FINAL ENVIRONMENTAL IMPACT STATEMENT

FOR THE

FLAT ROCK WIND POWER PROJECT

Towns of Martinsburg, Harrisburg, and Lowville, Lewis County, NY

Lead Agency: Town of Martinsburg
Martinsburg Town Hall
Martinsburg, New York 13404
Contact: Terry Thisse, Town Supervisor
Phone: (315) 376-3329

Prepared By: Environmental Design & Research, P.C.
238 West Division Street
Syracuse, New York 13204
Contact: John Hecklau
Phone: (315) 471-0688

Date Accepted by Lead Agency: February 18, 2004

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14-12-8 (3/99)-9c

SEQR

State Environmental Quality Review
Notice of Completion of Draft / Final EIS

Project Number _____ **Date:** 02/18/04

This notice is issued pursuant to Part 617 of the implementing regulations pertaining to Article 8 (State Environmental Quality Review Act) of the Environmental Conservation Law.

A ☐ Draft or ☑ Final (check one) Environmental Impact Statement has been completed and accepted by the Town of Martinsburg as lead agency, for the proposed action described below.

If a Draft EIS: Comments on the Draft EIS are requested and will be accepted by the contact person until_____

Name of Action:

Flat Rock Wind Power Generating Project

Description of Action:

Construction and operation of a wind-powered generating facility of 187 turbines with a capacity of approximately 300 megawatts. The project will involve construction of the turbines in addition to two meteorological towers, a system of gravel access roads, a buried and above ground electrical collection system, and a substation.

Location: (Include street address and the name of the municipality/county. A location map of appropriate scale is also recommended.)

The project area encompasses approximately 21,000 acres and is located on the eastern edge of the Tug Hill Plateau, in portions of the Towns of Lowville, Martinsburg, and Harrisburg, Lewis County, New York.

Potential Environmental Impacts:

The project may have both short term construction related impacts and long term operational impacts. These impacts range from negligible to significant. The analysis of potential impacts is as follows: Impacts to physiography, geology and soils may include soil erosion, compaction, and loss of agricultural land; impacts to water resources may include stream and wetland disturbance, and siltation/sedimentation; impacts to biological resources may include vegetative clearing, incidental wildlife injury or mortality, and loss or alteration of habitat; impacts on land use and zoning may include rezoning, adverse and beneficial impacts to farming, changes in community character, and trends; socioeconomic impacts may include tax revenue, local revenue, tourism, and employment; transportation related impacts may include road wear, traffic delays, and road system improvements/upgrades; impacts to cultural resources may include visual impacts on architectural resources and disturbance of archeological resources; Visual impacts may include changes to the landscape, impact on sensitive sites/viewers, and shadow-flicker impact on adjacent residents; community services, public utilities, and infrastructure impacts may include demands on police and emergency services and possible telecommunications interference; climate and air quality impacts may include construction vehicle emissions, construction related dust, and beneficial reductions of air pollutants and greenhouse gases; and noise impacts may include construction generated noise and operational noise. Various measures have been taken to minimize, avoid and mitigate potential environmental impacts including careful siting, employment of environmental monitors, environmental protection measures, and direct mitigation programs.

A copy of the Draft / Final EIS may be obtained from:

Contact Person: Environmental Design & Research, P.C. Attn: John Hecklau

Address: 238 West Division Street, Syracuse, New York 13204

Telephone Number: 315-471-0688

A copy of this notice must be sent to:

Department of Environmental Conservation, 50 Wolf Road, Albany, New York 12233-1750

Chief Executive Officer, Town/City/Village of Martinsburg, Harrisburg, Lowville

Any person who has requested a copy of the Draft / Final EIS

Any other involved agencies

Environmental Notice Bulletin, Room 538, 50 Wolf Road, Albany, NY 12233-1750

Copies of the Draft/Final EIS must be distributed according to 6NYCRR 617.12(b).

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1.0 SUMMARY

This Final Environmental Impact Statement (FEIS) is prepared pursuant to the New York State Environmental Quality Review Act (SEQRA) and its implementing regulations, 6 NYCRR Part 617.

A Draft Environmental Impact Statement (DEIS) was prepared by Environmental Design & Research, P.C. (EDR) on behalf of the Lead Agency, the Town of Martinsburg. The DEIS was accepted as complete and made available for public review by the Martinsburg Town Board on December 3, 2003. A Public Hearing on the DEIS was held on January 5, 2004 at the Martinsburg Town Hall, and the public comment period remained open until January 15, 2004. One set of New York State Department of Environmental Conservation (NYSDEC) comments was received after the close of the comment period but has been incorporated into the FEIS as a courtesy by the Town of Martinsburg.

The DEIS for the Flat Rock Wind Power Project is hereby incorporated by reference as part of this FEIS. The DEIS, as prepared for the Town of Martinsburg as Lead Agency, contains the following sections:

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SUMMARY OF THE DEIS

Provided below is a summary of the DEIS for the Flat Rock Wind Power Project, including a brief project description, along with summaries of the regulatory process; the project's purpose, need, and benefit; its potential environmental impacts; proposed mitigation measures; alternatives to the project; and its effect on use and conservation of energy.

Project Description

Flat Rock Wind Power, LLC (FRWP) is proposing to develop a wind-powered generating facility of 188 turbines with a capacity of approximately 300 megawatts (MW). In addition to the wind turbines, the project will involve construction of two meteorological towers, a system of gravel access roads, a buried and aboveground electrical collection system, and a substation. An additional substation and a 10.3-mile-long 230 kV transmission line will also be constructed to connect the project with the existing electric transmission system (grid). These transmission components are being reviewed separately by the New York State Public Service Commission (NYSPSC) under Article VII of the NYS Public Service Law (PSL), and are not subject to the State Environmental Quality Review Act (SEQRA) (Article 8 of the Environmental Conservation Law and 6 NYCRR Part 617).

The proposed project is located on the eastern edge of the Tug Hill Plateau, west of the Village of Lowville, in Lewis County, New York. It will be developed on leased private land in the Towns of Martinsburg, Harrisburg, and Lowville in two phases. Phase I will consist of 95 turbines dispersed over approximately 10,200 acres; Phase II will consist of 93 turbines dispersed over approximately 10,900 acres. Phase I construction is expected to begin in May 2004 and be completed in November 2004. Phase II is anticipated to begin in May 2005 and be completed in November 2005.

Once built, operation of the wind turbines and associated components is almost completely automated. Typically, no onsite personnel are required. Under normal conditions, wind

turbines operate automatically at a single speed. For the wind turbine anticipated for the project, a minimum wind speed of approximately 7 mph is required. High-speed shutdown occurs at 55 mph. Each wind turbine has a computer to control critical functions, monitor wind conditions, and report data.

Regulatory Process

The DEIS was prepared by Environmental Design & Research, P.C. (EDR). The document is intended to facilitate the environmental review process and provide a basis for informed public comment and decision making. This process is in accordance with the requirements of SEQRA. The Town of Martinsburg is acting as the Lead Agency for SEQRA review.

Various support studies have also been performed for the project and support this SEQRA evaluation. These include the following:

- Agricultural field review and development of Agricultural Protection Measures (Appendix C)
- Wetland investigation, including state and federal delineation and permitting (Appendix D)
- Phase I Avian Risk Assessment and avian follow-up studies (Appendix F)
- Transportation system inventory and needs assessment (Appendix G)
- Stage I Cultural Resources Survey (Appendix H)
- Visual Impact Assessment (Appendix I)
- Shadow Flicker Modeling (Appendix J)
- Microwave and TV Propagation Measurement and Analysis (Appendix K)
- Noise Impact Assessment (Appendix L)

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 Executive Order 111, issued by Governor George Pataki on June 10, 2001, which requires all New York State agencies to purchase 10% of their electricity from renewable energy sources by 2005 and 20% by 2010. Implementation of the Executive Order is coordinated by the New York State Energy Research and

Development Authority (NYSERDA), which has committed $5 million in funding for the Flat Rock project. The project also responds to objectives identified in the 2002 New York State Energy Plan and Final Environmental Impact Statement (State Energy Plan) (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., increased tax revenues to local municipalities and lease revenues to participating landowners), air quality (through reduction of emissions from fossil-fuel-burning power plants), and climate (reduction of greenhouse gases that contribute to global warming).

Summary of Potential Impacts

In accordance with requirements of the SEQRA process, potential impacts arising from the proposed action were evaluated with respect to an array of environmental and cultural resources. The analysis of potential impacts is summarized in the table below.

Environmental Factor	Potential Impacts
Physiography, Geology, and Soils	Soil erosion Soil compaction Loss of agricultural land
Water 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	Rezoning Adverse and beneficial impacts on farming Changes in community character and land use trends
Socioeconomics	Tax revenue/PILOT/Empire Zone Revenue to participating landowners

Environmental Factor	Potential Impacts
Socioeconomics (cont.)	Expenditures on goods and services Tourism Short-term 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 Possible telecommunication interference
Climate and Air Quality	Construction vehicle emissions Dust during construction Reduced air pollutants and greenhouse gases
Noise	Construction noise Operational Impacts on adjacent residents

The project is expected to result in positive, long-term impacts on agriculture, socioeconomics, and air quality within the project area and surrounding region. The project will result in minor, generally short-term impacts to soils, vegetation, wetlands, wildlife habitat, and transportation facilities. The project could have long-term effects on community character, avian resources, adjacent residents, and some historic and visual resources. However, other than the project's visibility, operational impacts (e.g., noise, bird collisions, shadow-flicker) will be limited/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 agreement with adjacent landowners. The project developer will also employ Environmental Monitors to assure compliance with permit requirements and environmental protection commitments during construction. 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 operation include:

- Siting the project away from population centers and areas of residential development.
- Siting most project components outside of areas of mature forest land to the extent practicable.
- Locating access roads and turbines along field edges and in field corners to avoid or minimize disturbance of agricultural land.
- Keeping turbines a minimum of 1,200 feet from non-participating residences to avoid significant noise and visual impacts.
- 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.
- Developing and implementing a sedimentation and erosion control plan.
- Proposing a compensatory stream/wetland mitigation program.
- Siting turbines to avoid or minimize wetland, wildlife, or visual impacts.
- Performing post-construction monitoring to improve understanding of possible avian impacts.
- Implementing agricultural protection measures to avoid, minimize, or mitigate impacts on agricultural land and farm operations.

