in a vehicle or site equipment, or at height within a turbine.

4. **Notify Supervisor**

Contact the nearest site supervisor, and then your own supervisor. For non-urgent medical attention, the supervisor should arrange for site transport to take the injured to the hospital, and notify the hospital that they are on their way. The nearest hospital with an emergency room is the Alice Hyde Medical Center in Malone, New York.

5. **Notify Jericho Rise**

The supervisor(s) will contact a Jericho Rise supervisor (a full list will be provided and posted in a highly visible area) who will assist at the location of the emergency. Jointly, the supervisors will arrange for a trained first aider to attend the scene of the emergency, if required. The names of all first aiders will be made available to all of the site supervisors. First aiders should be identified by a badge on their hard hat.

6. **Coordinate**

The supervisor(s) will send an employee to the nearest site access point to meet the emergency services, and escort them to the location of the emergency. The gate guard also should be informed to assist in directing the emergency services to the scene of the incident.

If Airvac services are required, personnel will direct the emergency responders to a designated helicopter landing area. This area will be identified prior to construction, and a map and coordinates will be included in the final Plan.

7. **Accompany**

   The supervisor(s) will continue to assist with the situation on site, and one of the supervisors will accompany any injured personnel to the hospital. The supervisor will stay until examination (including a drug and alcohol test) is complete, so that a full report including the extent of the injuries can be made. The employer can later require the injured to make an appointment to see the Company Doctor if confirmation of the extent or nature of injuries, treatment, or disability is required.

3.2 Site Evacuation Procedure

1. Personnel empowered to order evacuation/shutdown of the site are:
   - Supervisors of individual contractors, who may instruct their own people to evacuate
   - Jericho Rise supervisors, who may instruct all personnel to evacuate
2. A designated evacuation route and meeting site will be identified in the final Plan and posted within the O&M facility and various other locations in plain view. When instructed, personnel will evacuate site via nearest access to the designated route, and assemble at the designated site.
3. The Jericho Rise site manager (or designated person) will arrange a head count of all personnel. This will be done by the supervisors from each contractor carrying out their own headcount, and advising Jericho Rise of the result. Supervisors from each contractor will be responsible for maintaining an accurate record of which personnel are onsite each day, in order to be able to identify which personnel are missing in the case of an emergency evacuation. Further, a sign-in/sign-out procedure will be implemented at the entrance.

3.3 Natural Disasters or Acts of Terrorism without Warning

Natural disasters like earthquake and flash flood may occur without warning. In such cases it is important that the site be evacuated with all possible haste. All site personnel should move away from the location of the event and get to a safe distance location. It is essential that personnel remain calm and do not panic. Once personnel are in a safe location, Emergency Notification Procedures should be enacted.

Acts of terrorism, by their nature, frequently come without warning and should be treated in the same manner as natural disasters.

A radio will be located on site and will provide a good source of information/communication and site personnel should tune into a news station until such time as the all clear is announced and they can either safely return to the site or their home.

3.4 Fire Prevention Procedures

Fire Prevention Procedures will be developed in coordination with local authorities prior to construction and will provide specific procedures for each facility type.

3.5 Severe Weather Conditions

Severe weather conditions, particularly gusting high wind speed and electrical storms, have a pronounced effect on the construction of wind turbines. Records will be kept of prevailing weather conditions on a daily basis and periodically throughout the day weather forecast updates will be reviewed and assessed to ensure the safe continuity of work, while ensuring that weather sensitive activity is only commenced on the understanding that existing or imminent weather conditions will not exceed the risk assessed for that activity. In any event, due diligence should be proactive with routine observation by all concerned about obvious local changing atmospheric conditions that could indicate deteriorating weather conditions.

The turbine manufacturers have recommendations in the turbine installation manuals that specify maximum wind speeds that are allowed for:

- Erection of tower sections, nacelles, and rotor assemblies
- Working at height inside a turbine
- Working at height external to the turbine
- Working on a suspended platform

In addition, heavy lifting cranes have specific limitations with respect to positioning, rigging, and lifting components that will change with the dimensions of the component, the location, ground conditions, weather conditions, and wind speeds.

