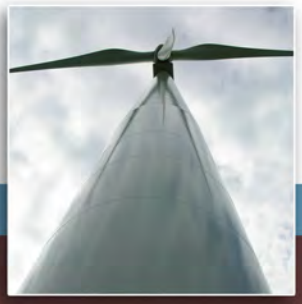
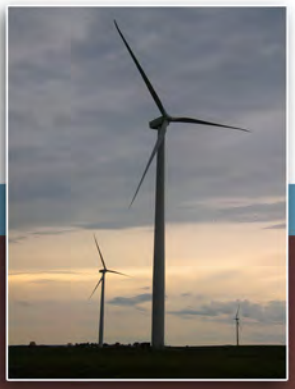
Invenergy

California Ridge Wind Energy Project

Vermilion County
Wind Energy Structure Ordinance
Building Permit Application

Vermilion County, Illinois





June 2011

Prepared by

HDR

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1.0 INTRODUCTION

1.1 PROJECT SUMMARY

California Ridge Wind Energy LLC (California Ridge), a wholly owned subsidiary of Invenergy Wind LLC (together with its subsidiaries, Invenergy), submits this application for a Wind Energy Structure Ordinance Building Permit (Application) to construct the California Ridge Wind Energy Project (Project). The Project is anticipated to be located in both Vermilion and Champaign counties, Illinois (Figure 1-1 and Figure 1-2) in the townships of Pilot, Ogden and Compromise. This Application is for the Vermilion County portion of the Project.[1] The Project will be approximately 214 megawatts (MW) in size, consisting of up to 134 wind turbines of the 1.6-100 MW model manufactured by General Electric (GE). It is anticipated that approximately 166MW will be in Vermilion County and 48MW in Champaign County. Currently, an approximate 104 turbines are planned for Vermilion County.

The purpose of this Application is to assure that any structures—and equipment connected to such structures—used in the development and productions of wind generated electricity in Vermilion County are safe and effective, and in compliance with the Vermilion County Wind Energy Structure Ordinance, Ordinance No. 09-0102, governing the establishment of wind energy conversion systems (the "Ordinance"). It is also to facilitate economic opportunities for local residents and to promote the supply of wind energy in support of Illinois' statutory goal of increasing energy production from renewable energy sources while adhering to required structural regulations to enhance safety. The Project area was selected based on wind resources, land use, and proximity to existing transmission infrastructure. The Ordinance is designed to govern the permitting and building of 100 KW, or greater, wind energy conversion systems and substations that generate electricity to be sold to wholesale or retail markets.

Invenergy is a leading clean energy company focused on the development, ownership, operation, and management of large-scale electricity generation assets in the North American and European markets. Invenergy's electric generation assets primarily include large scale wind energy and clean natural-gas fueled electric generating facilities.

Founded in 2001, Invenergy has an excellent track record in the energy industry and a highly experienced management team. The members of Invenergy's senior management team have an average of approximately 20 years of experience in diverse areas of the energy market including development, engineering, construction, finance, operations, asset management, and energy trading and contracting.

Invenergy is headquartered in Chicago, Illinois, and has North American regional offices located in Austin, Denver, San Diego, San Francisco, Washington D.C., and Toronto.

Table 1-1 lists Invenergy's completed wind projects and those currently under construction or under contract.

[1] The Champaign County portion of the Project will be the subject of a separate application to that County.

Table 1-1
Invenergy's Completed Wind Projects and Projects Under Construction

Wind Project	Location	Status	Size of Facility
Le Plateau	Quebec	In Construction	138.5 MW
Raleigh	Ontario	In Construction	78.0 MW
Gratiot	Michigan	In Construction	200.0 MW
Bishop Hill	Illinois	In Construction	200.0 MW
White Oak[5]	Illinois	In Construction	150.0 MW
Bishop Hill II	Illinois	Under Contract	68.0 MW
Conestogo	Ontario	Under Contract	88.5 MW
Darlowo	Poland	Under Contract	250.0 MW
Vantage	Washington	Operating	90.0 MW
Beech Ridge	West Virginia	Operating	100.5 MW
Grand Ridge II, III & IV	Illinois	Operating	111.0 MW
Sheldon	New York	Operating	112.5 MW
Turkey Track	Texas	Operating	169.5 MW
McAdoo	Texas	Operating	150.0 MW
Ashtabula [4]	North Dakota	Operating	48.0 MW
Willow Creek	Oregon	Operating	72.0 MW
Grand Ridge I	Illinois	Operating	99.0 MW
Stanton	Texas	Operating	120.0 MW
Camp Springs I & II	Texas	Operating	250.5 MW
Forward I & II	Wisconsin	Operating	129.0 MW
Logan [1]	Colorado	Operating	201.0 MW
Victory [2]	Iowa	Operating	99.0 MW
Centennial [3]	Oklahoma	Operating	120.0 MW
Judith Gap	Montana	Operating	135.0 MW
Wolverine Creek	Idaho	Operating	64.5 MW
Spring Canyon	Colorado	Operating	60.0 MW
Tymien	Poland	Operating	50.0 MW
Buffalo Mountain	Tennessee	Operating	27.0 MW
Total:			**3,632.5 MW**

Notes:

1. *Sold to FPL*
2. *Sold to MidAmerican Energy*
3. *Sold to Oklahoma Gas & Electric*
4. *Sold to Otter Tail Corporation*
5. *Sold to NextEra*

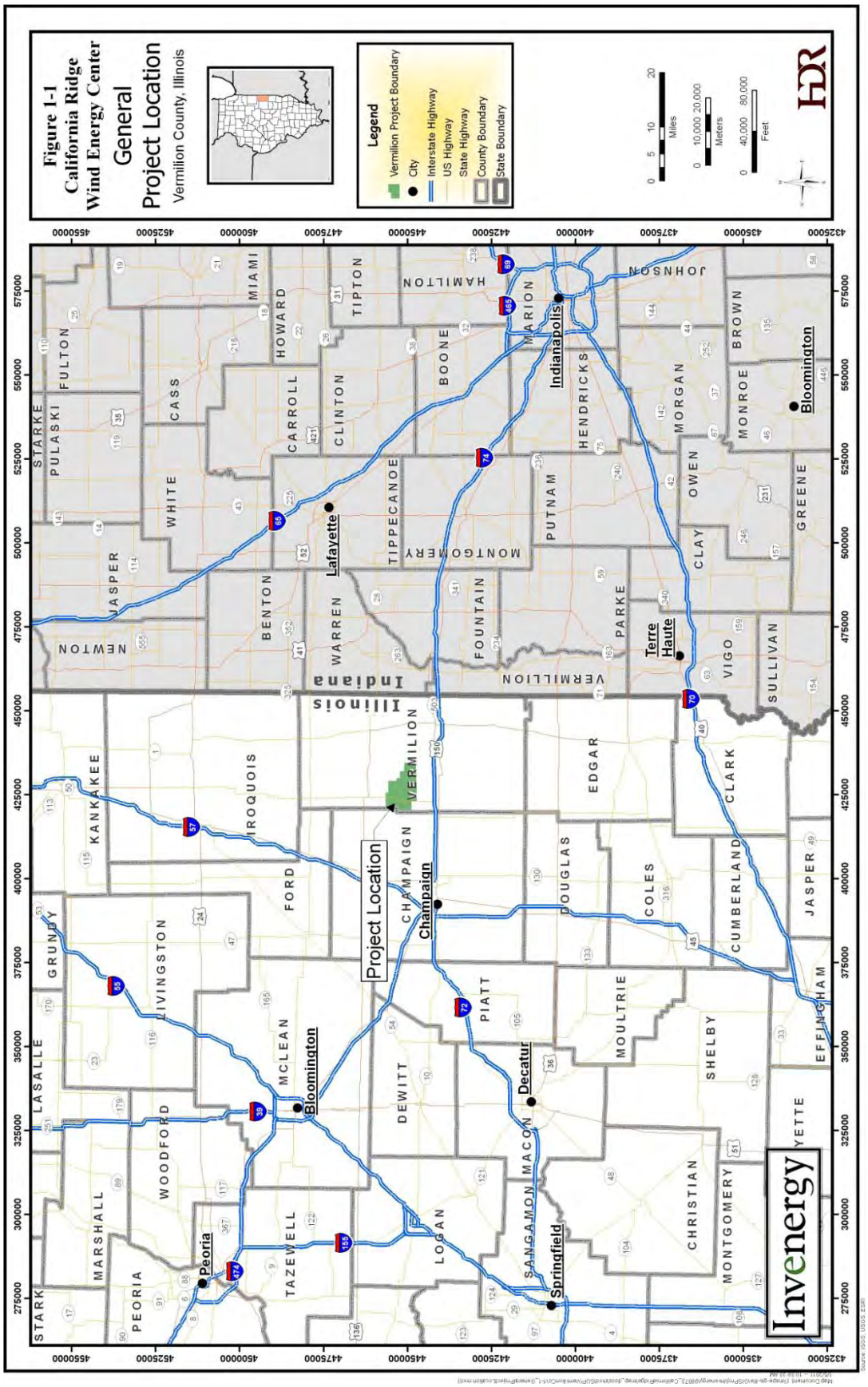
Figure 1-1
California Ridge
Wind Energy Center
General
Project Location
Vermilion County, Illinois
Legend
Vermilion Project Boundary
City
Interstate Highway
US Highway
State Highway
County Boundary
State Boundary
Miles
Meters
Feet
HDR
Indiana
Illinois
Project Location
Champaign
Bloomington
Lafayette
Indianapolis
Terre Haute
Decatur
Springfield
Peoria
Invenergy