- Upgrading public roads utilized during construction.

- Developing and implementing a historic resource protection plan in concert with the New York State Historic Preservation Office (SHPO).

Alternatives

Alternatives to the proposed project that were considered and evaluated include no action, alternative project siting, alternative project size, alternative project design, alternative technologies, and alternative construction phasing. Analysis of these alternatives revealed that both the size of the project and the configuration of the turbines as currently proposed are necessary to produce a commercially feasible project. A smaller project will not fully capture the available wind resource and would not generate enough power to offset the $21 million expense of connecting to the power grid. A larger facility might theoretically provide more economic return, but it would force location of towers into areas with more marginal wind power resources and greater proximity to residents, wetlands and/or forested areas. This would result in more potential adverse environmental impacts than the present project. A larger number of smaller turbines, while perhaps reducing visibility from some areas, would not change the overall visual impact of the project and would increase impacts associated with the more extensive road and interconnect systems required. Alternative technologies (e.g., different sources of generation) eliminate many of the environmental advantages associated with the proposed project. Project phasing alternatives do not reduce potential impacts but instead would trade off short-term concentrated/intense impacts for prolonged impacts. 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 300 MW of electricity without any fossil-fuel emissions. This is enough power to support approximately 94,000 homes in New York State, which is the equivalent of 2.2% of Niagara Mohawk's residential load. The project will add to and diversify the state's sources of power generation and over

the long term may displace some of the state's older, less efficient, and dirtier sources of power. 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"
- "Promoting and achieving a cleaner and healthier environment"

2.0 SUBSTANTIVE COMMENTS RECEIVED AND FRWP RESPONSES

SEQRA PUBLIC HEARING

A public hearing on the proposed project was held at the Martinsburg Town Hall on the evening of January 5, 2004. Oral comments/questions were presented by a total of eight speakers. Several questions were asked regarding issues unrelated to environmental impacts such as how tax revenues would be utilized, when construction was anticipated, whether/where a maintenance and operation facility would be built, how to benefit from increased tourism, and whether people were in favor of or opposed to the project. These questions were answered at the hearing (see hearing transcript in Appendix M). However, because these questions did not relate to the content of the DEIS no formal responses are provided as part of the FEIS. Substantive public comments and FRWP's responses to these comments are presented below.

1. **Commentor:** ***Lee Hinkleman***

   Comment: An escrow account should be established to cover the cost of turbine removal/decommissioning.

   Response: Decommissioning and removal of the turbines at the end of their operational life was a recommendation of the project Visual Impact Assessment (Appendix I of the DEIS) and is a mitigation commitment FRWP has made as part of its lease agreements with participating landowners (see sample language in Appendix N). This commitment will be added to the list of visual mitigation proposals included on page 110 of the DEIS.

2. **Commentor:** ***Ben Beyer***

   Comment: Will project access roads be open to the public?

   Response: Project access roads will be private roads, available for use only by the landowner and the project owner/operator. Access roads will be gated at their intersection with public roads.

3. **Commentor:** ***Jim Arvanites***

   Comment: How will construction traffic be routed through the project area?

   Response: As stated in the DEIS (pages 78 and 79), although the delivery routes and the vehicle routing plan are not yet final, it is expected that delivery of turbine components will approach the site mainly on New York State Route 177, from the west. For the northern three quarters of the Phase I portion of the project it is expected that a north-south path will be followed, utilizing Eagle Factory, Borkowski, Rector, Swernicki, Flat Rock, and Centerville Roads. This same route will be followed for

component deliveries to the southern one quarter of the Phase I area, with vehicles turning east off of Swernicki Road, down Flat Rock Road to West Road, south to Keener Hill Road and back up the hill to Graves, Maple Ridge, French, and Centerville Roads (subject to Lewis County approval). It is anticipated that gravel and concrete will come from multiple local sources. Dump trucks and concrete trucks will thus have to use local roads to gain access to the site. However, travel through the Village of Lowville and along West Road will be minimized. Delivery routes for the northern Phase II portion of the project are still being defined. A final construction routing plan will be prepared and submitted to the local highway departments prior to the initiation of construction.

4. **Commentor:** ***Alex Warner***

   Comment: Will the Town have to pay for road damage resulting from project construction?

   Response: As stated on page 107 of the DEIS, any required road improvements to accommodate construction traffic, or work required to repair damage caused by construction equipment/activity, will be the responsibility of FRWP and will be undertaken at no cost to the Towns or County. This commitment will be included in FRWP's agreement with the local municipalities and Lewis County.

5. **Commentor:** ***Peter Jantzi***

   Comment: What will be done to control dust generated by construction traffic on unimproved roads in the project area?

   Response: Provision of dust control will be included in FRWP's agreement with the Towns. As stated on page 111 of the DEIS, project Environmental Monitors will identify dust problems and report them to FRWP and the contractor. Water will be used to wet down dusty roads (public roads as well as project access roads) as needed throughout the duration of construction activities. FRWP will also consider temporary paving of road sections during construction where dust impacts on neighbors have the potential to be most severe, such as at the intersection of Eagle Factory and Gardner Roads.

WRITTEN COMMENTS

The public comment period on the DEIS ran from December 3, 2003 to January 15, 2004. During that time, the Lead Agency received a total of seven letters (see copies in Appendix M). Responses to written comments provided in each of these letters are presented below:

Letter of December 30, 2003 from Matthew Brower, Agricultural Resource Specialist, New York State Department of Agriculture and Markets.

Comment 1: The proposed one-year post-construction monitoring commitment does not provide sufficient time to identify agricultural areas in need of additional mitigation and to implement the appropriate follow-up restoration.

Response: Consistent with NYS Department of Agriculture and Markets (Ag. & Markets) recommendations, FRWP commits to a monitoring and remediation program lasting at least two years following the completion of initial restoration. Monitoring and remediation efforts will continue until the implementation of all necessary follow-up restoration is complete. A statement to this effect will be added to the list of agricultural mitigation measures listed on pages 105 and 106 of the DEIS. This commitment will also be added to the Agricultural Protection Measures included in Appendix C and incorporated into the Final Notice of Intent (NOI) to Undertake an Action within an Agricultural District that will be submitted to Ag. & Markets and the County Farmland Protection Board.

Comment 2: Department staff should be involved in identification of project-related problems and follow-up restoration on agricultural lands.

Response: FRWP will assure that Ag. & Markets staff is involved in the identification of agricultural impacts, development of mitigation measures, and approval of final restoration. A statement to this effect will be added to the list of mitigation measures on pages 105 and 106 of the DEIS.

Comment 3: The DEIS does not provide sufficient detail as to how agricultural problems will be properly identified and what remediation will be implemented to correct specific problems.

Response: In accordance with Department recommendations, the details on monitoring and remediation attached to Ag. & Markets' letter of December 30, 2003 (see Appendix M) will be incorporated into the Agricultural Protection Measures included in Appendix C of the DEIS.

Letter of January 5, 2004 from Roger Tibbetts, Chairman, Cooperative Tug Hill Council.

Comment 1: The Cooperative Tug Hill Council has the authority to review projects which affect towns within the "core area" of Tug Hill, especially in instances where projects cross town lines and affect more than one municipality.

Response: The Cooperative Tug Hill Council will be added to the list of involved and interested agencies on Table 2 of the DEIS.

Comment 2: Where farmland is to be disturbed, facility location and construction activity should be designed to limit disturbance to arable lands, growing timber, and existing recreational corridors.

Response: As stated in the DEIS, project layout has been guided to a large extent by the goal of minimizing impacts to active agricultural land and forestland. Impacts to recreational resources, such as State Forest land and the County snowmobile trail system, have also been avoided or minimized.

Comment 3: Money should be fairly distributed between the municipal entities involved, and tax burdens diminished.

Response: A PILOT agreement, specifying the real property tax treatment of the project and the sharing of tax revenues, has been agreed to by FRWP, the four host towns, Lewis County, and the three local school districts.

Letter of January 12, 2004 from Jim Arvanites.

Comment 1: What is the potential for the project, and associated environmental impacts, to increase in size through feature in-fill with additional turbines?

Response: FRWP has no plans to expand the size of this project. As the DEIS described, in order to achieve the lowest cost of power generation the project has been designed to maximize wind energy collection on the elevated farmland available for development. Any future expansion is subject to the constraints posed by forests that lie to the west and south of the project area, as well as the limit on energy transfer capability of the 230 kV transmission line that connects the project with the existing power grid. Furthermore, engineering constraints related to the optimal spacing of wind turbine generators within the array of turbine strings make it impossible to add additional turbines within the project area without significantly compromising turbine efficiency.

Any future expansion or significant alteration of the project, beyond that described in the DEIS, would require supplemental SEQRA review. The type and extent of required review (EAF, Supplemental EIS) would be determined by the Lead Agency.

Letter of January 15, 2004 from Douglas May, Chief, Energy Resources and the Environment, New York State Department of Public Service.

Comment 1: Pertinent parts of the existing and proposed land use ordinances for each town should be included as an Appendix to the FEIS.

Response: Appendix O of this FEIS includes existing and proposed ordinances from the Towns of Martinsburg and Harrisburg that relate to wind power facilities. Such facilities are defined by the Town of Lowville as "essential services," and as such, are allowed in any zoning district within the town.