The turbine manufacturer’s recommendations and the crane limitations need to be considered for each stage of construction to balance the risk inherent in each operation.

With regard to atmospheric electrical activity, tall metal structures like wind turbines and heavy lifting cranes are prone to attract such activity until such time as suitable grounding is in place. In the event of local electrical storms or thunderstorms, all turbine locations should be evacuated and site personnel seek safety in the cab of their vehicle at least 80 feet from the turbine location until such time as the storm has passed or abated.

Turbine specific details and manuals will be maintained on site.

3.6 Plan Holders

The final Plan will be held both in the Jericho Rise trailer and by each of the contractors. In addition, copies shall be sent to the respective emergency services. This will be provided, together with a site layout map and site location map, in a laminated format. A poster summarizing this information will be prominently displayed on the site.

4.0 EMERGENCY WITHIN A TURBINE

In the event that an incident occurs at height within a turbine, Emergency Services should be made aware of the need for specialist recovery equipment and techniques to enable injured personnel to be removed to safety. The wind turbine manufacturer will have available, on site, such equipment and trained personnel to support and assist the Emergency Services to action such a recovery.

Emergency response equipment will be stored in the turbine supplier’s site office and shall be transported to the appropriate turbine in the case of an emergency incident.

5.0 IN CASE OF SPILLAGE

A separate construction spill prevention, control, and countermeasures (SPCC) plan will be developed to address any spill of hazardous, or potentially hazardous materials on the site. Please refer to that plan for more detailed instructions regarding spill prevention and response.

Location of Material Safety Data Sheets for Hazardous Materials

Each subcontractor is required to maintain listings of all materials that they are using which may be flammable or hazardous to health and will provide a copy, updated as appropriate to the Jericho Rise site office. The location of these files within each subcontractor's trailer or office, and the Jericho Rise site office, should be highlighted and clearly visible.

6.0 AIRCRAFT IMPACT

A separate Federal Aviation Administration Lighting Design plan complies with existing regulations and requirements, which will be fully operational as soon as each electrical circuit is energized. To minimize the risk of collision by low flying aircraft during the construction phase, fully erected turbines that have not been energized will be marked with a suitable self-powered obstruction light until such time as that circuit is energized.

In the unlikely event that such a collision occurs, the Plan will be brought into effect to mobilize the appropriate Emergency Services.

7.0 ACTS OF SABOTAGE, TERROISM, AND BOMB THREATS

With the advent of potentially increased levels of terrorist activity on the United States, it has become essential that all companies consider the implications to the health and safety of their staff should a terrorist attack occur in the workplace. The primary concerns are threatened bombing attacks and the potential for chemical or biological attack. The New York State Police Malone Office has law enforcement authority over the site and is responsible for assuming control of response actions.

In the event that an act of terrorism comes without warning, or in the case that an incident is subsequently found to be caused by vandalism or sabotage, the Plan will be brought into effect to mobilize the appropriate emergency services.

7.1 Bomb Threat Procedure

In the event that a bomb threat call is received, the main objective is to record every word of the threat message accurately and obtain as much information as possible from the caller. To this end, the following questions should be asked:

- When will the bomb go off?
- Where is the bomb?
- What type of bomb is it?
- What does it look like?
- When was it put there?
- Why are you doing this?
- Who are you?

While talking to the person, try to determine:

- The gender of the caller
- The style of speech
- The accent and mannerisms of the caller
- Listen for background noises that could be helpful to an investigator

After receiving the call, the recipient will then:

- Contact the site manager or the nearest site supervisor
- Or Dial 911 and inform the New York State Police Malone Office

Site Management should:

- Make sure the New York State Police Malone Office has been informed.
- Ensure immediate evacuation of the area of the bombs supposed location and the surrounding areas.
- Prepare to implement the Evacuation Procedure.

- Prepare relevant documentation to assist in assessing the situation with police and authorities. Information such as the number of persons at each site location, site maps, plans of related buildings and equipment, etc.
- Coordinate and supply support to the New York State Police Malone Office as requested.