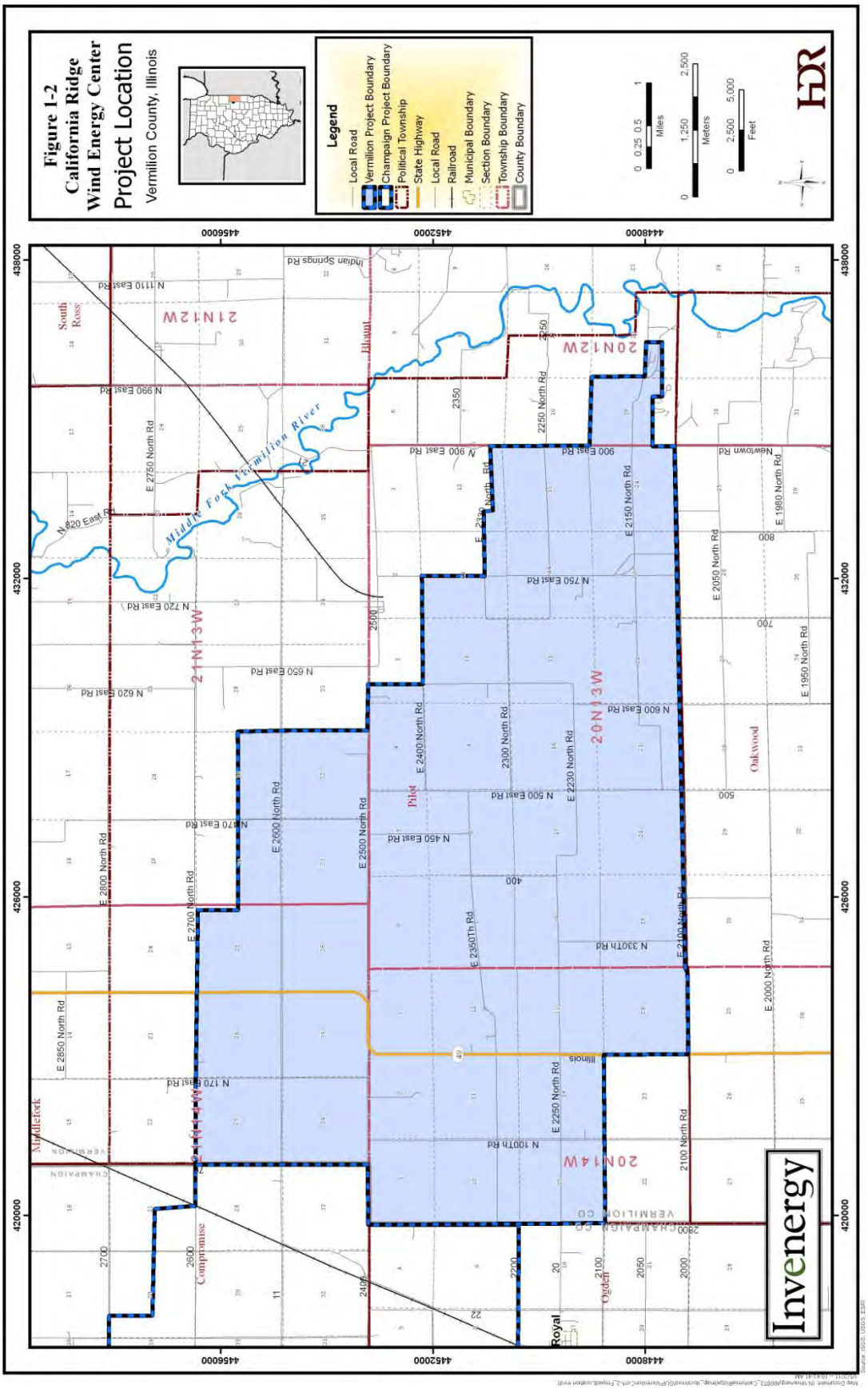
Figure 1-2
California Ridge
Wind Energy Center
Project Location
Vermilion County, Illinois
Legend
Local Road
Vermilion Project Boundary
Champaign Project Boundary
Political Township
State Highway
Local Road
Railroad
Municipal Boundary
Section Boundary
Township Boundary
County Boundary
Miles
Meters
Feet
HDR
Invenergy
21N12W
20N12W
21N13W
20N13W
20N14W
Middle Fork Vermilion River
Blount
Pilot
Oakwood
Middletork
Compromise
Royal
Ogden
South Ross
Indian Springs Rd
Newtown Rd
E 2750 North Rd
E 2600 North Rd
E 2500 North Rd
E 2400 North Rd
E 2300 North Rd
E 2230 North Rd
E 2150 North Rd
E 2100 North Rd
E 2050 North Rd
E 2000 North Rd
E 1980 North Rd
E 1950 North Rd
E 2800 North Rd
E 2700 North Rd
E 2850 North Rd
E 2360Th Rd
E 2250 North Rd
2250 North Rd
2350 North Rd
Illinois
N 990 East Rd
N 900 East Rd
900 East Rd
N 820 East Rd
N 750 East Rd
N 720 East Rd
N 650 East Rd
N 620 East Rd
N 600 East Rd
N 500 East Rd
N 450 East Rd
N 370 East Rd
N 330Th Rd
N 170 East Rd
N 100Th Rd
438000
432000
426000
420000
445600
445200
444800

1.2 APPLICANT INFORMATION

One special-purpose Delaware limited liability company was created in order to develop, permit, finance, construct, own, and operate the Project. Contact information for each company is as follows:

Invenergy Wind LLC
One South Wacker Drive
Suite 1900
Chicago, IL 60606
Phone: (312) 224-1400
Fax: (312) 224-1444

California Ridge Wind Energy LLC
One South Wacker Drive
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Chicago, IL 60606
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Fax: (312) 224-1444

1.3 PROJECT CONTACTS

Invenergy and California Ridge's Project contacts are:

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1.4 ILLINOIS RENEWABLE ENERGY STANDARD

In August 2007, Illinois enacted legislation (Public Act 095-0481, codified at 20 ILCS 3855/1-1, *et seq.*)(Act) creating the Illinois Power Agency (IPA). The legislation includes a renewable energy standard (RES) of 10 percent by 2015 and 25 percent by 2025. The RES is an obligation for a specified quantity of energy to be acquired by Illinois state utilities supplying more than 100,000 Illinois customers. The RES escalates by year contingent upon the ability to acquire the energy at or below a mandated price cap. The purpose of the IPA is to develop electricity procurement plans for these state utilities to ensure "adequate, reliable, affordable, efficient, and environmentally sustainable electric service at the lowest total cost."

2.0 ORDINANCE COMPLIANCE CHECKLIST

Table 2-1 below lists certain requirements of the Vermilion County Wind Energy Structure Ordinance pertaining to wind power facilities and where this information can be found within the Application.

Table 2-1
Ordinance Requirements for Vermilion County

Wind Energy Structure Ordinance		Location in Document
Vermilion County Wind Energy Structure Ordinance		
I.	INTRODUCTION	
	A. Title	Vermilion County Wind Energy Structure Ordinance
	B. Purpose	Section 1.1
II.	DEFINITIONS	N/A – located in Ordinance
III.	APPLICABILITY	Section 1.1
IV.	PROHIBITION	N/A – stated in Ordinance
V.	Vermilion County Structural Safety Committee	N/A – stated in Ordinance
VI.	Siting Approval Application	N/A
	A. Permit Approval Application	N/A
	B. Application fee	$1,000/turbine
	C. Authority to Create or Require Application Form	N/A
	D. Permit Approval Application Contents	
	1. Project summary – General description of the project, including:	
	a.) Name Plate Generating Capacity	Sections 1.1, 3.2, 3.5.2
	b.) Potential Equipment Manufacturer(s)	Sections 1.1, 4.1.1, 4.2.2, 5.1.3
	c.) WECS Type	Sections 1.1, 4.1.1
	d.) WECS Number	Sections 3.1-3.3, 4.1.1
	e.) WECS Tower Maximum Height	Sections 3.2-3.4, 4.1.1, 5.3.2, 5.4.1 Figure 4-1
	f.) WECS Maximum Rotor Diameter	Sections 3.3, 3.4, 4.1.1, Figure 4-1
	g.) Project General Location	Sections 1.1, 3.1, Figure 1-2, Figure 3-1, Figure 3-2
	h.) Applicant, Owner and Operator Description, including business structures	Section 1
	2. Contact Information and References	
	a.) Applicant(s), Owner, and Operator Name, Address, Phone Number	Section 1.2
	b.) Property Owner Name, Address, Phone	Appendix B

Wind Energy Structure Ordinance	Location in Document
Number	
c.) References	Section 1.1
d.) History of similar projects constructed, maintained or operated by the Applicant, Owner and Operator	Section 1.1
3. *Project Site Plan:*	Section 3, Figure 3-2, Figure 3-6
a.) Required studies, reports, certifications, and approvals demonstrating compliance with provisions of this Ordinance.	Appendix A-E
b.) County check list of required and requested information and background and experience.	N/A –not available at time of application
c.) Review of Application by County Structural Safety Committee	N/A
E. Notification of Any Changes to Information Provided in Application	N/A
VII. Design and Installation	
A. Design Safety Certification	Section 4.1.2
1. Certificate of design compliance	Section 4.1.2
2. Engineer's certification of foundation and tower design	Section 4.1.2
3. Safety and Building code compliance if applicable or International Building Code and National Electric Code	Section 4.1.1
4. Staging area Identification	Figure 3-1, Figure 3-2, Figure 4-1
B. Controls and Breaks	Section 4.1.1
Redundant brake system	Section 4.1.1
Aerodynamic overspeed controls including variable pitch, tip, and other similar systems)	Section 4.1.1
Mechanical brakes in fail safe mode	Section 4.1.1
C. Electrical Components	Section 4.1.1,
D. Color	Section 4.1.1
E. Federal Aviation Administration Compliance	Sections 5.4.1, 5.7.5, 5.9.1, 5.14.2
F. Warnings	
1. Signage concerning voltage at base of pad-mounted transformers and substations	Section 5.4.1
2. Visible, reflective, colored objects on anchor points of guy wires and along guy wires up to a height of 15 feet from the ground	N/A – no guy wires anticipated for Project.
G. Climb Prevention	
1. Design or protection of WECS tower to prevent climbing	Section 4.1.1

Wind Energy Structure Ordinance	Location in Document
H. Setbacks	
1. 1000 feet from any Primary Structure	Sections 3.4, 3.5.2, Figure 3-6
2. At least 1.10 times the WECS Tower height from public roads, third party transmission lines, and communication towers.	Sections 3.4, 3.5.2, Figure 3-6
3. At least 1.10 times the WECS Tower Height from adjacent property lines.	Sections 3.4, 3.5.2, Figure 3-6
4. Setback variances	Sections 3.4, 3.5.2, Figure 3-6
I. Compliance with Additional Regulations	Section 1.1
J. Use of Public Roads	
1. Use of any county, municipality, township or village road(s), for construction, operation, or maintenance	Sections 3.5.2, 4.2.1, 5.2 Figure 4-3
a.) Identification of public roads	Figure 4-3
b.) Weight and size permits	N/A
2. Weight or size permits from the county, municipality, township or village	N/A
a.) Preconstruction baseline survey to determine existing road conditions for assessing potential future damage	N/A
b.) Roadway Use and Repair Agreement	Sections 4.2.1, 5.2, 5.2.2
c.) Financial assurance for repairing damage to public roads	Sections 4.2.2, 5.2, 5.2.2
VIII. Operation	
A. Maintenance	
1. Annual summary of Operation and maintenance reports to the County and upon request by the County.	Section 4.3.5
2. Re-Certification	Section 4.3.5
B. Interference	
1. Copies of project summary and site plan to microwave transmission providers and local emergency service providers and mitigation of interference identified by providers.	Section 5.3
2. Mitigation of interference with local broadcast residential television.	Section 5.3
C. Coordination with Local Fire Department	
1. Copy of site plan	Section 5.4.2
2. Develop fire department emergency response plan	Sections 5.2.2, 5.4.2
3. Compliance with all other applicable fire laws and regulations.	Sections 5.2.2, 5.4.2
D. Materials Handling, Storage and Disposal	

Wind Energy Structure Ordinance	Location in Document
1. Solid wastes	Sections 5.2, 5.5
2. Hazardous materials	Section 5.5
IX. Noise Levels	Section 5.1
X. Birds and Bats and Other Natural Resource and Wildlife Issues	Sections 5.6.1, 5.6.2
A. Consultation with Illinois Department of Natural Resources	Sections 5.6.1, 5.6.2
B. Certification that the siting, building and operation of the WECS will not violate existing law.	Sections 5.1, 5.1.2, 5.1.3, 5.1.4, 5.2, 5.4.2, 5.5.1, 5.6.2
C. Independent Studies suggested by IDNR	Sections 5.6.1, 5.6.2
XI. Public Participation	Section 6.0
XII. Liability Insurance	Section 4.3.3
XIII. Decommissioning Plan	Section 4.3.6, Appendix C
A. Triggering events	Appendix C
B. Structures, debris and cabling removal	Appendix C
C. Soil and Vegetation Restoration	Appendix C
D. Estimated Decommissioning Costs	Appendix C
E. Financial Assurances	Appendix C
F. County Access to Financial Assurances	Appendix C
G. Provisions for binding terms	Appendix C
H. County Site Access	Appendix C
XV Remedies	N/A
XVI County Authority to Enter and Inspect	N/A
XVII Waiver and Variances	N/A
XVIII Conflict with Other laws and Severability	N/A
XIX. Effective Date	N/A

Note: Vermilion County does not have a Section XIV in the Ordinance.