Comment 2: As was done for wetlands, the cumulative visual impact of both the generating facility and the 230 kV transmission line should be evaluated.

Response: The visibility and visual impacts of the proposed generating facility (and associated substation and interconnect lines) were evaluated in the DEIS per the requirements of SEQRA, while the visibility and visual impacts of the transmission line were reviewed in the Article VII Application. It should be noted that wetland impacts associated with the generating facility and the transmission line were addressed together because wetland impacts are being reviewed at the federal level (U.S. Army Corps of Engineers) as well as the state level. Therefore, separate review under SEQRA and Article VII does not apply. However, FRWP recognizes that the transmission line and the generating facility will both be visible from certain locations, and therefore a Supplemental Visual Impact Assessment (VIA) was conducted and is included as Appendix P to this FEIS.

The Supplemental VIA confirmed that there are relatively few publicly accessible viewpoints where both the transmission line and generating facility are clearly visible at foreground distances. Transmission line visibility will be largely restricted to areas within 0.5 mile of proposed road crossings. At most of the major road crossings adjacent steep slopes and/or roadside vegetation obscures views of the wind turbines. From viewpoints on the east

side of the Black River Valley (e.g., Pine Grove Road and Whetmore Road), trees and the effects of distance limit visibility and visual impact of the generating facility and/or transmission line. The only area where the transmission line and the wind turbines are both clearly visible, and relatively close to the viewer, is in the West Martinsburg Road/Rector Road area. Consequently, two viewpoints from this area were selected to illustrate the cumulative visual impact of the two facilities (see Figure 4 of the Supplemental VIA). One of these viewpoints (Viewpoint S39, Figure 5) shows the facilities relative to the hamlet of West Martinsburg and the historic West Martinsburg Methodist Episcopal Church. The other viewpoint (Viewpoint 72, Figure 6) is a view up Rector Road that shows both the transmission line and several wind turbines at foreground/near midground distances. As reported in the Supplemental VIA, an in-house rating panel evaluated both simulations using the same procedure employed in the original VIA. The rating panel concluded that in those instances where both the wind power project and the transmission line will be visible from foreground and near midground distances, the two facilities will combine to create additional visual clutter and a perceptible change in land use. The electric generating/utility function of the wind power project becomes more well defined with the addition of the transmission line, and line tends to extend this more industrial land use away from the wind power site and into surrounding agricultural and hamlet settings.

The cumulative impacts of the two facilities will be minimized or mitigated by utilizing the following strategies:

- Keep right-of-way clearing along the transmission line to a minimum.
- Use of wood pole and Corten steel transmission line structures to minimize color contrast with the natural surroundings.
- Explore the possibility of selectively replacing steel poles with guyed wood poles to reduce structure height, mass, and industrial character.
- Use of non-specular conductor on the transmission line and overhead interconnect lines to minimize reflective glare.
- Use of single-circuit H-frame transmission line structures in most locations to keep structure height generally under 80 feet.
- Use of white or light gray color to minimize wind turbine/tower contrast with the sky.
- Approximately $400,000 in offset mitigation to address potential visual impacts on historic structures. This mitigation is still being negotiated with the State Historic Preservation Office (SHPO), but is anticipated to include completion of a historic structures survey, along with repair/restoration of certain historic structures in Martinsburg, West Martinsburg, Lowville, Watson, and Copenhagen.
- Proposed relocation of the first segment of the transmission line to the north of a wooded ravine to minimize tree clearing and to reduce visibility from residences and travelers on Rector Road.

Comment 3: Additional information is needed to identify the location of aboveground portions of the proposed interconnect system.

Response: Figure 3 of the DEIS (Proposed Project Layout) indicates the aboveground portions of the interconnect system with a dashed line and the underground segments with a dotted line. As indicated on pages 3 and 4 of the DEIS, the aboveground line south of the Rector Road substation will be 34.5 kV, while the aboveground line north of the Rector Road substation will be 115 kV.

Comment 4: Preliminary plans/specifications for the substations, met. towers, and aboveground interconnect line should be included in the FEIS.

Response: The requested level of detail was not available at the time the DEIS was prepared, and engineering on these components is still in progress. Preliminary plans and specifications for the 34.5 kV line, the 115 kV single-circuit line, and the Nefsey Road and Rector Road substations are included in Appendix Q of the FEIS. Typical span length on the 115 kV line will be 375 feet, while typical span length on the 34.5 kV line will be 200 feet. Final design of the met. tower(s) has not yet been determined. The tower will be a self-supportive steel lattice or monopole structure, 80 meters in height.

Letter of January 15, 2004 from Kevin Kispert, Project Manager, New York State Department of Environmental Conservation.

Comment 1: The DEIS provides little information on use of the project area by bats. Known hibernacula for Indiana bat occur in Onondaga County and Jefferson County, approximately 60 and 14 miles, respectively, from the project site. The project is within the seasonal movement pattern of bats using both these sites. Potential impacts on Indiana bats and other bat species during the summer, as well as the spring and fall migration periods, should be evaluated in the FEIS.

Response: As mentioned in the Draft Environmental Impact Statement (DEIS), the only bat species observed during field surveys of the Flat Rock Wind Power Project site was believed to be the little brown bat (*Myotis lucifugus*). The project site is within the range of several bat species, including the Indiana bat (*Myotis sodalis*), a state and federally listed endangered species. However, being near the northern terminus of this species' range, Indiana bat density is likely to be lower than would be expected in the more central portions of their range.

The project site and the area immediately surrounding it do not include known caves where bats hibernate, and no listed bat species or significant habitat for bats were identified in agency correspondence conducted during preparation of the DEIS. However, based on information provided by the NYSDEC, we now understand that a bat hibernaculum is located in the Black River gorge northwest of Watertown, approximately 18.5 miles from the northwest edge of the Flat Rock project site (and approximately 26.5 miles from the center of the Phase I area). This hibernaculum reportedly accommodates a population of Indiana bat. Consequently, the potential occurrence of Indiana bats, and potential bat impacts need to be considered.

Indiana bats typically hibernate in limestone caves with pools of water and stable temperatures of 40º to 46ºF (Humphrey, 1978). Hibernation period for this species typically lasts from mid October to mid April. Upon leaving their hibernaculum, Indiana bats disperse widely, with seasonal movements of up

to 320 miles documented (DeGraaf et al., 1981). Many species of bats follow linear features of the landscape while commuting and migrating (Erickson, et al., 2002), but it is unknown whether migratory Indiana bats may follow ridges or rivers. During the summer, Indiana bats forage for insects in the foliage of tree crowns 2-30 meters tall (Humphrey et al., 1977). Females and juveniles tend to forage in the air space near the foliage of riparian and floodplain trees, while males forage in the densely wooded area at tree top height (LaVal et al., 1977). Solitary females or small maternity colonies bear young in hollow trees or under loose bark. It is not clear where males live during the summer months (Thompson, 1982). Migration back to their hibernaculum usually begins in August.

In New York, approximately 13,000 Indiana bats are known to exist at eight hibernation sites. Surveys conducted since the 1980s suggest that statewide populations are stable or increasing (NYSDEC Web site). Where population declines have been observed in other states, the reasons are not clearly understood. Human disturbance or damage to caves is the most likely cause.

Based on all available evidence, bat collision with man-made structures appears to involve migratory bats, primarily during the fall migration period (late summer through early fall). This is also the period when juvenile bats become active. About 85% of all documented bat collision fatalities occurred from mid July through mid September (Erickson et al., 2002). The causes of migratory bat collisions with turbines and other man-made structures are not well understood. However, some evidence indicates migrating bats may navigate without the use of echolocation (Crawford and Baker, 1981), which could make them more susceptible to collision with obstacles in their flight path.

Concern over potential bat mortality has been heightened by recent reports of sizable bat kills at the Mountaineer Wind Power Project in West Virginia. Approximately 475 bats were documented as being killed at this forested ridgetop site during the summer and early autumn of 2003 (West Virginia DNR.). Review of available literature indicates that bat collisions with wind turbines and other man-made structures have been documented in various locations throughout the United States (see Erickson et al., 2002). The numbers are generally low and most of the species involved are migratory tree bats. Only six of 39 species of bats in the U.S. comprised all known bat fatalities at U.S. wind plants (Erickson et al., 2002). According to Erickson et al. (2002), hoary bats (*Lasiurus cinereus*) comprised 61.7% of all documented fatalities, while eastern red bats (*Lasiurus borealis*) comprised 17.2%, and silver-haired bats (*Lasionycteris noctivagarns*) comprised 7.1% of the fatalities. The remaining documented fatalities included small numbers of big brown bats (*Eptesicus fuscus*), little brown bats, and eastern pipistrelle (*Pipistrellus subflavus*).

In reviewing the available information it appears that impacts to Indiana bats from the proposed Flat Rock Wind Power Project are likely to be minor. This conclusion is based on the following facts:

1. Research suggests that resident bats generally forage at or below treetop level, which is well below the space typically occupied by turbine

blades (minimum height on the Flat Rock project = 38 meters above ground).

2. The echolocation used by foraging bats allows them to detect and avoid both stationary and moving obstacles (Griffin, 1970).

3. No correlation between turbine lighting and bat mortality has been documented (Erickson et al., 2002).

4. The Flat Rock site is very different from the West Virginia site, which is located on a forested ridge in an area with numerous caves (former coal mines), some of which are used by large numbers of bats.

5. The proposed layout and separation distance of wind turbines at the Flat Rock site are very different from those at the West Virginia site. The Flat Rock turbines are more spread out and do not line the top of a geographically prominent ridge. This layout reduces the probability of bat collisions.

6. The identified bat hibernaculum is well removed from the proposed Flat Rock project site, and will not be impacted by project construction. Human disturbance of caves has historically been the primary cause of declining bat populations.