Whether the threat is received in writing or in person, the same procedure should be followed as far as possible.

A procedural check list will be developed in the final Plan and shall be maintained and readily available, incorporating the above elements.

7.2 Chemical and Biological Threat

It is difficult to have a contingency plan that takes into consideration all the possibilities that avoid the consequences of a chemical or biological attack. However, should a warning or threat be issued, the identical procedure should be applied as that used for a bomb threat. Leaving the area is even more imperative. Keeping your body covered as far as possible to avoid any skin contact with the threatened substance is a priority. Covering the nose and mouth to avoid inhalation is also necessary.

In the event that a letter or parcel is used to spread the noxious medium, all site personnel should be vigilant in their examination of suspicious or unsolicited deliveries. If there are any doubts as to the content of a letter or parcel, and if the senders address and the postmark do not match, the item should be treated as suspect and the authorities contacted to examine the piece under controlled conditions.

The site management cannot mandate for the malicious actions of others, but all site personnel should maintain a heightened state of awareness to protect themselves, their families, and their colleagues at work.

DO NOT APPROACH, TOUCH, OR ATTEMPT TO REMOVE
ANY SUSPICIOUS OBJECT OR DEVICE.

8.0 TRAINING

Jericho Rise will develop specific training protocol to be provided to all on-site personnel to be included in the final Plan. Training protocol will be developed in consultation with the chief line officer of each agency and/or public service department.

9.0 POST-INCIDENT REVIEW OF RESPONSE PROCEDURE

Jericho Rise will develop a schedule for regular site safety meetings. During meetings that follow an emergency response incident, the site team will review how successfully the Plan was implemented. Following this review, actions will be taken to correct any deficiencies, either by improved communication of the Plan or by modification to the Plan.

Summary of Emergency Services for Jericho Rise Wind Farm Project
Towns of Bellmont and Chateaugay, Franklin County, New York

Nearest 24/7 hospital with emergency room capability that can be reached within 20-30 minutes	
Will Respond to any Emergency Call (Fire/Basic Life Support) Burke Volunteer Fire Department 1041 County Route 23 Burke, New York 518-483-0804 (Fire House) 518-425-0032 (Chief Donnie Smith Jr.) Chateaugay Fire Company 2 Lake Street Chateaugay, New York 518-497-3135 (Fire House) 518-497-6625 (Chief Robbie Demarse)	Dial 911
Fire Departments Burke Volunteer Fire Department 1041 County Route 23 Burke, New York 518-483-0804 (Fire House) 518-425-0032 (Chief Donnie Smith Jr.) Chateaugay Fire Company 2 Lake Street Chateaugay, New York 518-497-3135 (Fire House) 518-497-6625 (Chief Robbie Demarse)	Dial 911
New York State Police 3909 State Route 11 Malone, New York 518-483-5000	Dial 911
Alice Hyde Medical Center 133 Park Street Malone, New York 518-483-3000	Dial 911
Northern Ambulance (Advanced Life Support/Critical Care) 347 Elm Street Malone, New York 518-483-6650	Dial 911
Company Doctor TBD	
Spill Reports—National Response Center	Dial 800-424-8802
Spill Reports—New York State Spill Hotline	Dial 800-457-7362
Poison Center	Dial 800-222-1222
Emergency Service can be contacted by dialing 911	
Contact details of site supervisors, first aiders, and other personnel are listed on a separate sheet that will be issued with this plan and updated as the project progresses.	