Table 2-1 is only a general guide. Due to the overlapping nature of the Ordinance factors, often relevant and important information is included in other related sections of the Application. By including these tables, California Ridge does not limit or narrow the parts of the Application that demonstrate compliance with the Ordinance. This Application, as a whole, demonstrates that the Project complies with the Vermilion County Ordinance requirements.

3.0 PROJECT DESCRIPTION

3.1 PROJECT LOCATION

The Project is located in the township of Pilot in Vermilion County. The Project will extend into the adjacent Champaign County as well. (Figure 3-1 and Figure 3-2). This Application is for the Vermilion County portion of the Project. The Vermilion County portion will consist of up to 104 turbines of the total 134 wind turbines located in the Project area. Figure 3-1 and Table 3-1 include the townships, ranges, and sections of the Project area.

The Project area in Vermilion County encompasses approximately 23,327 acres north of the town of Royal, Illinois, and south of the villages of Gifford and Potomac, Illinois. Current plans are to place the turbines on agricultural lands throughout portions of the site. The preliminary locations of the turbines, access roads, power lines, communication lines interconnection point, and other ancillary facilities or structures (wind power facilities) are shown in Figure 3-2. The final location of wind power facilities will be determined in consultation with landowners, and state, and federal agencies. The final layout will also be determined in consideration of the Vermilion County requirements. The final wind power facilities layouts will be submitted to Vermilion County and such layouts will include coordination for: each tower, substation, and property lines of adjoining property owners.

Table 3-1
Sections within Project Area

County	Township	Range	Section(s)
Vermilion County	21N	14W	25-27, 34-36
	21N	13W	29, 30, 31, 32
	20N	14W	1-3, 10-15, 24
	20N	13W	2,4-24,27
	20N	12W	19, 20

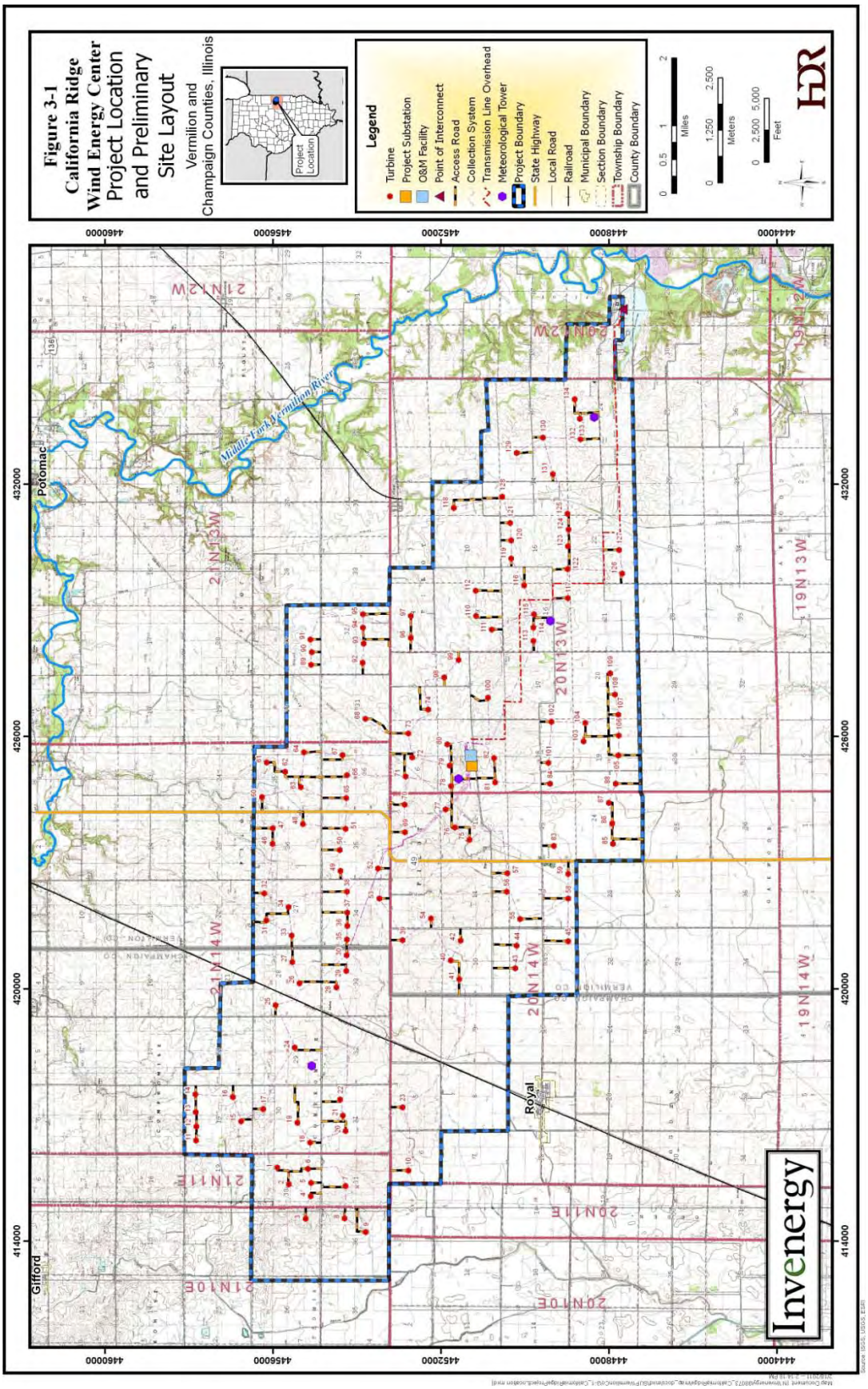
Figure 3-1
California Ridge
Wind Energy Center
Project Location
and Preliminary
Site Layout
Vermilion and
Champaign Counties, Illinois
Project Location
Legend
Turbine
Project Substation
O&M Facility
Point of Interconnect
Access Road
Collection System
Transmission Line Overhead
Meteorological Tower
Project Boundary
State Highway
Local Road
Railroad
Municipal Boundary
Section Boundary
Township Boundary
County Boundary
Miles
Meters
Feet
HDR
Middle Fork Vermilion River
Potomac
Royal
Gifford
Invenergy

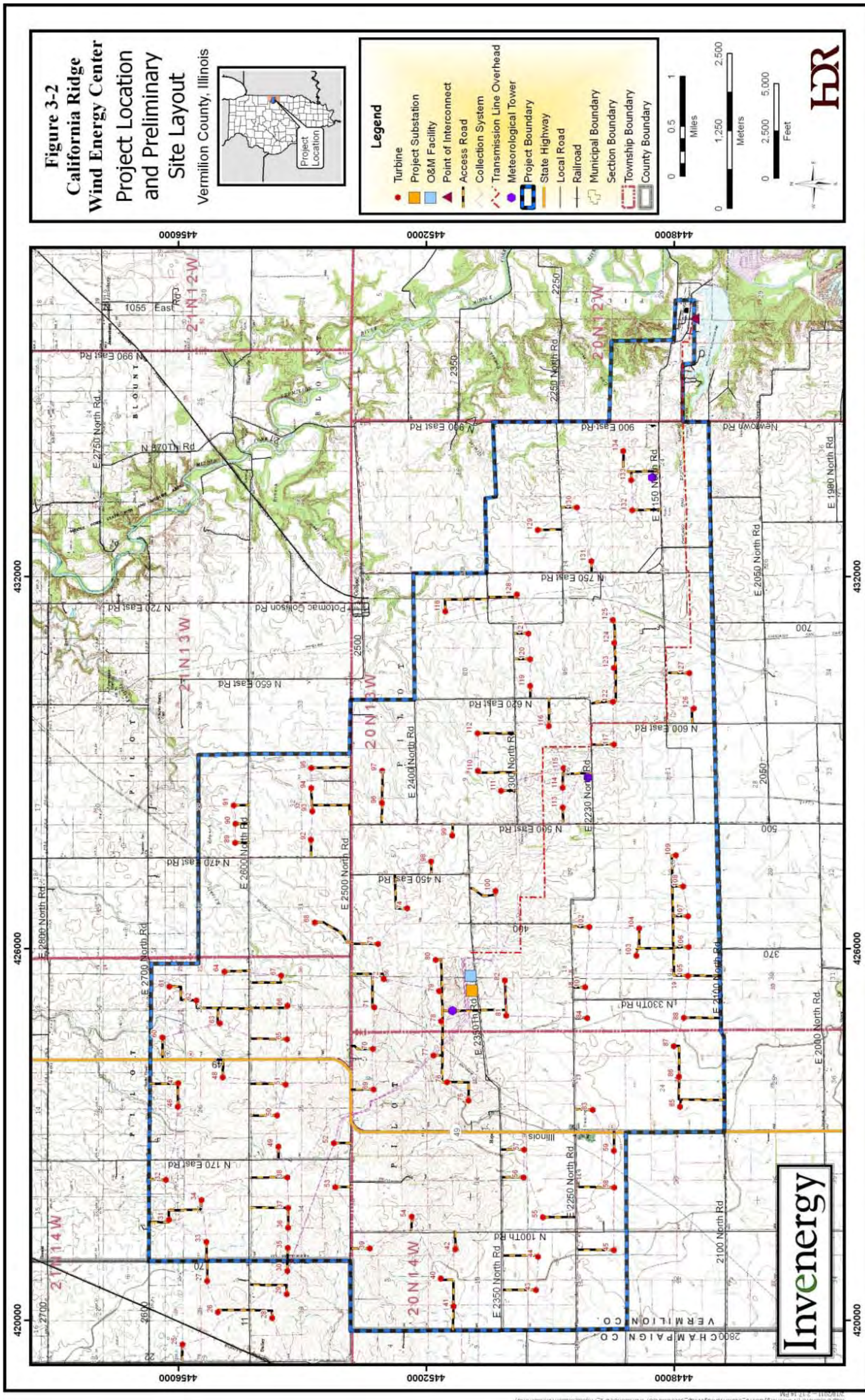
Figure 3-2
California Ridge
Wind Energy Center
Project Location
and Preliminary
Site Layout
Vermilion County, Illinois
Project Location
Legend
Turbine
Project Substation
O&M Facility
Point of Interconnect
Access Road
Collection System
Transmission Line Overhead
Meteorological Tower
Project Boundary
State Highway
Local Road
Railroad
Municipal Boundary
Section Boundary
Township Boundary
County Boundary
Miles
Meters
Feet
HDR
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Only a portion of the Project area will actually host wind power facilities. The land occupied by the Project will be less than 0.43 percent of the Project area in Vermilion County, assuming 104 turbines and associated access roads are constructed. It is anticipated that the area of direct land use for the turbines and access roads will be approximately 57.2 acres. This assumes an average of approximately 0.55 acres of land for each turbine and associated 16 foot-wide gravel access road. An additional 10 acres of land will be required for the operations and maintenance (O&M) building and 34.5/138 kilovolts (kV) substation. Refer to Section 5.0 for a detailed description of the environmental setting and impacts.