7. Bats utilizing the identified cave as a hibernaculum are likely to be widely dispersed once they leave the cave.

8. There are no physiographic landscape features (e.g., abrupt ridge line or water course) that might direct or concentrate bats migrating to and from this cave through the Flat Rock project site.

9. Although significant in New York State, the identified cave(s) are at the edge of the Indiana bat's range and probably harbor relatively small numbers of this species. Approximately 87% of the known population of Indiana bats winter in seven caves in the southeastern and midwestern U.S. (USFWS Web site).

10. The proposed Flat Rock project will generally not impact mature forest (in particular riparian forest) that is the preferred foraging habitat of Indiana bats. Nor will it remove large hollow trees that provide potential roosting areas for any Indiana bats that could be residing in the area.

11. The fact that the Flat Rock site is near the northern terminus of the range of the above-listed species suggests that the density of bat migration over the Flat Rock site is likely to be low, especially in comparison to sites farther south, such as the Mountaineer project in West Virginia (some 400+ miles to the south of Flat Rock).

12. No Indiana bats have been documented as being killed at any wind power project site in the U.S., even those where sizable numbers of bats have been killed. There is no evidence that wind power projects present a risk to this species. In addition, Indiana bats have not been reported to collide with the guy wires of communication towers, as have night

migrating birds.

13. Even if bat mortality does occur, population impacts are unlikely, given the relatively small number of bats killed at other wind power projects (generally less than 3 bats per turbine per year). To put these numbers in perspective, a comparison should be made to the number of furbearers (otter, fisher, mink, etc.) taken by regulated trapping on an annual basis without adverse long-term impact on populations of these species.

For all of the reasons outlined above, Flat Rock Wind Power, LLC does not believe the proposed project would have a significant adverse impact on Indiana bats, or bats in general. However, we acknowledge that little is known regarding potential Indiana bat use of the proposed project site. Consequently, FRWP proposes to address concerns related to potential Indiana bat use of the Flat Rock project site in the following manner:

1. FRWP will retain a recognized bat expert to evaluate the project site and existing data regarding Indiana bats to determine the likelihood of this species using the project site and being impacted by the proposed project. Input from the NYSDEC will be sought in terms of identifying an individual with appropriate expertise and in obtaining additional data regarding Indiana bats in New York State. The results of this preliminary analysis will be reported by May 15, 2004.

2. Consistent with NYSDEC suggestions, the bat expert hired by FRWP will design and conduct a pre-construction field investigation on the Flat Rock site during June 2004 to document the presence or absence of Indiana bats on the site. The study is anticipated to involve mist netting of bats, but specifics of the study design and protocol have yet to be determined. Study design and protocol will be developed in consultation with the NYSDEC. Study results will be presented to the NYSDEC prior to the initiation of project operation.

3. FRWP will undertake post-construction monitoring to determine actual bat mortality associated with the project. The monitoring study is anticipated to extend over several years following the initiation of project operation. The timing, duration and methodology of the monitoring study will be developed in consultation with the NYSDEC. Monitoring study results will be reported to the NYSDEC on an annual basis.

4. If bat mortality is documented by the monitoring study, FRWP will attempt to identify those factors that may be contributing to the occurrence of collision mortality. FRWP will explore all available mitigation options and will commit to implementing those that are determined to be potential effective and economically/technically feasible. (The sponsors of FRWP along with certain other members of the American Wind Energy Association are currently supporting an investigation into the recent bat collisions at the Mountaineer project in West Virginia, and thus will benefit from the results of that study as well). Supplemental monitoring will be conducted if necessary to determine the effectiveness of any mitigation measures employed.

Comment 2: Avian concerns to be provided in a follow-up letter.

Response: See response to Comment #10 from the U.S. Fish and Wildlife Service.

Comment 3: Onsite compensatory mitigation should be provided for both temporary and permanent wetland impacts. The possibility of expanded existing wetland systems within the project area should be explored in addition to the proposed funding of a study.

Response: As indicated in Appendix R of the FEIS, the proposed project will impact up to approximately 0.14 acre of state jurisdictional wetland and 2.37 acres of state-regulated adjacent area during construction. Permanent loss or alteration of state jurisdictional wetland will be 0.05 acre, while permanent loss or alteration of state-regulated adjacent area will total 0.48 acre. Using the temporary and permanent wetland impact numbers and multiplying these by 1.5 would result in a total mitigation acreage of 0.29 acre. Because FRWP does not actually own land within the project area, and because much of this land is either already wetland or in active agricultural use, opportunities for (and perhaps the need for) compensatory wetland mitigation are limited. However, FRWP will commit to funding up to $50,000 to fund wetland mitigation. This mitigation can be in the form of study funding, as proposed in the DEIS, or funding to enhance or create wetlands within the project area or elsewhere within Region 6. FRWP will coordinate with the regional NYSDEC office to identify potential enhancement and mitigation opportunities.

Letter of January 14, 2004 from David A. Stilwell, Field Supervisor, U.S. Fish and Wildlife Service.

Comment 1: No data was supplied which evaluates the wind resource and potential environmental impacts at other locations. A through alternatives analysis should be provided that supports selection of the proposed site.

Response: The sponsors of the project, Atlantic Renewable Energy Corp. and Zilkha Renewable Energy Corp., have been involved in the development of six of the nine commercial wind farms now in operation in the Northeastern U.S. These companies are actively developing wind energy projects around the U.S., as well as elsewhere in New York State. Before deciding to move forward with permitting and development of the Flat Rock project the sponsors considered numerous alternative sites from Maine to Virginia, both offshore and onshore, including a large number of alternative sites in Pennsylvania and New York.

Flat Rock is a private entity and as such does not enjoy the power of eminent domain. Therefore, SEQRA limits the alternatives analysis requirement for such applicants to parcels under the applicant's control (6 NYCRR § 617.9 [b] [5] [v]) (in this case the project site). Nevertheless, based on extensive review of other potential wind power project sites, the sponsors can state with confidence that no other location in the region has the following combination of the attributes that exist at the Flat Rock project site:

- An extensive area of open, elevated, and well-exposed farmland;
- Proximity to high-voltage utility lines that can accept large quantities of intermittently generated energy;

- Extensive local support, with community involvement in development issues since 1999;
- Minimal local environmental impacts.

The proposed project also enjoys widespread public support, which is essential for a viable wind power development. This combination of attributes also means that Flat Rock can meet the competitive demands of the commercial power market (i.e., generating electric power at a price that attracts both power buyers *and* the commercial debt and equity needed to build the project) in a way that no other project in New York State has been able to achieve.

As stated on page 113 of the DEIS, the Tug Hill Plateau has long been recognized as a potential wind power generating site due to its persistent high winds, relatively sparse settlement, and extensive open farmland. Winds on the eastern edge of the Tug Hill Plateau average above 7.5 meters per second (at turbine hub height), which makes it one of the windier areas in New York. While there are windier places in New York State, most of them are at higher elevation sites in or near the Adirondack or Catskill Parks, or along the south shore of Long Island. These alternative sites present significant ecological, visual, regulatory, and logistical concerns, all of which are either non-existent or significantly reduced at the proposed project location on Tug Hill. As stated on page 113 of the DEIS, other locations on the Tug Hill, either on the western or windward slope of the plateau, or the southern end of the plateau, have both reduced wind velocities and potentially greater impacts associated with wetlands and forest fragmentation.

In sum, no other location in the State of New York possesses the combination of favorable factors found at the Flat Rock site. In fact, it is this combination of factors, including in particular the extensive local support, that allowed the project to expand from 67 to 187 turbines.

As stated in the DEIS, the original proposal of 67 turbines was only financially viable if a shorter (4-mile), 115 kV power line could have been used to interconnect with Niagara Mohawk's Taylorville-Boonville line. However, system reliability studies undertaken by Niagara Mohawk indicated that this interconnection alternative was less feasible technically, given the age and other limitations of the Taylorville-Boonville line. This alternative would also have not allowed for the future expansion of wind power generation in the area, which was always anticipated, and has now been accommodated in the proposed project layout.

As demonstrated in the DEIS, the Flat Rock project will produce considerable *net* environmental benefits, principally through the displacement of the air emissions associated with conventional power generation. The quantity of these emissions offsets is equal to the permanent removal of approximately 105,000 vehicles from the roads of New York State, or equivalent to the offset of carbon dioxide emissions provided by 300 square miles of forest. Only renewable energy projects like wind projects can help offset (in an economically efficient manner) air emissions that are the leading cause of acidic precipitation and global climate change. In New York (and in particular the Tug Hill Plateau, which receives some of the most acidic precipitation of any place in the U.S.), both acid rain and increasing average atmospheric temperature have potentially

significant adverse impacts on both flora and fauna. Also, to the extent that commercial wind projects help to both sustain the local farm economy and preserve open agricultural land, they will also offset real estate development and related farm segmentation that is probably the greatest local threat to grassland wildlife habitat in the area.

Thus, for both environmental and economic reasons, a bigger wind energy project at Flat Rock is inherently better than a smaller-sized alternative. Because of the economies of scale inherent in wind project construction and development, a larger wind project has a lower cost of production, making it possible for this project to compete in the bulk power marketplace. In other words, a smaller, higher-cost project at Flat Rock simply may not be economically feasible in today's energy markets. Because a smaller project also results in fewer environmental benefits, a larger wind project at this site is the best alternative.

Comment 2: The Service recommends that the proposed meteorological towers be monopoles rather than lattice structures to reduce avian perching and nesting opportunities on the towers.

Response: The proposed self-supporting lattice met. towers do not in themselves present significant risk of avian collision. The use of free-standing, unguyed meteorological towers was recommended in the Avian Risk Assessment, and has been committed to by FRWP. Collision fatalities have been virtually undocumented at unguyed lattice structures. Possible use of these structures as perching or nesting sites in proximity to the wind turbines should also present minimal risk. The latticework on unguyed meteorology towers is generally diagonal in orientation and difficult for raptors to perch on. Depending on the type of latticework that is planned, anti-perching structures can also be added to deter perching and use of these towers.