Other Useful Contacts

Center for Disease Control (CDC)	http://www.cdc.gov/
Department of Homeland Security	http://www.dhs.gov/dhspublic/
Environmental Protection Agency	http://www.epa.gov/
Federal Bureau of Investigation (FBI)	http://www.fbi.gov/
Federal Emergency Management Agency (FEMA)	http://www.fema.gov/
National Response Center to report Toxic Chemical and Oil Spills	http://www.nrc.uscg.mil/nrchp.html
New York State Department of Environmental Conservation (DEC), Spill Hotline	http://www.dec.ny.gov/chemical/8428.html
New York State Department of Health (DOH)	http://www.health.state.ny.us/
New York State Department of Labor, Division of Safety and Health (DOSH)	http://www.labor.state.ny.us/workerprotection/ safetyhealth/ DOSH_PESH.shtm
Occupational Safety and Health Administration (OSHA)	http://www.osha.gov/
Poisons Control Center	http://www.aapcc.org/ http://uuhsc.utah.edu/healthinfo/adult/nontrauma/overview.htm
United States Postal Service	http://www.usps.com/

Appendix R
Ohio University Community Development Fact Sheet

Ohio State University Fact Sheet

Community Development

700 Ackerman Road, Columbus, OH 43202-1578

Costs of Community Services

CDFS-1260-98

Land Use Series

Allen M. Prindle
Thomas W. Blaine

The term, costs of community services (COCS), usually refers to a growing body of literature which focuses upon how various types of land use affect local government taxation and spending. This body of literature generally summarizes studies that use fiscal impact analysis as their primary method of determining whether various forms of land use contribute to or detract from local government budgets.

During the period immediately following World War II, many communities sought to attract business, industrial, and residential growth for a number of reasons. Among these was that economic growth would raise the property tax base and generate increased revenues for local infrastructure, including schools, roads, and fire/police protection. During the 1980s however, many skeptics began to question whether economic development in rural areas "paid its own way" in terms of local taxation. When farmland, open space and woodlands are converted to residential development, for example, local tax revenues increase substantially, since property values increase. But the local government and school district are also required to provide added services to the new residents. Does the increased revenue balance the increased demand for services? That is the question the COCS studies set out to answer.

The COCS Ratio

It has become conventional in COCS studies to divide land use into three categories: residential, commercial/industrial, and farmland/open space. One of the most common procedures used is the calculation of a COCS ratio for each land use category. The ratio compares how many dollars worth of local government services are demanded per dollar collected. A ratio greater than 1.0 suggests that for every dollar of revenue collected from a given category of land, more than one dollar is spent in association with it.

Many of the early studies providing estimates of COCS ratios were either sponsored or conducted by the American Farmland Trust. But in recent years a great number of other researchers from a variety of backgrounds have undertaken such studies. The results seem to corroborate each other. Virtually all of the studies show that for residential land, the COCS ratio is substantially above 1. That is, residential land is a net drain on local government budgets. The average estimate ranges from about 1.15 to 1.50, which means that for every dollar collected in taxes and non-tax revenue, between $1.15 and $1.50 gets returned in the form of services by the local government and school district.

On the other hand, the COCS ratios for the other two land use categories are both substantially below 1. For commercial/industrial, the ratio usually ranges from 0.35 to 0.65, indicating that for every dollar collected, only about 35 to 65 cents worth of services are provided by the local government. For agriculture and open space, the ratios are only slightly smaller, usually ranging from 0.30 to 0.50.

The largest single expenditure category for communities, according to the studies, is the public school system, accounting for 60 to 70 percent of spending. Since open space and commercial development in themselves do not place any burden on the schools, it should not be surprising that their ratios are less than the residential category.

Several questions emerge from these results. These include the following: are these studies reliable, and why do the numbers vary?

The studies do appear to be reliable because of the way in which taxes and service expenditures are calculated and imputed. The methods used in the studies have been laid out clearly. Regarding the variation in COCS ratios, it should be noted that they do not vary in any profound manner. The studies are unanimous in showing that residential land use ratios are above 1 and that the other types of land uses are below 1. The primary reason that the ratios do have some variation is that all communities are not identical. If, for example, many homes in a community are in an extremely high price range, and occupied by "empty nesters," the COCS ratio should be expected to be relatively low. On the other hand, low or middle income property occupied by families with numerous children would produce a higher ratio. Some communities have gone beyond simply calculating a COCS ratio and have actually calculated the "break even" home value for their community. Not surprisingly, these values tend to be substantially higher than the median (average) home value.