3.2 GENERAL WIND RESOURCES

California Ridge has relied upon a number of sources of information to determine the wind resource in the Project area. These include publicly available wind resource maps, elevation data, publicly available data from nearby airports and weather monitoring stations.

In addition, California Ridge has contracted with an independent wind resource assessment company, DNV Global Energy Concepts Inc. (DNV-GEC), to collect, quality control, validate, summarize, and transmit data for four 50- to 60-meter (164- to 197-foot) meteorological towers located within the Project area to obtain project-specific wind data. The four meteorological towers were installed between October, 2008 and July of 2009. The towers are manufactured by NRG Systems, Inc. The meteorological towers are temporary and will be removed when construction is complete. DNV-GEC has performed extensive evaluations of the site wind data and has produced long-term energy estimates correlated to reference data. The results of this analysis were used to determine anticipated project energy output in a computer model for a 200 MW project using up to 134, 1.6 MW wind turbines, each having a hub height of 100 meters (328 feet). Figure 4-1 in the next section shows a typical wind turbine structure.) The site-specific wind data has confirmed that there is a sufficient wind resource to support a project of this type.

In addition to the wind power facilities discussed previously, California Ridge may site one or more permanent meteorological towers within the Project area to collect meteorological data during operation (towers likely to be free-standing).

3.3 FACILITY SITE PLAN

The facility will include wind turbines, access roads, transformers, underground communication and electric power collection cables, permanent meteorological stations, overhead generation lead line, the Project 34.5/138 kV substation, the O&M building, and other ancillary facilities or structures. Collectively, these are called the wind power facilities. The point of interconnection (POI) will be within an Ameren Corporation-owned (Ameren) existing switchyard.

The Project will consist of 134 GE 1.6-100 turbines. Each turbine has a 1.6MW capacity. A total of 104 turbines are anticipated to be built in Vermilion County. The turbines will have a hub height of 100 meters. A rotor diameter of up to 100 meter (328-foot) may be used (Figure 4-1). Each tower will be secured by a concrete foundation designed for existing soil conditions and will be stamped by a professional engineer.

Each wind turbine will be accessible via all-weather gravel access roads connecting to public roads. The access roads will be approximately 4.9 meters (16 feet) wide and low profile to allow

cross-travel by farm equipment. California Ridge will work closely with the landowners in locating access roads to minimize land use disruptions to the extent possible. California Ridge is also currently negotiating Roadway Use and Repair Agreements with the county engineer and township road commissioner for Pilot Township to in accordance with Section VII.J. of the Ordinance. Consideration will be given to locating access roads to minimize any impact on current or future row crop agriculture.

A control panel inside the base of each turbine tower houses communication and electronic circuitry. A step-up transformer will be installed at the base of each turbine to raise the voltage from 690 volts (V) to collection line voltage (34.5 kV). Power will be run through an underground collection system at a depth of three to five feet to the Project feeder system that will feed power to a project 34.5/138 kV substation. Both power and communication cables will be buried in trenches on private property or public right-of-way (ROW) at a depth below 3 feet.

The collection system and communication cable lengths are minimized by installing underground cables the shortest distance from turbine to turbine. The feeder system will deliver the power to the Project 34.5/138 kV substation. The substation will include a step-up transformer that raises the voltage again, from 34.5 kV to 138 kV. From the Project substation, an approximately 9 miles overhead 138 kV generation lead line, constructed and owned by California Ridge, will move the power to the Ameren interconnection switchyard. The Ameren interconnection switchyard is the point where the energy generated by the Project connects to Ameren's transmission system.

The Project 34.5/138 kV substation will conform to industry standards and will be owned by California Ridge. The Ameren switchyard will conform to Ameren's specifications.

- The location of the Project 34.5/138 kV substation, Ameren switchyard, and Project transmission line are shown on Figure 3-2.
-
- Figure 3-3 is a conceptual diagram of the path of energy from the wind farm to energy users.
-
- Figure 3-4 shows a typical wind farm facility layout.
-
- Figure 3-5 shows a typical substation layout.

The Project O&M facility will be constructed somewhere within the project boundary. The O&M building will be approximately 7,000 square feet, and will house all the necessary equipment to operate and maintain all phases of the Project.

California Ridge will own and operate the Project. California Ridge expects to select one or more third-party contractors to perform all engineering, procurement, turbine and tower erection, and construction of the wind power facilities.

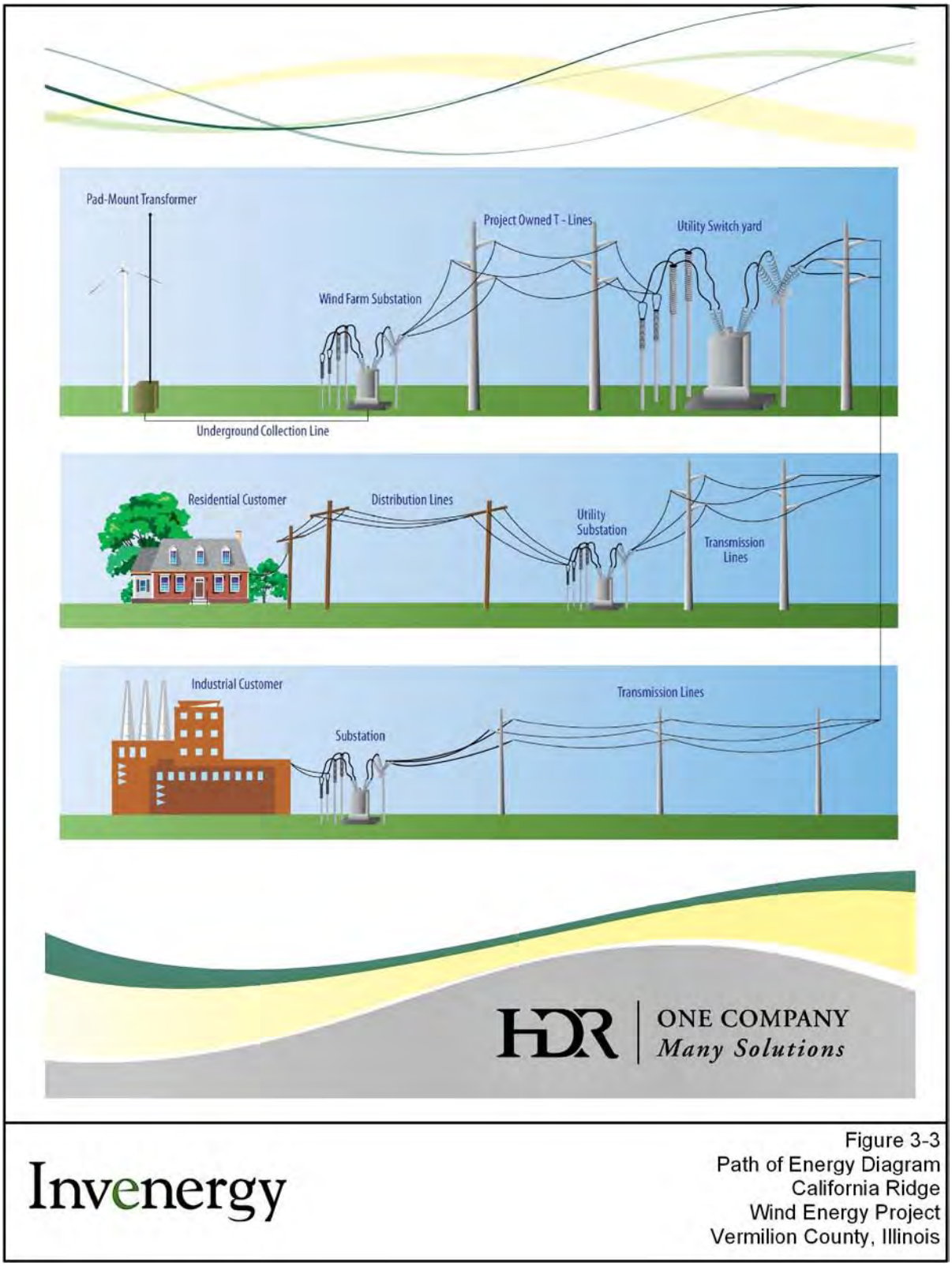

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Figure 3-3
Path of Energy Diagram
California Ridge
Wind Energy Project
Vermilion County, Illinois