Comment 3: The Service recommends that no guy wires be used for electric line tower support.

Response: The proposed overhead interconnect and transmission lines will be carried on self-supporting wood or steel pole structures. Guy wires will only be required on certain wood pole angle structures (which are generally employed to help avoid crossing agricultural land or other sensitive environmental features). These structures will generally not exceed 80 feet in height and will not be illuminated. The fact that poles will have only one or two guy wires (as compared to dozens at tall communication towers), combined with the fact that these types of guy wires do not extend for long distances or to great heights above the ground, probably explains why so few birds collide with them. These guy wires are generally thick (compared to those on communication towers), which increases their visibility to birds. These factors significantly reduce any impact the guy wires present to night migrating songbirds. Per Avian Powerline Interaction Committee (APLIC) guidelines, the few guy wires that are needed on the transmission structures could also be fitted with markers that would make them more visible to birds.

Comment 4: The proposed 230 kV transmission line will result in fragmentation of a contiguous block of forest between Tower 65 and the proposed Chases Lake Road Interconnect Facility. Alternate routing adjacent to Whetmore Road and the fields east of Pine Grove Road should be explored as a

means of avoiding habitat fragmentation.

Response: Although not addressed in the DEIS, the impact of the transmission line on forested habitat was discussed in the Article VII Application. As noted on pages 4-32 through 4-35 of the Application, the forest being crossed in this area is relatively young and has been exposed to various forms of past and ongoing disturbance (logging, residential subdivision, forest roads, etc.), which limits its value as habitat for forest interior wildlife species. The proposed route was specifically chosen to take advantage of open fields, early successional forest, and a system of forest roads that could provide off-right-of-way access. The alternative of routing the line along Whetmore Road is not feasible due to the presence of residential development along this road. Since FRWP does not have any powers of eminent domain, it can only build the transmission facility across parcels on which the company can secure easements. Since there are numerous homes along both Chases Lake and Wetmore Roads, it is simply not possible to secure the necessary land rights to install the power line along either one of these roads. In addition, even if possible, this alternative would result in significantly greater visual/aesthetic impact.

Comment 5: Final Phase II wetland information was not available in the DEIS. The town should have all pertinent data regarding wetland resources and potential impacts before making a decision. A table should be added that summarizes wetland by size, impacted area, or community type.

Response: See summarized Phase I and Phase II wetland information in Appendix R of the FEIS.

Comment 6: Figure 8 of the DEIS indicates that turbines would be located in wetlands. The map should be revised to indicate actual wetland impacts.

Response: Figure 8 is an overlay of the proposed project layout on digital National Wetlands Inventory (NWI) mapping. This map is at a small scale and is meant to indicate the general relationship of project components to existing wetland mapping. In fact, NWI mapping is not available for the majority of the project area, and even where it is available, is considered approximate. As indicated in the DEIS text (page 21), map review was followed by actual field reconnaissance to assure that turbines were placed outside of wetlands and that impacts from roads and interconnect lines were minimized. Wetland delineation/documentation was undertaken in those areas where the impacts from road and interconnect lines could not be avoided. Site-specific figures showing Phase I and Phase II wetland impacts are included in Appendix R of the FEIS.

Comment 7: Contribution of funding to a study of acidic deposition is not acceptable as mitigation for unavoidable wetland impacts. The sponsor should develop compensatory mitigation measures which include wetland restoration or creation that provides in-kind replacement of wetland functions.

Response: Impacts (temporary and permanent) to federal jurisdictional waters/wetlands in Phase I and Phase II of the project total approximately 4.56 acres. Of this total, 1.74 acres of wetland/stream will be permanently lost. As stated in response to NYSDEC Comment #3, FRWP will commit up to $50,000 to fund either the acidic deposition study or a wetland restoration/creation project(s) within the project area or the adjacent region. The proposal to study acidic deposition in the Tug Hill region was suggested by the region's leading land conservation organization (The Nature Conservancy) expressly

as an alternative to conventional compensatory mitigation measures, in light of the extensive wetland resources that already exist on Tug Hill.

Comment 8: A more complete study of the site streams is warranted to determine their importance to fish and wildlife resources. The DEIS should include a table of all streams to be impacted by the project and the length of stream habitat altered or lost.

Response: As stated on page 18 of the DEIS, the majority of the streams within the project area are small headwaters and tributaries of Mill Creek, Cobb Creek, Atwater Creek, and others. Only portions of Mud Creek, a tributary of Mill Creek, Roaring Brook, and Atwater Creek, are classified by the NYSDEC as C(T), indicating that they support populations of trout. None of the streams are classified as C(TS), indicating use by spawning trout. Only six protected trout streams will be crossed by proposed access roads and buried interconnect line. Field observations indicate that most of the streams that will be crossed by project access roads or electrical interconnect lines are small (generally 2 to 4 feet wide) and have intermittent flows. Data on actual stream width, water depth, substrate material, and area of impact at each proposed crossing have been summarized and are included in Tables 3, 6, 4, 9, 11 14 and 16, in Appendix R of the FEIS.

Field observations indicate that the smaller streams (less than 4 feet wide) generally receive little use by fish and wildlife. Many of these streams are ditches and swales that run between or along the edges of agricultural fields. As such, they may provide travel corridors for wildlife, and those that are bordered by shrubs may also provide nesting and escape cover for upland species of birds and mammals. Most of these smaller streams are intermittent and thus receive little, if any, use by fish. The larger perennial streams within the project area are generally being avoided. However, several streams over 4 feet wide will be crossed, as indicated in the previously referenced tables. Several of these larger streams were observed to support populations of minnows, although the actual species were not identified. Several streams with rocky substrate (especially those found within ravines) support populations of brook salamanders. These streams also support various crustaceans and insect larva, which are utilized as food by fish and wildlife. These streams provide foraging habitat for Louisiana and northern water thrush and mammals such as mink and raccoon. However, with the exception of 19 proposed road crossings, all of the impacts to these streams will be temporary (i.e., associated with installation of buried utility lines). FRWP has committed to utilize boring, stream diversions, or other appropriate means to assure that this disturbance occurs "in the dry." Sediment and erosion control techniques, as well as operational restrictions, will minimize potential impacts associated with siltation and/or spills or releases of chemicals. The permanent loss of 0.11 acre of stream habitat resulting from installation of project (both the wind power facility and the 230 kV transmission line) access roads will not have a significant adverse impact on fish and wildlife resources in the area.

Comment 9: The nearest known hibernaculum for Indiana bat is located northwest of Watertown, not in Onondaga County as indicated on page 32 of the DEIS.

Response: The information on page 32 will be revised to indicate this correction. See also response to NYSDEC Comment #1.

Comment 10: The radar surveys to document bird use of the project site were not extensive, and are not sufficient to determine the relative risk of the project to avian species. We recommend that additional radar data be gathered, in conjunction with visual observations, to accurately characterize avian use within the rotor-swept area of the turbine facility. These studies should be conducted over multi-season and multi-year periods, and the avian risk assessment should then be revised to reflect the findings of these studies.

Response: Before responding directly to Service comments regarding avian studies and potential avian impacts associated with the Flat Rock project, some clarification regarding the ecological impacts of wind power and its general risk to avian species is warranted.

First of all, it should be remembered that electricity generated with wind results in no emissions to the air. As stated on page 91 of the DEIS, the power generated by the proposed project is the equivalent of taking 105,000 vehicles off the road. Emissions generated by automobiles and conventional fossil-fuel-generating facilities are recognized as the major contributors to acidic precipitation and global climate change, both of which are now accepted as having significant impacts on birds, as well as other vertebrates, invertebrates, and plants. These impacts are in addition to impacts attributable to the fossil fuel extraction, transportation, and disposal process. As well as having direct adverse effects on the survival and reproduction of various species of fish and wildlife in the Northeast, acid rain and climate change also have the potential to result in serious (and potentially catastrophic) ecological consequences on a global scale. To the extent that wind power offsets fossil fuel generation and its well-documented adverse environmental impacts, it represents a direct and significant ecological benefit.

Secondly, studies on modern wind power facilities simply have not documented significant avian mortality. The concern over avian impacts was, and continues to be, largely associated with collision mortality observed at the Altamont Pass Wind Resource Area (APWRA) in California. As indicated in the Avian Risk Assessment, this area possesses a unique set of circumstances that create a high risk of avian collisions. These include the following:

1. An extraordinarily large concentration of operating turbines (N=5,400, reduced from about 7,000 several years ago).
2. Closely spaced turbines that may not permit birds to fly between them safely.
3. The presence of very large numbers of foraging raptors throughout the year.
4. A superabundant population of California ground squirrels that attract and support large numbers of raptors.
5. Steep topography with turbines placed in valleys and along canyon edges.
6. Turbines mounted on lattice-type towers with horizontal members that permit perching and provide shade and cover from the sun and rain.
7. Turbine rotors that revolve at high revolutions (>40-72 rpm).

These factors have been hypothesized, by various researchers, to act alone or in concert (Howell and DiDonato, 1991; Orloff and Flannery, 1992, 1996; Curry and Kerlinger, 2000) to produce mortality in the APWRA. Similar conditions do not occur at other wind power sites, and avian mortality studies at modern facilities in the Northeastern and Midwestern U.S. have not documented significant avian collision mortality at any site (Erickson et al., 2001). Beyond that, examination of FAA lighting and adverse weather conditions at wind power facilities across the United States suggests that these factors do not significantly affect collision mortality (Kerlinger, Unpubl.).