Another Approach

Other researchers have attempted to measure the costs of growth simply by statistically measuring the relationship between population growth rates and per capita local government spending. Most of these results have shown that for very small growth rates (in the area of 1-2 percent per year), costs do not escalate rapidly. For communities with higher growth rates, however (above 3 percent per year) per capita spending begins to increase very dramatically.

The findings of the various types of studies on costs of services seem to be in agreement that, as farmland and open space are converted to residential development, local public per capita spending increases.

Criticisms of the COCS Literature

Initially, critics of the COCS studies argued that it may be difficult to generalize from these studies. This criticism has lost some credibility, however, because so many studies have been conducted in a wide range of communities nationally. The results seem to be unambiguous.

More recently, critics have developed the argument that only looking at the fiscal impacts on local governments and school districts is too limited in scope. They maintain that new residents do much more than simply pay taxes and demand services. Residents work, earn money, and spend much of it locally, and therefore contribute to the economic base of the community in a substantial way that is not captured in the COCS studies. The critics argue that future work should include these impacts.

But if COCS studies do not include these "multiplier" effects, it also must be said that they do not include non-economic costs to the community, such as the loss of scenic landscape, increased traffic congestion, and other variables associated with quality of life either.

Another argument against COCS studies is that they are based on a "cost theory of taxation" and do not consider how growth, even with increased taxation, increases the values of properties. The rival "benefit theory of taxation" states that as new taxes pay for better infrastructure such as schools and roads, property values (and thus the net worth of property owners) increase. Considerations such as this have not been measured within the context of COCS.

Implications

One of the most important implications of the COCS literature is that proponents of farmland and open space preservation now have an important economic argument on their side. Some proponents of economic development have argued that a system that allows land to go to the highest bidder provides the most efficient economic results. The COCS findings, however, indicate that residential development often brings costs to the community that are not fully borne by the new residents, but instead are distributed throughout the community. Local leaders should be aware that efforts to "promote growth" in their communities will have substantial impacts on revenues and expenditures. They should be able to estimate these impacts when planning for the future.

Two things emerge when reflecting on the COCS issue. The first is that residential development in any area invariably leads to increased per capita demand for publicly provided services, placing increased burdens on local infrastructure and public agencies. As a result, increases in local tax rates to provide additional services tend to follow growth. Second is that members of each community should ask themselves the broader question, "How do we manage growth in our community, along with all of the impacts (both positive and negative) that it brings?"

References

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Kelsey, T.W., 1996. "The Fiscal Impacts of Alternative Land Uses: What do Cost of Community Services Studies Really Tell Us?" *Journal of the Community Development Society*, 27/1, pp. 78-89.

Ladd, H., 1992. *Effects of Population Growth on Local Spending and Taxes*. Cambridge, MA: Lincoln Institute of Land Policy.

Keith L. Smith, Associate Vice President for Ag. Adm. and Director, OSU Extension.

TDD No. 800-589-8292 (Ohio only) or 614-292-1868

Appendix S
Lighting Plan

AVIATION SYSTEMS INC.
Aviation Consultants

September 6, 2007

Mr. Patrick Doyle
Horizon Wind Energy
3 Columbia Place
Albany, NY 12207

Re: Jericho Rise, 07-N-0255.NY.004

Dear Mr. Doyle:

Pursuant to your request, Aviation Systems, Inc. (ASI), has performed an initial evaluation of the feasibility of the Jericho Rise Wind Power Project. The purpose of the study is to determine the feasibility of erecting wind turbines with a tip height of up to 397 feet above ground level (AGL), from an aviation and airspace point of view. We have reviewed the above referenced project against aviation and airspace criteria set forth in Federal Aviation Regulation (FAR) Part 77 (14 CFR 77); FAA Order 8260.3B, the United States Standard for Terminal Instrument Procedures (TERPs) and; FAA Order 7400.2E, Procedures For Handling Airspace Matters. The criteria in these documents comprise the factors the Federal Aviation Administration (FAA) will use in evaluating the aeronautical compatibility of the project when it is submitted for their official regulatory review. Our findings include the following:

- The project consists of 53 wind turbines to be located within an area 3.5 x 3.2 nautical miles in the State of New York.
- Ground elevations within the area range from 950 feet above mean sea level (AMSL) to 1490 feet AMSL. With a proposed turbine height of 397 feet above ground level (AGL), the highest point of the project would be 1887 feet AMSL. See attached map depicting the project and surrounding area. A 100 foot buffer was added for terrain variations and to establish the "Target Height" of 1987 feet AMSL.
- The nearest public airport is Malone – Dufort Airport, located 9.57 nautical miles (NM), west of the project centerpoint. The project would not impact airport operations.
- The project would have no impact on Minimum Vectoring Altitude (MVA) or En-Route Low Altitude Airways.

- The project would be located outside the boundaries of Military Operations Areas or Restricted Areas.

- The Saint Albans Joint Use Long Range Radar Site is within 60 NM (44.44 NM east) of the search area centerpoint. The potential for long range radar operational impact and mitigations options very with development specifics. A standard aeronautical study is required.

- Within Sector A, the project would not cause any aviation operational impact and 397 feet AGL wind turbines should receive Determinations of No Hazard from the FAA.

Additionally, any structure over 200 feet AGL, in this case the turbines, requires notice to the FAA and also would require lighting in accordance with FAA Advisory Circular (AC) 70/7460-1K, change 2. At your request, ASI will handle the FAA filing process pursuant to the notice requirements of FAR Part 77 and follow-up until the No Hazard Determinations are issued by the FAA. We will prepare a plan of selective lighting so that not all of the turbines will require the extra expense of installing and maintaining lights.

The FAA makes changes to the National Aviation System everyday. New approaches are published, departure procedures are changed, new runways are planned, Minimum Vectoring Altitudes (MVA's) are modified etc. Therefore, it is possible for the study findings to become obsolete in a relatively short time period. We recommend that prior to filing specific sites within the study area, the study findings be reviewed for currency. Studies greater than 12 months old should automatically be re-visted and their findings confirmed.

Our findings are intended as a planning tool, in conjuction with the resolution of other pertinent issues. Actual construction activities are not advisable until the FAA Determinations of No Hazard are issued.

This is the opinion of Aviation Systems, Inc.

Sincerely,

Jerry Chavkin

Jerry Chavkin
Vice President, Airspace Operations

Attachments

AVIATION
SYSTEMS INC.
Aviation Consultants

September 6, 2007

Mr. Patrick Doyle
Horizon Wind Energy
3 Columbia Place
Albany, NY 12207

Re: Jericho Rise, 07-N-0255.NY.004

Dear Mr. Doyle:

Enclosed please find the current list of proposed turbine locations along with lighting recommendations for each turbine in the Jericho Rise Wind Project. This lighting plan was developed in compliance with the FAA Advisory Circular (AC) 70/7460-1K, Change 2 and on the basis of our discussions with FAA Regional offices regarding their current policy. However, final review by FAA could require some changes.

The lighting plan calls for the lighting of 23 out of 53 wind turbines, the equivalent of 43% overall. Please note any changes to the project may require the development of a new lighting plan. As requested, ASI has electronically filed the 53 wind turbines with the FAA and hard copies of these submittals are also enclosed for your records.