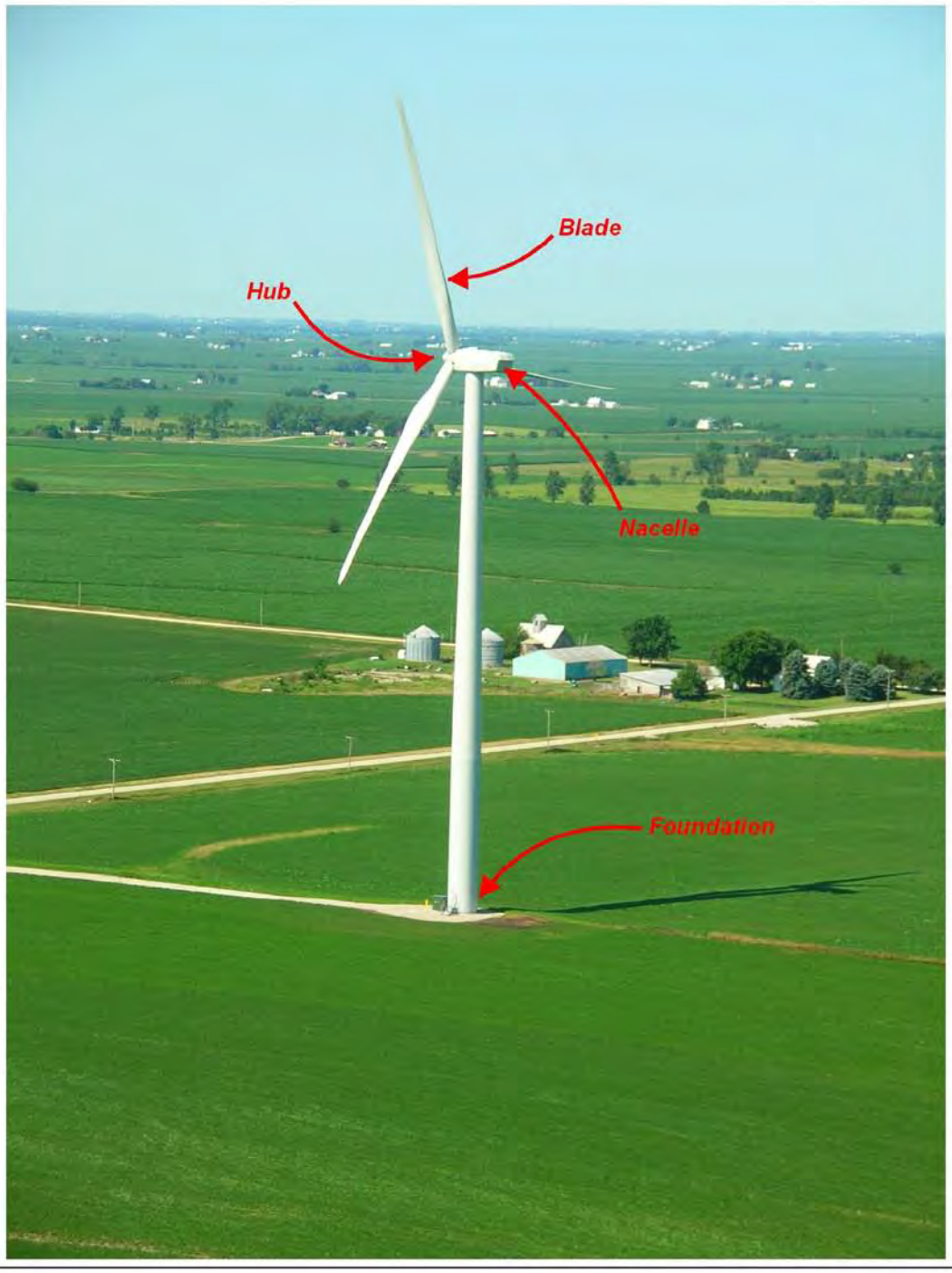

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Figure 3-4
Typical Wind Farm Facility Layout
California Ridge
Wind Energy Project
Vermilion County, Illinois

Map Document: (\\hrsps-gis-file\GIS\Proj\Invenergy\98073_CaliforniaRidge\mxd\SJP\VermilionCo\3-4_TypicalWindFarmLayout.mxd)
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Figure 3-5
Typical Substation
California Ridge
Wind Energy Project
Vermilion County, Illinois

Invenergy HDR

3.4 FACILITY SITING

California Ridge will develop a final site layout that optimizes wind resources while minimizing any impact on land resources and any potentially sensitive areas. The wind power facilities shown in Figure 3-2 are preliminary and are subject to location adjustments based on final micrositing.

The wind power facilities will be sited on agricultural land. The topography of the site, wind resource assessment, and the selected turbine technology will dictate turbine spacing. A description of turbine technology is presented in Section 4.1.

California Ridge will use equipment with a maximum rotor diameter of 100 meters (328 feet). Tower heights will be 100 meters (328 feet). Total height of the turbine will be up to 150 meters (492 feet). In compliance with the Vermilion County Ordinance, and unless an applicable waiver of setbacks is granted, the minimum turbine setbacks will be as follows:

- Primary structures ..... 1,000 feet
- Non-participating property lines ..... 1.1 times the total tower height
- Public roads (from Right of-Way) ..... 1.1 times the total tower height
- Transmission lines ..... 1.1 times the total tower height
- Communication towers ..... 1.1 times the total tower height

A map showing these wind turbine setback requirements for the Project is included as Figure 3-6 and the distance from such setback lines to the foundation at the base of each tower will conform to the applicable setback requirements.

3.5 LAND RIGHTS

3.5.1 ORDINANCE COMPLIANCE

California Ridge will site its turbines to comply with Ordinance. In Section 2, Tables 2-1 and 2-2, California Ridge has outlined the requirements of the Ordinance and the section or reference within this Application that identifies how California Ridge will comply with the particular requirements.

The Project is in harmony with the purpose and intent of the Ordinance. The Project will not be detrimental to the neighborhood or public welfare. Vermilion County anticipates that the Project area will remain agricultural and has not designated it for development.

This Application demonstrates that the Project satisfies each of the standards in the Ordinance. The California Ridge wind farm will be an important addition to Vermilion County infrastructure.

3.5.2 LANDOWNER AND DEVELOPMENT RIGHTS

California Ridge has obtained wind rights and easements for a 214.4 MW project. Land rights will encompass the proposed wind power facilities, including but not limited to wind and buffer easements, wind turbines, access, and generation lead lines located on public roads when necessary. Figure 3-6 shows the properties where California Ridge has obtained wind rights, easements and the setbacks as required by the Ordinance.

California Ridge has worked extensively with local landowners, government officials, and other affected parties in the Project siting and development process. The Project will be constructed on approximately 330 separate parcels of farmland within Pilot Township. California Ridge has entered into easement agreements with over 230 landowners for a term of up to 35 years. All of the land included in the Project is privately owned.

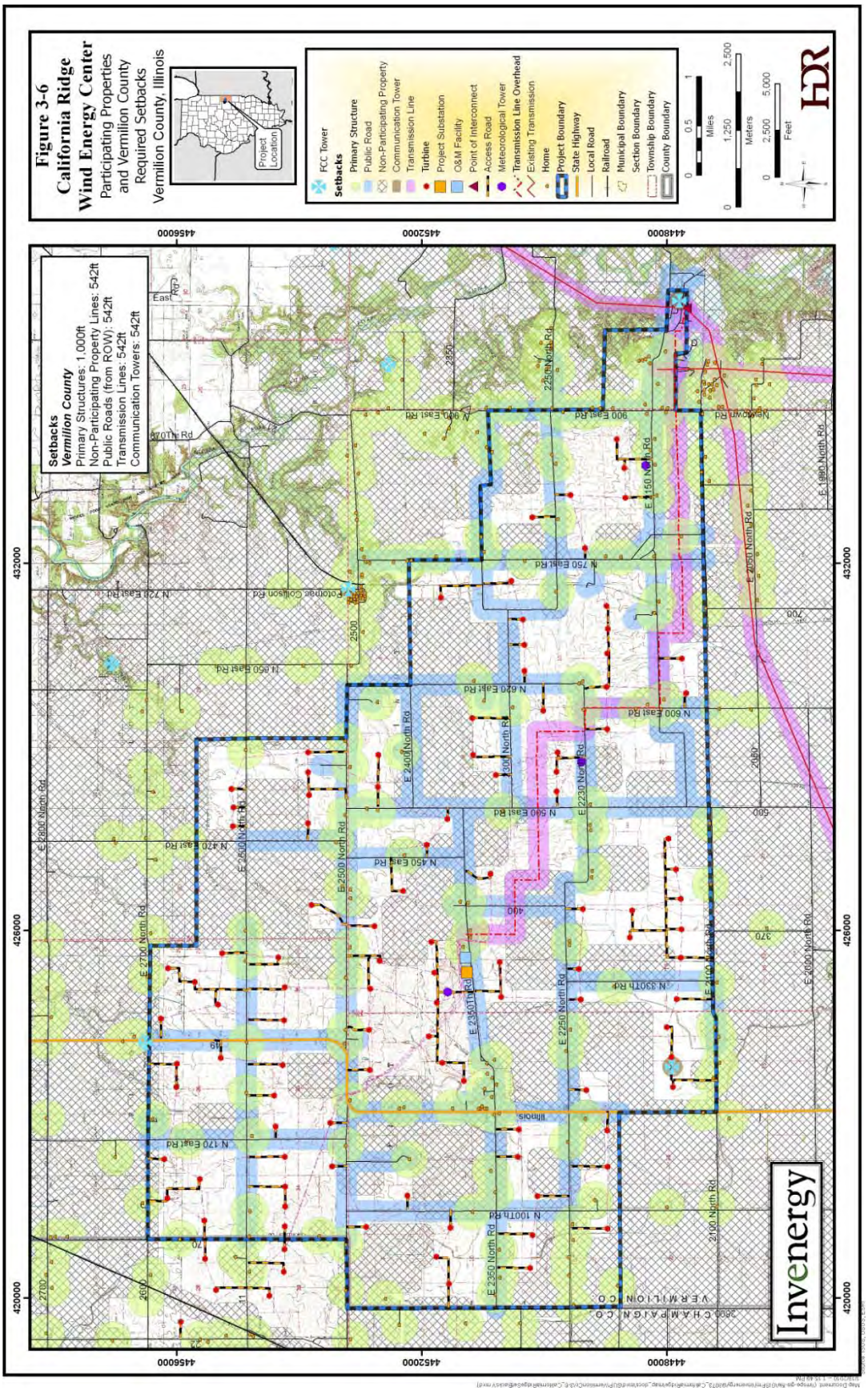


Figure 3-6
California Ridge
Wind Energy Center
Participating Properties
and Vermilion County
Required Setbacks
Vermilion County, Illinois
Project Location
FCC Tower
Setbacks
Primary Structure
Public Road
Non-Participating Property
Communication Tower
Transmission Line
Turbine
Project Substation
O&M Facility
Point of Interconnect
Access Road
Meteorological Tower
Transmission Line Overhead
Existing Transmission
Home
Project Boundary
State Highway
Local Road
Railroad
Municipal Boundary
Section Boundary
Township Boundary
County Boundary
Miles
Meters
Feet
HDR
Setbacks
Vermilion County
Primary Structures: 1,000ft
Non-Participating Property Lines: 542ft
Public Roads (from ROW): 542ft
Transmission Lines: 542ft
Communication Towers: 542ft
Invenergy

4.0 PROJECT DEVELOPMENT

4.1 WIND POWER TECHNOLOGY

The Project will use wind energy to generate electricity. As the wind passes over the blades of a wind turbine, it creates lift and causes the rotor to turn. The blades are connected by a hub and main shaft to a system of gears, which are connected to a generator housed in the nacelle. The electricity is delivered from the generator to a transformer at the base of the turbines where voltage is stepped-up for connection to the project collection system. Wind-powered electric generation is entirely dependent on the availability of wind at a specific location. The energy generated is proportional to the cube of the wind velocity. In other words, a doubling of the wind speed will result in roughly an eightfold increase in power.