Review of existing data reveals that modern wind power facilities are responsible for an average of <1-4 bird mortalities per turbine, per year (Erickson et al., 2001). This figure is dwarfed by other sources of mortality, such as vehicle collisions, feral cats, hay mowing, and regulated sport hunting. If sport hunting can remove up to 2-10% of a species' population annually without adversely affecting populations (e.g., 22,000 sandhill cranes [4.4%] or 500,000 American woodcock [~10%]), it is inconceivable that the level of avian mortality associated with modern wind power facilities could have a biologically significant impact on bird populations. For night migrating songbirds, for example, the numbers of fatalities at a wind power facility usually amount to fewer than 10 individuals per species per year, which represents less than 1/1000th of 1% of the population of all but a few songbird species. This impact is not likely to be biologically significant, nor are impacts many times greater.

Finally, the contention that night migrating birds typically concentrate in well-defined corridors is not supported by scientific data. To date, no concentrations (i.e., high seasonal use) of night migrating birds have been demonstrated in the U.S. away from the Great Lakes, oceans, bays, high mountain ranges, and passes in those mountains. The same has been found in Europe (Berthold, 2001). Lacking physical barriers to their travel, or unique sources of food and habitat that would tend to attract them in large numbers (e.g., shorebird and waterfowl concentration areas), migratory birds spread out over the landscape in what is called broad-front migration (Berthold, 2001; Kerlinger, 1995) and are generally found at low densities over a wide geographic area. In addition, it is well-documented that most songbirds, and other night migrants, fly at altitudes in excess of 300-500 feet (Kerlinger and Moore, 1989). Almost all of the documented significant collision mortality events have occurred at guyed communication towers and stacks illuminated with FAA lighting, in excess of 500-600 feet in height. Rotor tips on the tallest land-based wind turbines do not generally extend above 380-400 feet above ground level. These turbines pose far less risk than the sources of collision mortality reported by Avery (1980). Avery's review, cited by the Service as an example of how wind power projects present risk to birds, did not address wind turbines, so it is puzzling why it was referenced.

In terms of the specific avian studies requested by the Service, FRWP offers the following:

1. The Service provided an earlier letter dated June 21, 2000, in which there were no references to the need for radar studies, no questions regarding migratory birds, nor any references to federally listed species. It should also be noted that the NYSDEC, Natural Heritage Program

sent a similar letter, dated June 29, 2000, in which they corroborated the Service's statements regarding listed species. Subsequent phone calls by Paul Kerlinger to a USFWS biologist and four NYSDEC staffers in 2000 did not reveal anything further regarding listed species or other concerns, nor were further studies requested. No information has been presented to indicate why the Service's position has now changed.

2. With respect to the Service's "interim" and "voluntary" guidelines and recommendations, the studies conducted for the Flat Rock Wind Power Project are in conformance with those portions of the guidelines that are supported by science. The addendum to the Phase I Avian Risk Assessment outlines that conformance. Also of relevance is the fact that the guidelines have yet to be peer reviewed. The American Wind Energy Association has recently sent a review of that document to Department of the Interior Secretary Norton, including specific points regarding errors and shortcomings of that document, as well as lack of peer review. That review is attached in Appendix S. As an example of changes that will be made since the January 21, 2004, National Wind Coordinating Committee's Wildlife Working Group meeting, the Service recognizes that FAA lighting may be either red strobes or white strobes, as opposed to the earlier recommendation for "white strobes only."

3. In response to the request for additional data, FRWP has obtained results from a radar study conducted on the project site (Town of Harrisburg) in 1998, and has summarized the results of this and other migratory studies. This information is presented in Appendix S, and is in agreement with the findings of the Avian Risk Assessment and associated studies conducted for the Flat Rock project. These results are discussed in the paragraph below, and suggest that additional onsite studies are not necessary.

4. The interim and voluntary Service guidelines do not stipulate that radar or other remote sensing studies are required for ALL wind turbine sites or projects. Instead, the document states that in areas of "high seasonal concentrations of birds ... an average of three years of monitoring data ... should be collected and used ..."

   Existing information about migration in general and more specifically about the Flat Rock wind farm site indicates that the site does not experience "high seasonal concentrations of birds" including night migrating birds. The general migration literature has repeatedly shown migration of night migrating birds occurs over a broad front in most geographic settings. There is simply no reason to suspect that the Flat Rock site experiences anything other than broad front migration without concentrations of migrating birds. The evidence from radar also supports this contention. Radar studies were conducted at three sites within and just outside the Flat Rock wind farm site. In 1994, a fall study was conducted near the center of the project in Martinsburg. A fall study was also done in Harrisburg (within the project boundary) in 1998. These data combined with spring and fall 1994 data from a site in nearby Copenhagen (about 4-5 miles north-northeast of the Flat Rock site) have yielded strikingly similar results (contrary to the variation suggested in the Service's letter).

   Additional support for broad front migration comes from radar and ceilometer studies conducted in western New York, southern Vermont,

and northwestern Maine. A study conducted in fall 1998 and 1999 in the western tier of New York (Wyoming County) and another study conducted in spring 1994 near Lake Ontario (Jefferson County) report similar numbers of migrants and direction of migration. A radar and ceilometer study conducted in spring and fall 1994 in Maine showed similar migration passage rates to the New York studies. A two-year (spring and fall) ceilometer study in Vermont showed similar passage rates to those from Maine. Moreover, the direction and rates of migration reported at all of these sites is almost identical. Radar and ceilometer studies conducted in the southeastern United States demonstrate migration traffic rates that are 1 to nearly 3 orders of magnitude greater than those in northern New York, Vermont, and Maine, a result of the larger source area for birds passing through the southeastern United States. That all sites are reporting very similar (nearly the same) migration dynamics suggests that migration is broad front, not concentrated (see supplemental avian data in Appendix S). Therefore, there is not a "high seasonal concentration" of birds at the project site that would suggest the need for further radar studies.

5. On page 5, the Service's letter states, "We generally recommend that studies be conducted that adequately evaluate avian use of the project area and the potential risks to avian species." FRWP is unaware of any other projects in New York State where the Service has recommended two years of radar (or other) studies. It is understood that the Service reviews communication tower projects under NEPA, prior to FCC licensing. FRWP is unaware that radar studies or other migration studies (pre-or post-construction) been recommended or requested by the USFWS for communication projects or other projects that are known to impact migratory birds.

6. FRWP does not believe that radar has been validated as a means of assessing or predicting high risk to birds at wind power sites. To date, radar has never been demonstrated to be a valid or reliable predictor of high risk of collision at wind power facilities. The reason is that too few night migrating birds have been killed to provide the variance needed to make high risk predictable. Similarly, pre-construction radar data have not suggested that large-scale mortality would result at a wind power facility. With this in mind, it is not clear how such data could be used to assess risk at the Flat Rock wind power site. Furthermore, although radar equipment has "evolved" during the past 20 years as stated in the Service's letter, mobile marine radars are essentially the same and the results from those studies have not changed our knowledge regarding the basics of migration. Since 1994 and 1998, when Cooper's team studied the Martinsburg site and other sites, little has changed with respect to radar sensitivity and what the radars can measure with respect to night migrating songbirds.

Comment 11: The recommended radar studies should also be utilized to collect information on bat use of the project site.

Response: The radar used in migratory bird studies cannot distinguish between birds and bats, and frequently will also track insects. The radar signatures of bats are virtually identical to those of birds, especially when both types of targets are migrating. This was confirmed by Dr. Sidney A. Gauthreaux at a recent meeting of the U. S. Fish and Wildlife Service's Communication Tower

Tower Working Group (Feb. 11, 2004) at the Service's office in Arlington, Virginia. Because of their erratic flight pattern, radar sometimes cannot pick up bats. In addition, because bats forage close to the ground or beneath the forest canopy, they cannot be detected by radar under most conditions. Based on site conditions and previous studies, FRWP does not believe the project is likely to have a significant impact on populations of resident or migratory bats. However, post-construction bat mortality monitoring will be undertaken by FRWP (see response to NYSDEC Comment #1).

Comment 12: The sponsor may be required to conduct post-construction monitoring of avian mortality during project operation.

Response: As recommended in the Avian Risk Assessment, and as indicated on page 103 of the DEIS, FRWP has already committed to perform a post-construction monitoring study to evaluate turbine-related avian mortality. In addition, FRWP will conduct a long-term study of the disturbance, displacement, and/or habituation of locally nesting birds associated with the presence of turbines (particularly species that typically inhabit grassland areas). This study would evaluate the abundance of grassland nesting songbirds and their use of areas beneath and near turbines to assess the actual area of impact 1, 5, and 10 years after construction to provide a long-term perspective regarding displacement and habituation. These proposed studies were reviewed with representatives of the NYSDEC and local ornithologists/birders at a meeting in Lowville on October 9, 2003 (to which the U.S. Fish & Wildlife Service was invited but could not attend). All in attendance indicated that the proposed type and level of study appeared appropriate.

Letter of January 20, 2004 from Kevin Kispert, Project Manager, New York State Department of Environmental Conservation.

Comment 1: Additional studies should be conducted during the spring migration period to document both the temporal and spatial distribution of migrating avian species within the project area. Additional radar studies are recommended.

Response: See response to U.S. Fish and Wildlife Service Comment #10.

Comment 2: The NYSDEC recommends post-construction research and monitoring to identify and/or assess impacts to wildlife, including rotor strikes to birds and bats, and changes in the use of project lands due to the habitat fragmentation during construction of project roads and facilities. We recommend that this monitoring effort be conducted at year one, three, five, and ten years post-construction.

Response: FRWP has committed to post-construction studies in years 1, 5, and 10. See response to U.S. Fish and Wildlife Service Comment #12.