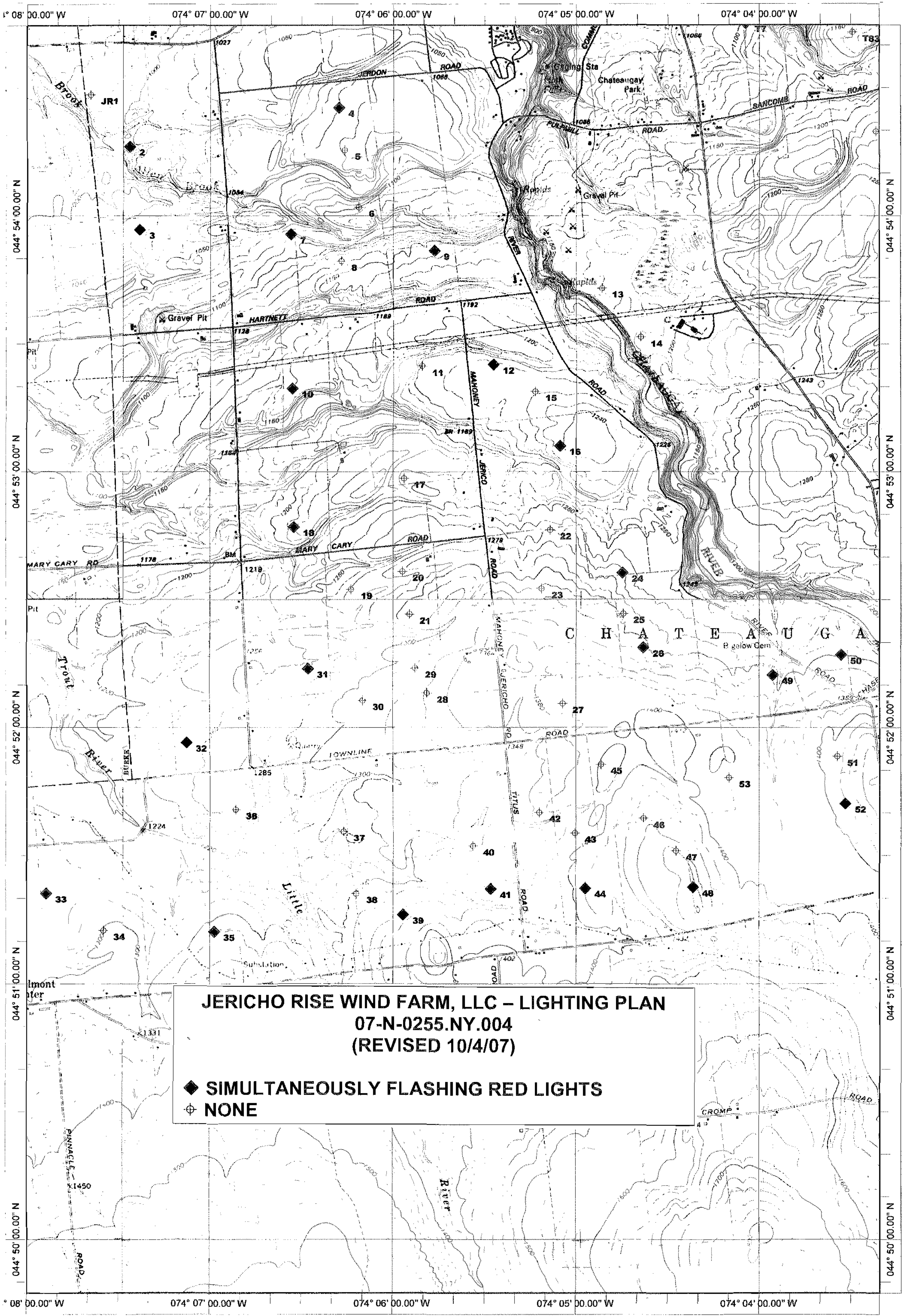
Sincerely,

Jerry Chavkin

Jerry Chavkin
Vice President, Airspace Operations

Enclosures: Wind Turbine List
Map
FAA Filings

2510 West 237th Street • Suite 210 • Torrance, CA 90505
Tel: 310.530.3188 • Fax: 310.530.3850 • Email: asi@aviationsystems.com • www.aviationsystems.com



JERICHO RISE WIND FARM, LLC – LIGHTING PLAN
07-N-0255.NY.004
(REVISED 10/4/07)