4.1.1 DESCRIPTION OF WIND TURBINES

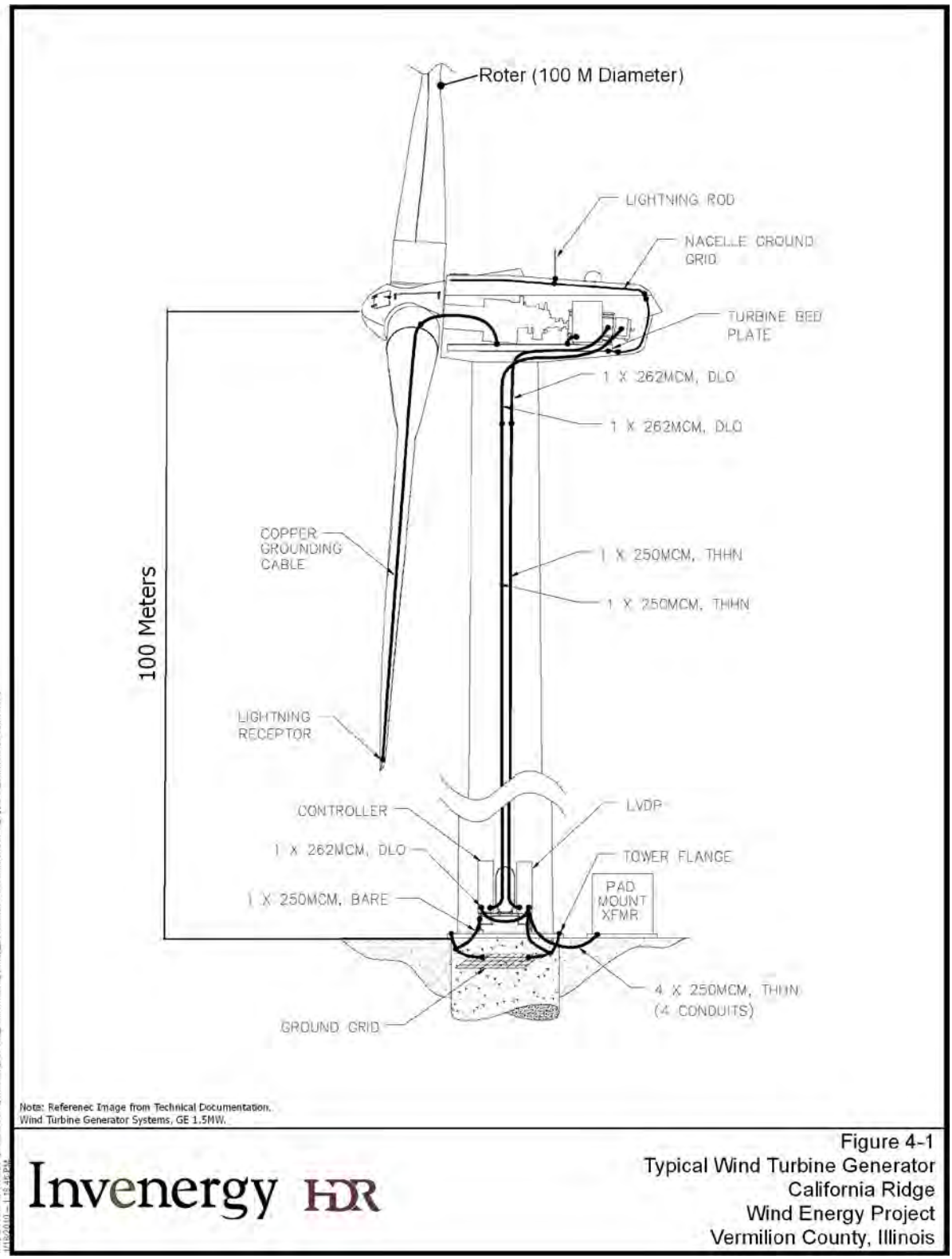
California Ridge will be using GE 1.6-100 MW turbines. Up to 134 turbines will be used in the Project area. The turbines will be new turbines and will not be experimental or prototype equipment. Approximately, 104 of those turbines are anticipated to be in Vermilion County. The remaining turbines are expected to be in Champaign County. The turbine model that will be used for the Project is a three-bladed, upwind, horizontal-axis wind turbine (Figure 4-1). The turbine rotor and nacelle are mounted on top of a tubular tower. The machine employs active yaw control (designed to steer the machine with respect to the wind direction), active blade pitch control (designed to regulate turbine rotor speed), and a generator/power electronic converter system from the speed variable drive train concept. A detailed description of turbine design is included in the brochures found in Appendix A. All electrical turbine components shall conform to applicable local, state, and national codes and relevant national and international standards (e.g. ANSI and International Electrical Commission).

Rotor

The rotor consists of three blades mounted to a rotor hub. The rotor blades are constructed of fiberglass and epoxy or polyester resin. The hub is attached to the nacelle, which houses the gearbox, generator, brake, cooling system, and other electrical and mechanical systems. The Project will have a maximum rotor diameter of 100 meter (328 feet) with a rotor swept area of 7,853 square meters (84,539 square feet). All of the turbines' rotors will rotate in the same direction.

The electrically actuated individual blade pitch systems act as the main braking system for the wind turbine. Braking under normal operating conditions is accomplished by feathering the blades out of the wind. Any single feathered rotor blade is designed to slow the rotor, and each rotor blade has its own back-up battery bank to provide power to the electric drive in the event of a grid line loss.

The turbine is also equipped with a mechanical brake located at the output shaft of the gearbox. This brake is only applied immediately on certain emergency-stops (E-stops). This brake also prevents rotation of the machinery as required by certain service activities.


Roter (100 M Diameter)
LIGHTNING ROD
NACELLE GROUND GRID
TURBINE BED PLATE
1 X 262MCM, DLO
1 X 262MCM, DLO
COPPER GROUNDING CABLE
1 X 250MCM, THHN
1 X 250MCM, THHN
100 Meters
LIGHTNING RECEPTOR
CONTROLLER
LVDP
1 X 262MCM, DLO
TOWER FLANGE
1 X 250MCM, BARE
PAD MOUNT XFMR
4 X 250MCM, THHN (4 CONDUITS)
GROUND GRID
Note: Referenec Image from Technical Documentation.
Wind Turbine Generator Systems, GE 1.5MW.
Invenergy HDR
Figure 4-1
Typical Wind Turbine Generator
California Ridge
Wind Energy Project
Vermilion County, Illinois

Tower

The tower is a self-supporting, tubular steel tower, white in color, with a hub height of 100 meters (328 feet). The nacelle is mounted on the turbine towers, which consist of three to four sections manufactured from steel plates. All welds are made in automatically controlled power welding machines and ultrasonically inspected during manufacturing per American National Standards Institute specifications. All surfaces are sandblasted and multi-layer coated for protection against corrosion. The tower has no external flanges or ladders and is designed so that it cannot be climbed from the outside. Access to the turbine is through a lockable steel door at the base of the tower. The steel door at the base of each tower will also include a high voltage warning sign and a low voltage safety light on a motion sensor for entry. No appurtenances will be connected to any tower except in accordance with the county Ordinance.

Foundation Design

The wind turbines' freestanding tubular towers will be connected by anchor bolts to an underground concrete foundation. Geotechnical surveys and turbine tower load specifications will dictate final design parameters of the foundations. The foundation design will be engineered for the turbine type, site soils, and subsurface conditions at the turbine locations. A common foundation design is a spread footing type foundation which is typically an octagonal spread footing approximately 18 to 19 meters (59 to 62 feet) in diameter with an approximate 1-meter (3- to 4-foot) pedestal, rebar, and anchor bolts. Figure 4-2 shows a typical wind turbine foundation that will be used for California Ridge depending on ground water conditions.

4.1.2 ENGINEER'S CERTIFICATE

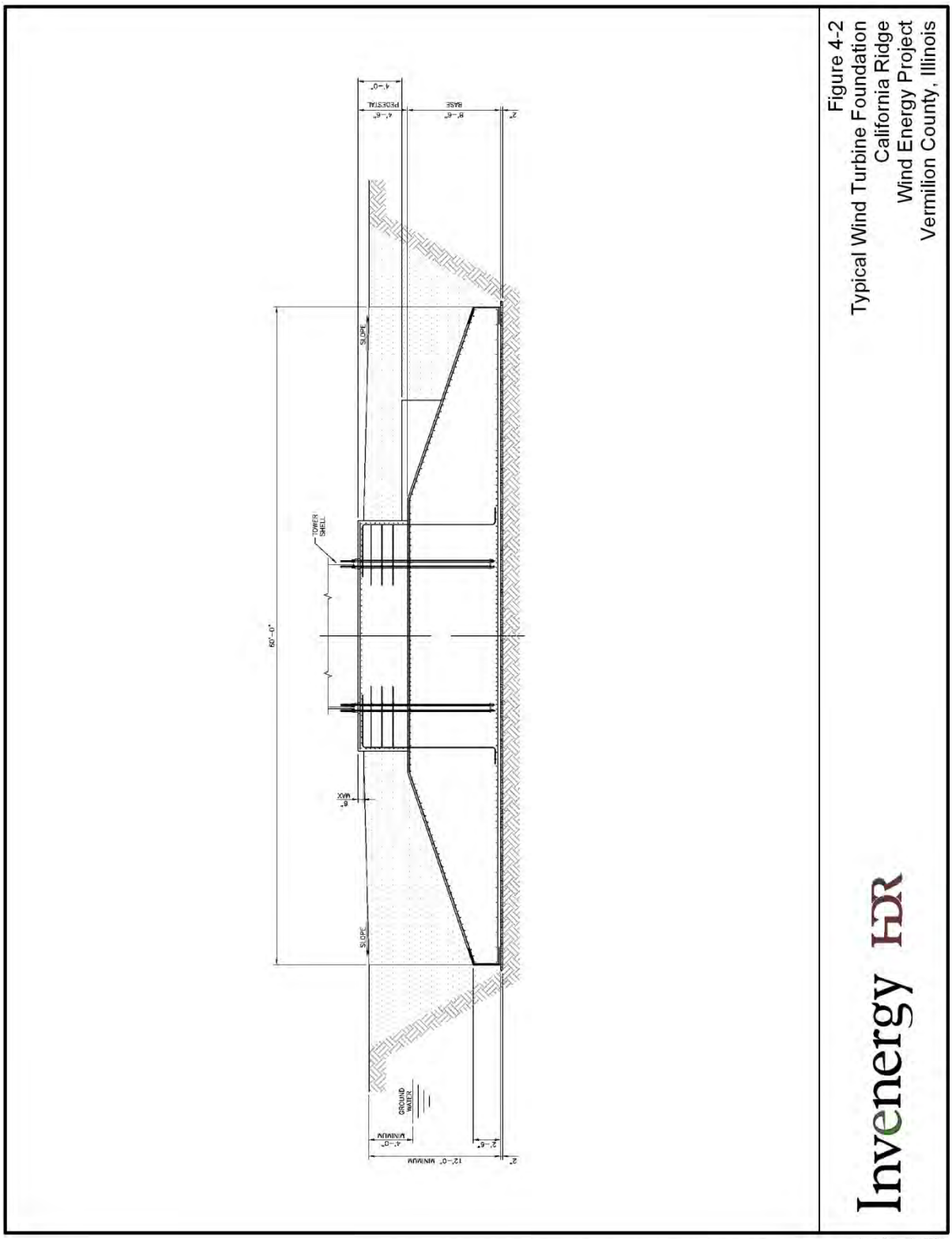
Certified wind turbine foundation design drawings and calculations stamped by a Professional Engineer will be provided to Vermilion County following the granting of permit approval. As mentioned above, this detailed design typically occurs during the project design phase, usually several months prior to the beginning of construction. This foundation design takes into account the loadings for the specific turbine being used, in conjunction with site-specific soil conditions and requirements.