3.0 REVISIONS/SUPPLEMENTS TO DEIS

The following paragraphs from the DEIS have been changed or modified (with changes in **bold)** to incorporate new or revised information:

Page ix, Paragraphs 2 and 3

Flat Rock Wind Power, LLC (FRWP) is proposing to develop a wind-powered generating facility of **187** turbines with a capacity of approximately 300 megawatts (MW). In addition to the wind turbines, the project will involve construction of two meteorological towers, a system of gravel access roads, a buried and aboveground electrical collection system, and a substation. An additional substation and a 10.3-mile long 230 kilovolt (kV) transmission line will also be constructed to connect the project with the existing electric transmission system (grid). These transmission components are being reviewed separately by the New York State Public Service Commission (NYSPSC) under Article VII of the NYS Public Service Law (PSL), and are not subject to the State Environmental Quality Review Act (SEQRA) (Article 8 of the Environmental Conservation Law and 6 NYCRR Part 617).

The proposed project is located on the eastern edge of the Tug Hill Plateau, west of the Village of Lowville, in Lewis County, New York. It will be developed on leased private land in the Towns of Martinsburg, Harrisburg, and Lowville in two phases. Phase I will consist of **94** turbines dispersed over approximately 10,200 acres; Phase II will consist of 93 turbines dispersed over approximately 10,900 acres. Phase I construction is expected to begin in May 2004 and be completed in November 2004. Phase II is anticipated to begin in May 2005 and be completed in November 2005.

Page 1, Paragraph 2

Flat Rock Wind Power, LLC (FRWP) is proposing to develop a wind-powered generating facility of **187** turbines with a capacity of approximately 300 megawatts (MW). In addition to the wind turbines, the project will involve construction of two meteorological towers, a system of gravel access roads, a buried and aboveground electrical collection system, and a substation. An additional substation and a 10.3-mile-long 230 kilovolt (kV) transmission line will also be constructed to connect the project with the existing electric transmission system (grid). These transmission components are being reviewed under Article VII of the NYS Public Service Law (PSL), and are not subject to the State Environmental Quality Review Act

(SEQRA). Accordingly, they are not included as part of the project being addressed in this DEIS.

Page 3, Paragraph 1

- A total of **94 General Electric (GE)** wind turbines or equivalent machines will be constructed within the Phase I project area (see Figure 2). Each **1.5** MW turbine consists of an 80-meter-(262-foot)-tall tubular steel tower; a **77-meter-(253-foot)**-diameter rotor; and a nacelle which houses the generator, transformer, and power train. The towers have a base diameter of approximately 15 feet and a top diameter of 8 feet. The tower is topped by the nacelle, which is approximately 9 feet high and 25 feet long, and connects with the rotor hub. The rotor consists of three **126**-foot-long composite blades. All of the nacelles will be equipped with two aviation warning lights, currently anticipated to be flashing strobes (white during the day, red at night). With a rotor blade oriented straight up, each turbine has a maximum height of approximately **390** feet (**120** meters). All components of the turbine are proposed to be painted white. A 6-foot-tall by 4-foot-wide transformer will be located adjacent to the base of each tower, raising the voltage of the electricity produced by the turbine generator up to the 34.5 kV voltage level of the collection system.

Page 4, Paragraph 2

- Phase II will consist of 93 **1.5** MW **GE** turbines with the same components and dimensions as those described for Phase I. Phase II will include approximately 22 miles of access roads, 38 miles of buried cable, and 4.91 miles of aboveground 115 kV line (see Figure 2). The location of some of these components is subject to possible adjustment. A new substation south of Nefsey Road and north of NYS Route 177 built as part of Phase II will consolidate all the electric output of the 93 wind turbine generators and transform it into 115 kV power for more efficient transport to the 230 kV Rector Road substation being built as part of Phase I. The Nefsey Road substation will be approximately 0.60 acre in size, and include transformers, breakers, switches, relays, meters, and associated equipment. It will be enclosed by a chain-link fence and connected to NYS Route 177 by a gravel access road.

Page 7, Paragraphs 2 and 3

Direct burial methods via cable plow, rock saw and/or trencher will be used during the installation of underground utility interconnect lines whenever possible (see Appendix B). Direct burial via a cable plow will involve the installation of bundled electrical and fiber optic

cables directly into the ground via a "rip" created by the plow blade. The rip disturbs an area approximately 12 inches wide with bundled **cables** installed to a minimum depth of 36 inches. An area up to 15 feet wide must be cleared of tall-growing woody vegetation and will be disturbed by the tracks of the installation machinery. However, this disturbance does not involve excavation of the soil. 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 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 involves the installation of bundled **cables** 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 a 14-inch-wide trench with a sidecast area immediately adjacent to the trench. Similar to cable plow, this direct burial method installs the **cables** a minimum of 36 inches deep and requires only minor clearing and surface disturbance (up to 15 feet wide from the installation machinery). 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.

Page 14, Table 2

Lewis County/Tug Hill Region	
Thomas Sweet, Superintendent Lewis County Highway Department Lowville, New York 13367	Robert Quinn, Executive Director Tug Hill Commission Dulles State Office Building 317 Washington Street Watertown, New York 13601-3782
John McHugh, Director Lewis County Department of Planning Lewis County Court House Lowville, New York 13367	Dennis Mastascusa, Chairman Lewis County Legislature Lewis County Court House Lowville, New York 13367
Roger Tibbetts, Chairman **Cooperative Tug Hill Council** **63 Fox Road** **P.O. Box 12** **Redfield, New York 13437**	

Page 32, Paragraph 3

No listed endangered, threatened, or special concern mammal species were observed within the project area, and based on existing habitat conditions, are considered unlikely to occur

there. Indian bat, a state and federally listed endangered species, is not known to occur in the area. The nearest known hibernating site for this species is in **Jefferson** County, **northwest of Watertown** (NYSDEC website). It is possible that certain species generally confined to the Adirondack Mountains, such as moose, may on occasion wander into the project area. No listed endangered, threatened, or special concern reptile or amphibian species were observed during the 2002 and 2003 field surveys, and none, other than Jefferson's salamander and blue-spotted salamander, are considered likely to occur in the area based on species range and existing habitat conditions.

Page 58, Paragraph 2

The primary impact to the physical features of the site will be temporary disturbance of soils during installation of foundations, underground 34.5 kV cable, and access roads. Based on the assumptions outlined at the beginning of Section 3.0, these activities will disturb approximately **650** acres of ground. Crane paths in areas without access roads have the potential to disturb approximately 30 acres of soil, primarily in agricultural fields. Construction staging areas (Phases I and II) will disturb approximately 22 acres, all of it agricultural land (hay fields). Total soil disturbance from all anticipated construction activities will total approximately **700** acres. Earth moving and general soil disturbance will increase the potential for wind/water erosion and sedimentation into surface waters. Construction activity also has the potential to impact soil in agricultural fields through rutting, mixing of topsoil and subsoil, and soil compaction.

Page 58, Paragraph 4

Approximately **550** acres of temporarily disturbed soils will be restored following construction, including approximately 407 acres of agricultural land. Restored areas will include tower sites, road edges, crane paths, temporary roads, and staging areas. This process will generally involve the following sequence of activities:

Page 59, Paragraph 1

Proposed agricultural soil protection measures are included in Appendix C. Overall, the project will result in permanent **impacts to** approximately 142 acres of land **due to construction of** built facilities (7,850 square feet of crane pad and foundation at each tower site, maximum 20-foot-wide permanent access roads, and a 1-acre substation).

Page 59, Paragraph 2 and 3

As described in Section 2.0 a total of 83 crossings of wetlands (and NYSDEC-regulated adjacent areas) and streams could occur due to Phase I project construction. Of the 83 wetlands/streams crossings, 60 will involve temporary impacts due to the installation of underground utility interconnect lines, with the remaining 23 being permanently impacted by proposed access roads and turbines. Of the 60 temporarily impacted Phase I wetland/stream areas, it is anticipated that six NYS protected stream areas, and six state jurisdictional wetland and wetland buffer areas will be crossed by the proposed underground utility connections, resulting in approximately **1.10** acres of temporary impact. Permanent impacts will total to approximately **0.56** acre of wetlands and streams (plus **0.48** acre of state regulated buffer area).

Field **investigations** conducted **during the Fall of** 2003 within the Phase II study area indicates that **temporary disturbance will occur at** approximately **80** crossings of state regulated and federal jurisdiction wetlands and/or streams **during** project construction.

Page 60, Paragraph 1

Approximately **31 wetlands/streams** will incur permanent impacts resulting from access road installation. Phase II wetland delineation and survey data **indicate approximately 1.71 acres of** temporary **wetland and stream** impacts and **approximately 1.18 acres of** permanent impact. **As of January 2004, data on all** state and federal wetland impacts **(Phase I and Phase II) have been** submitted to the Corps and NYSDEC. A copy of the permit application prepared for wetland/stream impacts resulting from Phase I project construction activities is provided in Appendix D.

Page 61, Paragraph 2

Proposed Phase I access road crossings will result in permanent impacts to three streams (none classified as C(t) or higher), one state jurisdictional wetland, four state jurisdictional wetland buffer areas, and 22 federal jurisdictional wetland areas (total of 22 wetland/stream crossings). The wetlands are generally dominated by wet meadow and shrub vegetation. Forested wetlands will not be impacted by the proposed road crossings. During construction, access roads will disturb up to a maximum width of 40 feet, resulting in temporary impacts to **1.10** acres of wetlands (plus **1.87** aces of state-regulated adjacent area). Following construction, the access roads will be reduced to a maximum 20-foot width (with an average width of 12 feet), which will remain in place for future maintenance activities. This will result in permanent loss of approximately **0.56** acre of wetlands/streams

(plus **0.48** acre of state-regulated wetland buffer) within the Phase I project area. Phase II wetland/stream inventory data **indicates** that access roads will not cross protected streams or state jurisdictional wetland and involve only federal jurisdiction wetland/stream areas.