◆ SIMULTANEOUSLY FLASHING RED LIGHTS
⊕ NONE

Jericho Rise Wind Farm
Lighting Plan

Turbine ID	FAA Aeronautical Study Number	Site Elevation	Recommended Lighting
JR1	2007-AEA-4458	968	NONE
2	2007-AEA-4459	1000	SFRL
3	2007-AEA-4460	1017	SFRL
4	2007-AEA-4461	1070	SFRL
5	2007-AEA-4462	1081	NONE
6	2007-AEA-4463	1101	NONE
7	2007-AEA-4464	1081	SFRL
8	2007-AEA-4465	1133	NONE
9	2007-AEA-4466	1156	SFRL
10	2007-AEA-4467	1170	SFRL
11	2007-AEA-4468	1201	NONE
12	2007-AEA-4469	1212	SFRL
13	2007-AEA-4470	1170	NONE
14	2007-AEA-4471	1191	NONE
15	2007-AEA-4472	1219	NONE
16	2007-AEA-4473	1237	SFRL
17	2007-AEA-4474	1243	NONE
18	2007-AEA-4475	1218	SFRL
19	2007-AEA-4476	1273	NONE
20	2007-AEA-4477	1285	NONE
21	2007-AEA-4478	1306	NONE
22	2007-AEA-4479	1271	NONE
23	2007-AEA-4480	1314	NONE
24	2007-AEA-4481	1271	SFRL
25	2007-AEA-4482	1292	NONE
26	2007-AEA-4483	1308	SFRL
27	2007-AEA-4484	1382	NONE
28	2007-AEA-4485	1343	NONE
29	2007-AEA-4486	1322	NONE
30	2007-AEA-4487	1308	NONE
31	2007-AEA-4488	1266	SFRL
32	2007-AEA-4489	1252	SFRL
33	2007-AEA-4490	1269	SFRL
34	2007-AEA-4491	1302	NONE
35	2007-AEA-4492	1316	SFRL
36	2007-AEA-4493	1269	NONE
37	2007-AEA-4494	1295	NONE
38	2007-AEA-4495	1305	NONE
39	2007-AEA-4496	1354	SFRL
40	2007-AEA-4497	1356	NONE
41	2007-AEA-4498	1347	SFRL

Turbine ID	FAA Aeronautical Study Number	Site Elevation	Recommended Lighting
42	2007-AEA-4499	1367	NONE
43	2007-AEA-4500	1391	NONE
44	2007-AEA-4501	1421	SFRL
45	2007-AEA-4502	1400	NONE
46	2007-AEA-4503	1455	NONE
47	2007-AEA-4504	1482	NONE
48	2007-AEA-4505	1486	SFRL
49	2007-AEA-4506	1310	SFRL
50	2007-AEA-4507	1298	SFRL
51	2007-AEA-4508	1417	NONE
52	2007-AEA-4509	1418	SFRL
53	2007-AEA-4510	1392	NONE

Federal Aviation Administration
Air Traffic Airspace Branch, ASW-520
2601 Meacham Blvd.
Fort Worth, TX 76137-0520

Aeronautical Study No.
2007-AEA-4458-OE

Issued Date: 10/04/2007

Patrick Doyle
Horizon Wind Energy
3 Columbia Place
Albanay, NY 12207

** DETERMINATION OF NO HAZARD TO AIR NAVIGATION **

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Wind Turbine JR1 0255.NY.001
Location:	Malone, NY
Latitude:	44-54-28.29 N NAD 83
Longitude:	74-7-38.61 W
Heights:	397 feet above ground level (AGL) 1365 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

As a condition to this Determination, the structure is marked and/or lighted in accordance with FAA Advisory circular 70/7460-1 K Change 2, Obstruction Marking and Lighting, white paint only - Chapters 12&13(Turbines).

It is required that the enclosed FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part I)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part II)

This determination expires on 04/04/2009 unless:

(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission if the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (718) 553-2560. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2007-AEA-4458-OE.

Signature Control No: 536572-100746171 (DNE)
William Merritt
Specialist

Attachment(s)
Case Description

7460-2 Attached

Federal Aviation Administration
Air Traffic Airspace Branch, ASW-520
2601 Meacham Blvd.
Fort Worth, TX 76137-0520

Aeronautical Study No.
2007-AEA-4458-OE

Issued Date: 10/04/2007

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3 Columbia Place
Albanay, NY 12207

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