4.2 WIND FARM CONSTRUCTION

4.2.1 CONSTRUCTION ACTIVITIES

Several activities must be completed prior to the proposed commercial operation date. The majority of the activities relate to equipment ordering lead-time, as well as the design and construction of the facility. A preliminary schedule of activities necessary to develop the Project is discussed below. Pre-construction, construction, and post-construction activities for the Project include:

- Ordering of all necessary components, including wind turbine generators, foundation materials, electrical cable, and transformers;
- Final turbine micrositing;
- Complete ALTA survey to establish locations of structures and roadways;
- Soil borings, testing, and analysis for proper foundation design and materials;
- Complete construction of access roads, to be used for construction and maintenance;
- Installation of tower foundations;
- Installation of underground cables;



Map Document: (\\mspe-gis-file\GISProjects\Invenergy\80073_CaliforniaRidge\mxd\SLUPVermilionCo\4-2_TypicalWindTurbineFoundation.mxd)
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- Design and construction of Project substation;
- Tower placement and wind turbine setting;
- Commissioning of wind turbines; and
- Commencement of commercial operation.

Access roads will be built adjacent to the towers, allowing access both during and after construction. The roads will be approximately 4.9 meters (16 feet) wide with gravel as cover to adequately support the size and weight of maintenance vehicles. The specific turbine placement will determine the amount of roadway that will be constructed for this Project.

During the construction phase, several types of light, medium, and heavy-duty construction vehicles will travel to and from the site. Private vehicles will also be used by the construction personnel. At this time, California Ridge estimates that there will be 75 large truck trips per day and up to 200 small-vehicle (pickups and automobiles) trips per day in the area during peak construction periods. Of the 75 large truck trips, approximately 20 are expected to be wind turbine component deliveries. The balance is comprised of concrete, aggregate, and miscellaneous delivery trucks. Construction is expected to take between 9 and 12 months with the peak construction period lasting 4 to 6 months. These numbers are currently being refined as part of a Traffic Impact Analysis that California Ridge is preparing as part of the proposed Roadway Use and Repair Agreement between California Ridge, the County Engineer, and Township Road Commissioner. The peak volume will occur when the majority of the foundation and tower assembly is taking place. At the completion of each construction phase, the equipment for that phase will be removed from the site or reduced in number.

The Road Use Plan (Figure 4-3) is a map showing the planned township and county roads expected to be used during Project construction.

4.2.2 CIVIL WORKS

Completion of the Project will require various types of civil works and physical improvements to the land. These civil works include:

- Ensuring that any damage to existing county and township roads that will be used to deliver materials and components to the Project area will be repaired at no cost to Vermilion County or Pilot township;
- Construction of access roads adjacent to the wind turbine strings to allow construction and continued servicing of the wind turbines;
- Clearing and grading for wind turbine foundation installations; and
- Trenching for underground cabling to connect the individual wind turbines.

Access road routing has been designed in consultation with each landowner and will be completed in accordance with local building requirements. The roads will also be located to facilitate both construction (cranes) and continued operation and maintenance of the Project. Siting roads in areas with unstable soil or wetland areas will be avoided wherever possible. All roads will include appropriate drainage and culverts while still allowing for the crossing of farm equipment.

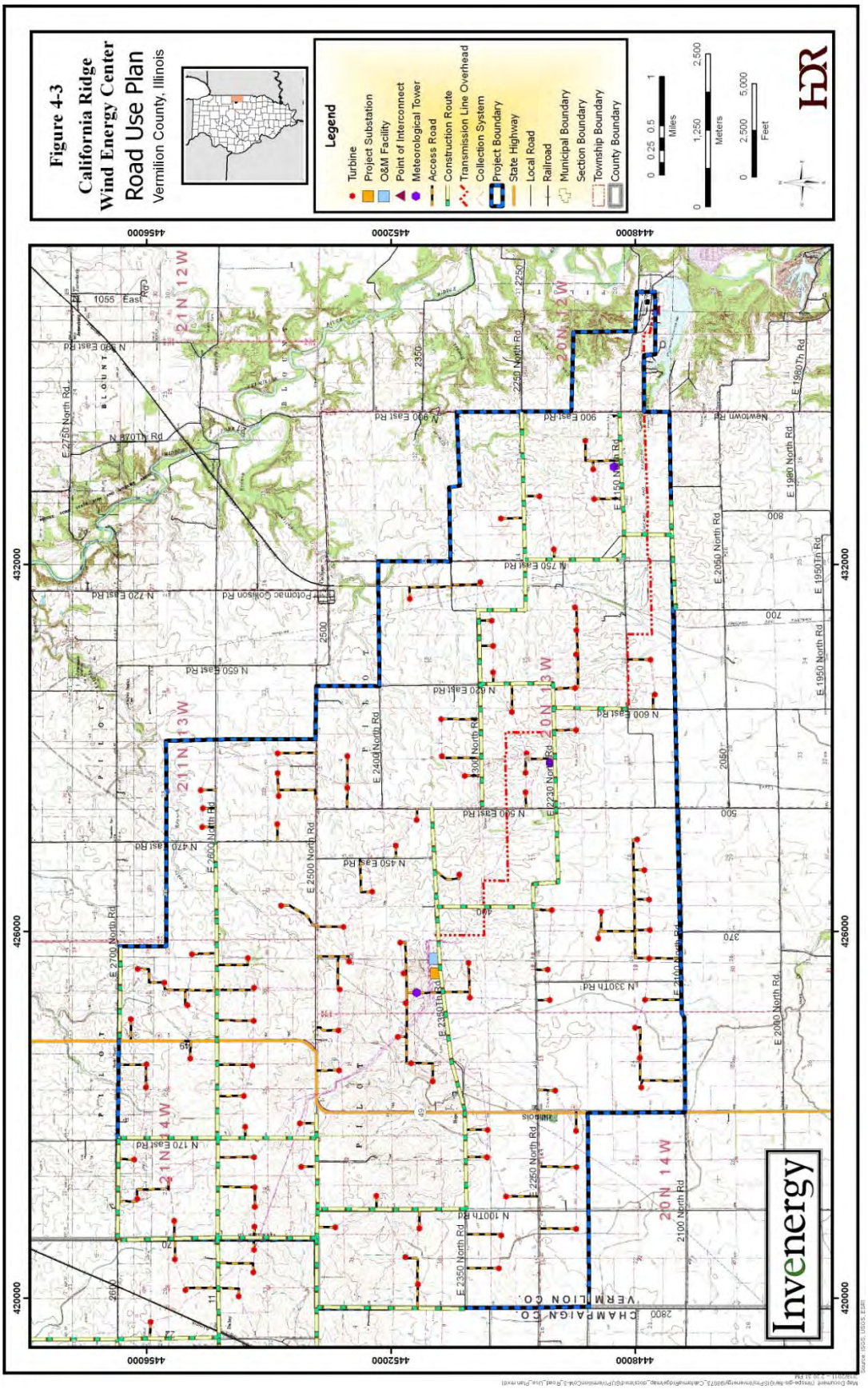


Figure 4-3
California Ridge
Wind Energy Center
Road Use Plan
Vermilion County, Illinois
Legend
Turbine
Project Substation
O&M Facility
Point of Interconnect
Meteorological Tower
Access Road
Construction Route
Transmission Line Overhead
Collection System
Project Boundary
State Highway
Local Road
Railroad
Municipal Boundary
Section Boundary
Township Boundary
County Boundary
Miles
Meters
Feet
HDR
Invenergy
21N 12W
20N 12W
21N 13W
20N 13W
21N 14W
20N 14W
VERMILION CO.
CHAMPAIGN CO.
444000
445200
446400
420000
426000
432000

Temporary disturbances during construction of the Project include: crane pads at each turbine site, travel roads for the cranes, turning radii at certain county and township road intersections, laydown areas around each turbine, trenching in the underground electrical collection system, and storage/stockpile areas. Construction of the GE turbine will include additional temporary impacts of approximately 12 feet of gravel roadway on either side of the permanent roadway (40-foot total width), a 40-foot by 120-foot gravel crane pad extending from the roadway to the turbine foundation (graded to a minimum of 1 percent), and a 150-foot diameter rotor laydown area centered around the turbine foundation which will be graded to a minimum of 5 percent.

4.2.3 COMMISSIONING

The Project will be commissioned after completion of the construction phase. The Project will undergo detailed inspection and commissioning procedures. Inspection and commissioning occurs for each component of the wind turbines, as well as the communication system, meteorological system, high voltage collection and feeder system, and the SCADA system.

4.3 PROJECT SCHEDULE

4.3.1 LAND ACQUISITION

California Ridge will be responsible for all land acquisition, and will obtain the necessary easements from landowners. All required land easements for the Project, including all necessary access easements and utility easements, will be obtained prior to construction on the property. Property information for Project participants is attached in Appendix B.

4.3.2 PERMITS

California Ridge will be responsible for undertaking all required reviews, and will obtain all permits and licenses that are required following issuance of the Ordinance Building Permit. California Ridge proposes that the Ordinance Building Permit be valid for five years from time of County Board approval; provided, however, that such five year period shall be extended by any time periods necessary to resolve (i) any third party appeals of such County Board approval and/or (ii) any litigation that enjoins or otherwise effectively prevents California Ridge from completing construction under the Ordinance Building Permit. Copies of permits and licenses for the Project from federal, state, county, and municipal agencies will be supplied to Vermilion County.