Page 106, bulleted list

- Removing and disposing of all construction debris offsite at the completion of restoration.
- **Involving Ag. & Markets staff in the identification of agricultural impacts, development of mitigation measures, and approval of final restoration.**
- **Implementing a monitoring and remediation program lasting at least two years following completion of initial restoration, and until the completion of all necessary follow-up restoration.**

Page 110, bulleted list

- As mentioned previously, it is anticipated that FRWP will enter into an agreement with the OPRHP to undertake various activities to mitigate potential visual impacts on historic structures. Although not yet finalized, this mitigation is anticipated to involve establishment of historic property visual mitigation grant fund, and funding of a cemetery maintenance program, both of which could include screen plantings that would specifically address impacts identified in the VIA.
- **All aboveground facilities will be removed at the end of their operational life.**

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5.0 LIST OF SUPPLEMENTAL APPENDICES

APPENDIX M: Comment Letters and Hearing Transcript

APPENDIX N: Sample Language from Lease Agreement

APPENDIX O: Existing and Proposed Land Use Ordinances

APPENDIX P: Supplemental Visual Impact Assessment

APPENDIX Q: Facility Plans and Specifications

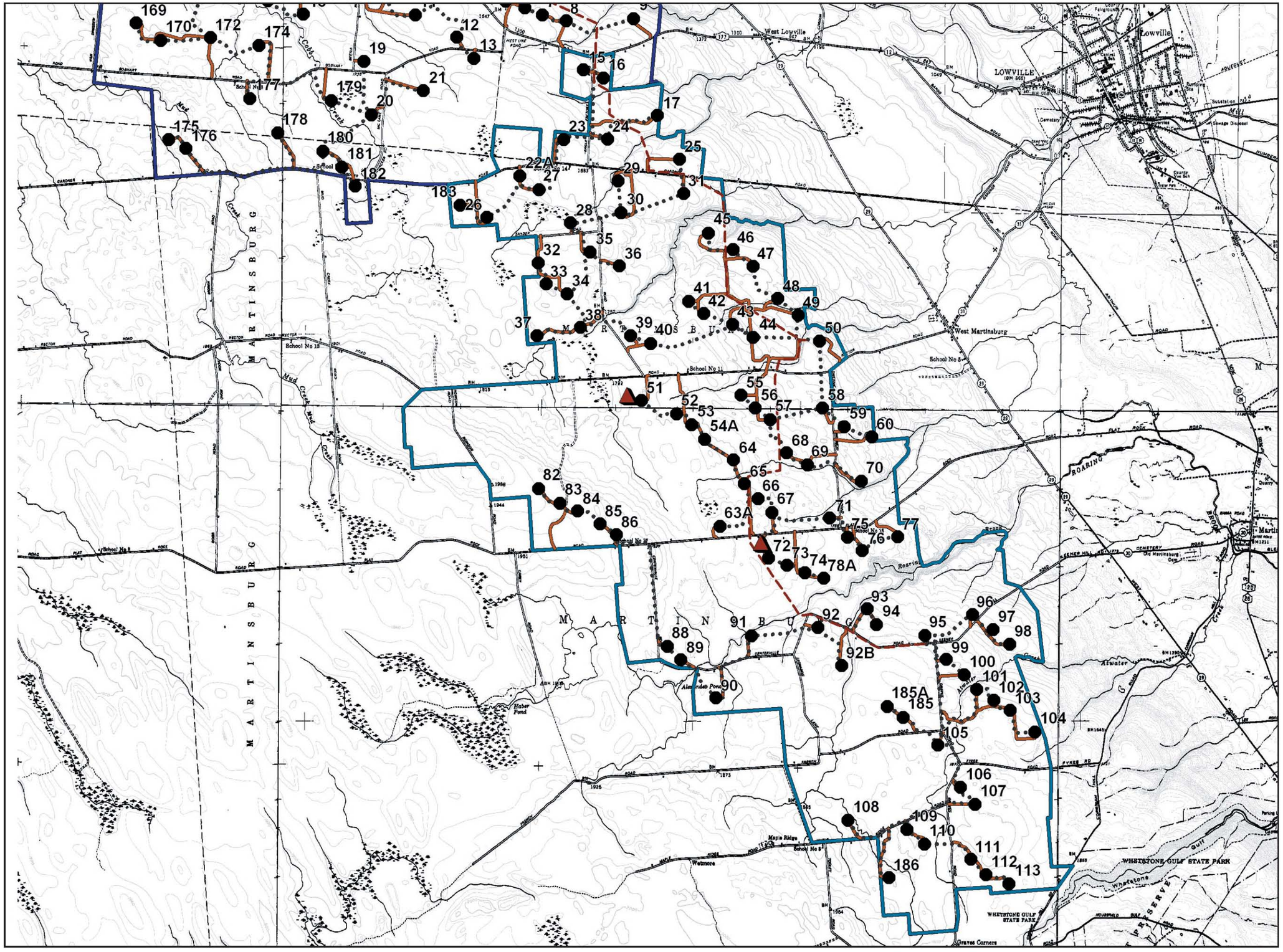
APPENDIX R: Summary of Phase I and Phase II Wetland and Stream Impacts

APPENDIX S: Supplemental Avian Data

APPENDIX T: Phase II Cultural Resources Report

FIGURE

Flat Rock Wind Power Project
Final Environmental Impact Statement



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Source: NYSDOT New Boston, West Lowville, Lowville, Sears Pond, Page, and Glenfield NY Quads

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LEGEND

- Phase I Project Area
- Phase II Project Area
- Wind Turbine
- Service Road
- Overhead Interconnect
- Buried Interconnect
- Met Tower

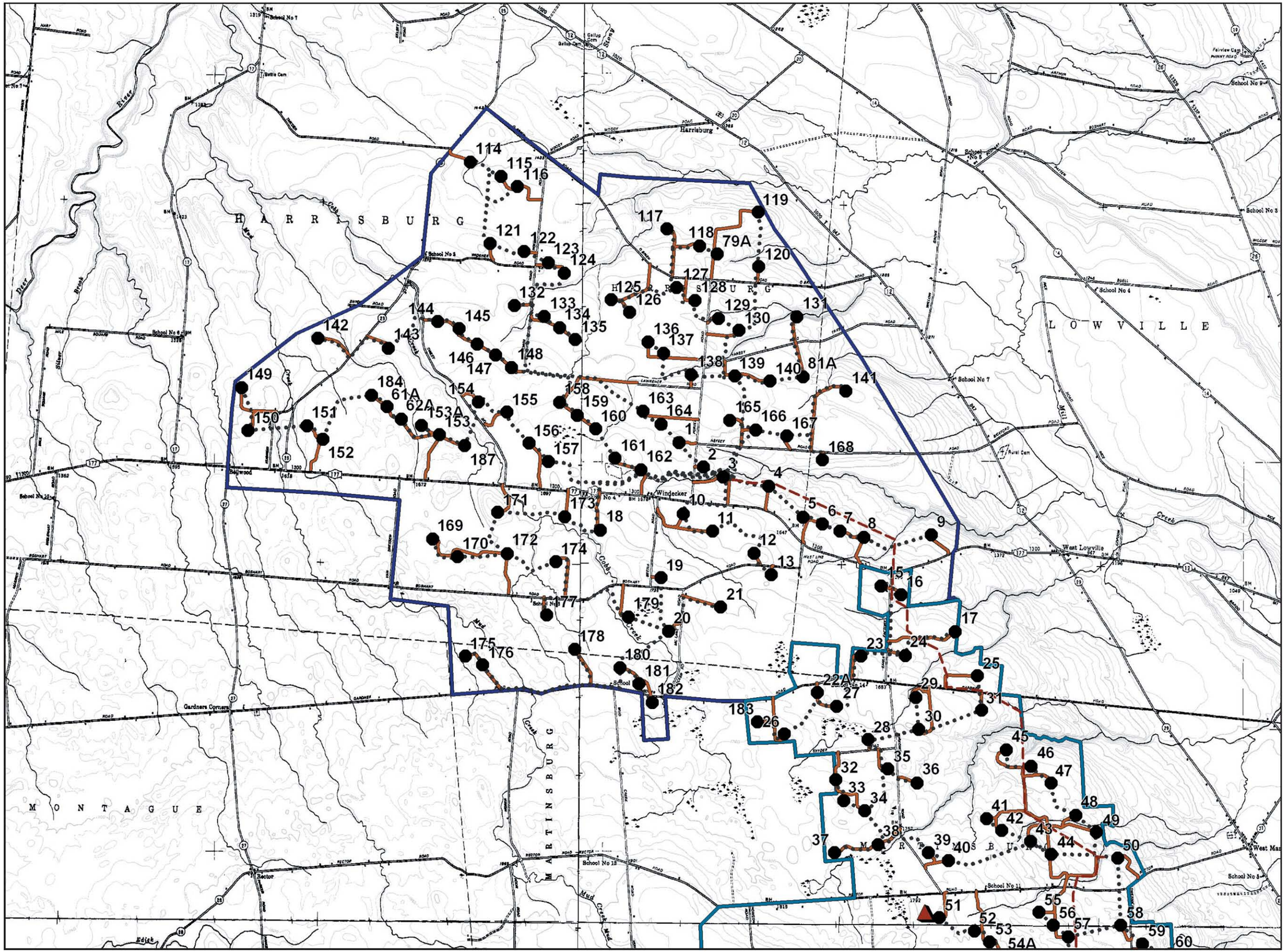
February 2004

Prepared By: EDR

Prepared For: Flat Rock Wind Power Project

Figure 1. Revised Project Layout Sheet 1

Flat Rock Wind Power Project
Final Environmental Impact Statement



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N

LEGEND

- Phase I Project Area
- Phase II Project Area
- Wind Turbine
- Service Road
- Overhead Interconnect
- Buried Interconnect
- Met Tower

February 2004

Prepared By:

Prepared For:

Figure 1. Revised Project Layout Sheet 2