4.3.3 CONSTRUCTION ACTIVITIES

The California Ridge construction contractors will be responsible for completing all Project construction, including roads, wind turbine assembly and erection, electrical, and communications work. The construction will take approximately 9 to 12 months to complete, and will commence as early as fall of 2011. California Ridge shall maintain a current general liability policy covering bodily injury and property damage with limits of at least $5 million per occurrence and $5 million in the aggregate. The same shall apply to all contractors and subcontractors during the construction process. Proof of such insurance shall be kept current and on file at the County Board Office.

4.3.4 EXPECTED COMMERCIAL OPERATION DATE

California Ridge anticipates that the Project could begin commercial operation as early as December 2012 pending completion of permitting, power off-take agreements, agency approvals, and other development activities.

4.3.5 OPERATION AND MAINTENANCE

California Ridge will be responsible for the operation and maintenance of the wind farm. Invenergy Services will perform the O&M services at the time of operation. An O&M facility will be built as a part of the Project within the Project boundary to accommodate all phases of the Project. California Ridge will submit a summary of the operation and maintenance reports to the County annually.

California Ridge will control, monitor, operate, and maintain the Project by means of the SCADA system. In addition to regularly scheduled on-site visits, the wind farm may be monitored via computer. Any physical modification to the wind turbine that alters the mechanical load, mechanical load path, or major electrical components shall be recertified in accordance with the Ordinance. Authorization for modification will be granted by the Structural Safety Committee and a relevant third party certifying entity in accordance with Ordinance Section VIII.A.2.

4.3.6 DECOMMISSIONING AND RESTORATION

California Ridge has a contractual obligation to the landowners to remove the wind turbines and foundations per the decommissioning plan when the wind easements expire. At the end of the Project's useful life, California Ridge expects to explore alternatives to decommissioning the Project. One such option may be to retrofit the turbines and power system with upgrades based on new technology

In accordance with the Ordinance, California Ridge has prepared a decommissioning plan to be used in the event it removes the wind facilities (Appendix C), which provides for decommissioning within 6 months of the end of the Project's life or abandonment. The decommissioning plan describes how the facility will be decommissioned, provides the structural engineer's estimate of the cost of decommissioning, and describes confirms the availability the financial resources to pay for decommissioning.

In summary, the decommissioning plan provides that California Ridge will be responsible for all costs to decommission the Project. Based on estimated costs of decommissioning and the salvage value of decommissioned equipment—which is the estimate used by a structural engineer—the salvage value of the wind farm will be less than the cost of decommissioning. Per industry standards, decommissioning costs are estimated to be approximately $98,000 per turbine in current dollars. The current scrap steel price is approximately $380 per ton, based on the June 2011 *steelonthenet.com* report. Given that market values fluctuate and the price of steel historically has shifted from $106 to $455 per ton, turbine salvage values can range between $40,688 and $174,652. However, internal turbine components and generators can also be salvaged for resale and reuse. Therefore, the salvage or resale value of each turbine is estimated to be $180,785. This offsets the anticipated decommissioning costs. The scrap steel value of the turbines does not necessarily ensure that sufficient funds will be available to cover decommissioning and restoration costs. California Ridge will recalculate the salvage value of the

wind farm periodically to make certain that sufficient resources are available to cover the decommissioning costs.

California Ridge's easement agreements with each landowner provide that the foundations (down to three feet) and wind turbines be removed at the end of their useful life. The easement agreements include a provision that if the Project is unable to meet its obligations to decommission the wind turbines and foundations, a decommissioning fund will be established during the 15th year of the Project, and will be held in escrow for the benefit of landowners. Any decommissioning security requirement by the County that exceed these terms will be implemented and will supersede these terms.

Site decommissioning and restoration will involve removal of towers, turbine generators, transformers, foundations, buildings, and ancillary equipment up to a depth of 3 feet below grade. All access roads will be removed unless the affected landowner provides written notice that the road or portions of the road shall be retained. Additionally, any disturbed surface shall be graded, reseeded, and restored as nearly as possible to its preconstruction condition.

5.0 ANALYSIS

5.1 NOISE

Section IX of the Ordinance requires that noise levels from each WECS or WECS Project be in compliance with applicable Illinois Pollution Control Board (IPCB) regulations. IPCB regulations (Illinois Rules Title 35: Environmental Protection, Subtitle H: Noise, Chapter I: Pollution Control Board, Part 901 – Sound Emissions Standards and Limitations for Property Line Noise Sources) limit maximum allowable noise emissions. Table 5-1 presents the maximum allowable noise emissions of a Class C (commercial and industrial) land use to a Class A (residential) land use.

Table 5-1
Allowable Octave Band Sound Pressure Levels (dB) of Sound Emitted to any Receiving Class A Land from Class C Land

Time of Day	Octave Band (dB)								
	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Daytime	75	74	69	64	58	52	47	43	40
Nighttime	69	67	62	54	47	41	36	32	32

The most stringent IPCB limitations apply to noise emitted to receiving residential uses. The analysis results described below demonstrate that noise from a GE 1.6-100 wind turbine does not exceed the noise limits in Title 35 of the IPCB Regulations. California Ridge hereby certifies that it will comply with the IPCB noise Regulations.

5.1.1 DESCRIPTION OF RESOURCES

In May 2009, HDR measured existing ambient sound levels at six locations in the Project area, four of the six locations are located within Vermilion County. Existing ambient sound levels were measured for 24 hour periods. HDR selected monitoring locations by reviewing digital aerial photographs of the Project area and identifying areas whose ambient acoustical environment appeared to be representative of the Project area.

The noise monitoring data represent the ambient acoustic environment of rural, agricultural areas in the Project area that were generally expected to have quiet ambient daytime and nighttime noise levels. However, existing noise levels at all monitoring sites exceed nighttime maximum allowable noise limits in a total of four octave bands (1 kHz, 2 kHz, 4 kHz, and 8 kHz). Existing ambient sound levels (L_{eq}) ranged from 34 to 59 dBA. Daytime ambient sound levels were dominated by vehicular traffic and natural sources. Nighttime ambient sound levels were generally dominated by natural sources. Details of the noise monitoring are included in Appendix D.

5.1.2 INVENERGY CALIFORNIA RIDGE NOISE ANALYSIS

Project-related noise was evaluated using the Cadna-A model. Modeling results were combined with monitoring data, and compared with maximum allowable noise levels under Illinois Rules. The monitoring, modeling, and compliance determinations were applied on a spectral basis, i.e.

to each of the nine frequency octave bands that comprise the applicable Illinois regulation (Illinois Rules Title 35: Environmental Protection, Subtitle H: Noise, Chapter I: Pollution Control Board, Part 901 – Sound Emissions Standards and Limitations for Property Line Noise Sources). The conclusions of this analysis are summarized below (see Appendix D, Invenergy California Ridge Noise Analysis, for full report).

5.1.3 IMPACTS

Operation Noise

When in motion, wind turbines emit a sound. Sound is generated from the wind turbine at points near the hub or nacelle (100 meters [328 feet] above the ground), and at the blade tip during blade rotation. Wind turbine generated noise varies with the speed of the turbine, environmental conditions, and the distance of the listener from the turbine. The analysis accounted for all noise generating elements associated with wind turbines.

GE published sound power emission levels for their GE 1.6-100 turbine, as shown in Table 5-2. This data is representative of the sound power levels from the GE 1.6-100 turbines expected to be used for this Project. Noise emissions for maximum operating conditions were evaluated based on spectral noise emissions at 14 m/s.

Table 5-2
Sound Power Emissions from GE 1.6-100 Turbine

Model number	Octave Band Sound Power (dB)								
	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
GE 1.6-100 Turbine	82.5	92.2	95.9	95.2	95.5	99.9	99.3	90.5	71.6

General Electric's sound power levels were based on the results in which a GE 1.6-100 turbine was tested at a 14 m/s (31 mile/hour) wind speed, the wind speed that produces the loudest manufacturer stated noise level. Therefore turbine noise emission levels produce a conservative analysis and overestimate turbine noise levels during lower wind conditions. Newer generation turbines, such as the GE 1.6-100, use variable speed rotors that produce lower levels of aerodynamic noise at low wind speeds, as opposed to previous generations' constant-speed designs, which generate the same amount of noise regardless of wind speed. Given this, older designs tend to be more audible during low wind conditions. This conservative modeling ensures that turbine noise levels are not under-predicted.

Cadna-A, an acoustical analysis software package designed for evaluating environmental noise from stationary and mobile sources, was used to evaluate Project-related noise. Cadna-A is a three-dimensional noise model based on ISO 9613, "Attenuation of Sound during Propagation Outdoors," adopted by the International Standards Organization (ISO) in 1996. This standard provides a widely accepted engineering method for the calculation of outdoor environmental noise levels from sources of known sound emission.

California Ridge has modeled the noise levels from the GE 1.6-100 turbines. Wind turbine noise emissions data were provided by GE, the turbine manufacturer. The modeled noise levels are representative of the noise levels from the GE 1.6-100 turbines expected to be used for the Project and at residences (receptors). A total of 293 receptors identified within Vermillion County were modeled for the project. Of these receptors, none were shown to be above noise levels specified by IPCB regulations.

A total of 134 wind turbine generators (the noise sources), each having a hub height of 100 meters were evaluated using Cadna-A. Project-related noise levels were calculated at 293 residences (the noise receivers) within one mile of the Project area. The digital terrain model reproduced the physical terrain of the Project area, encompassing approximately 23,327 acres. Coordinates for the turbine and residence locations, as well as the terrain contours, were obtained from the geographic information system (GIS) database created for this Project. Project-related noise was evaluated using the Cadna-A model. Modeling results were compared with maximum allowable noise levels under IPCB Regulations. The monitoring, modeling, and compliance determinations were applied on a spectral basis, i.e. to each of the nine frequency octave bands that comprise the applicable IPCB regulations. A summary of the results of this analysis are below and the report is attached as Appendix D. In summary:

- Existing ambient noise levels were measured within the Project area and ranged from 34 to 59 dBA on an L_{eq} basis.
- Existing noise levels exceed daytime maximum allowable noise limits in a total of 3 octave bands (1 kHz, 2 kHz, and 4 kHz).
- Existing noise levels exceed nighttime maximum allowable noise limits in a total of four octave bands (1 kHz, 2 kHz, 4 kHz, and 8 kHz).
- Daytime analysis results indicate that noise from 134 wind turbines as currently sited are at least 7 dB below the maximum allowable noise limit in all octave bands at all noise-sensitive receivers within 1 mile of the Project area.
- Nighttime analysis results indicate that noise from 134 wind turbines as currently sited meet the maximum allowable noise limit in all octave bands at all noise-sensitive receivers within 1 mile of the Project area.

5.1.4 MITIGATION MEASURES

Due to technological advancements in design, noise levels for today's generation of wind turbines are lower than that of their predecessors, especially at high wind speeds. Furthermore, the character of noise produced is more broadband in nature and largely without tones or impulsive qualities. In any event, any noise generated during Project operation will be in compliance with IPCB regulations.

5.2 PUBLIC SERVICES AND INFRASTRUCTURE

Electrical Service

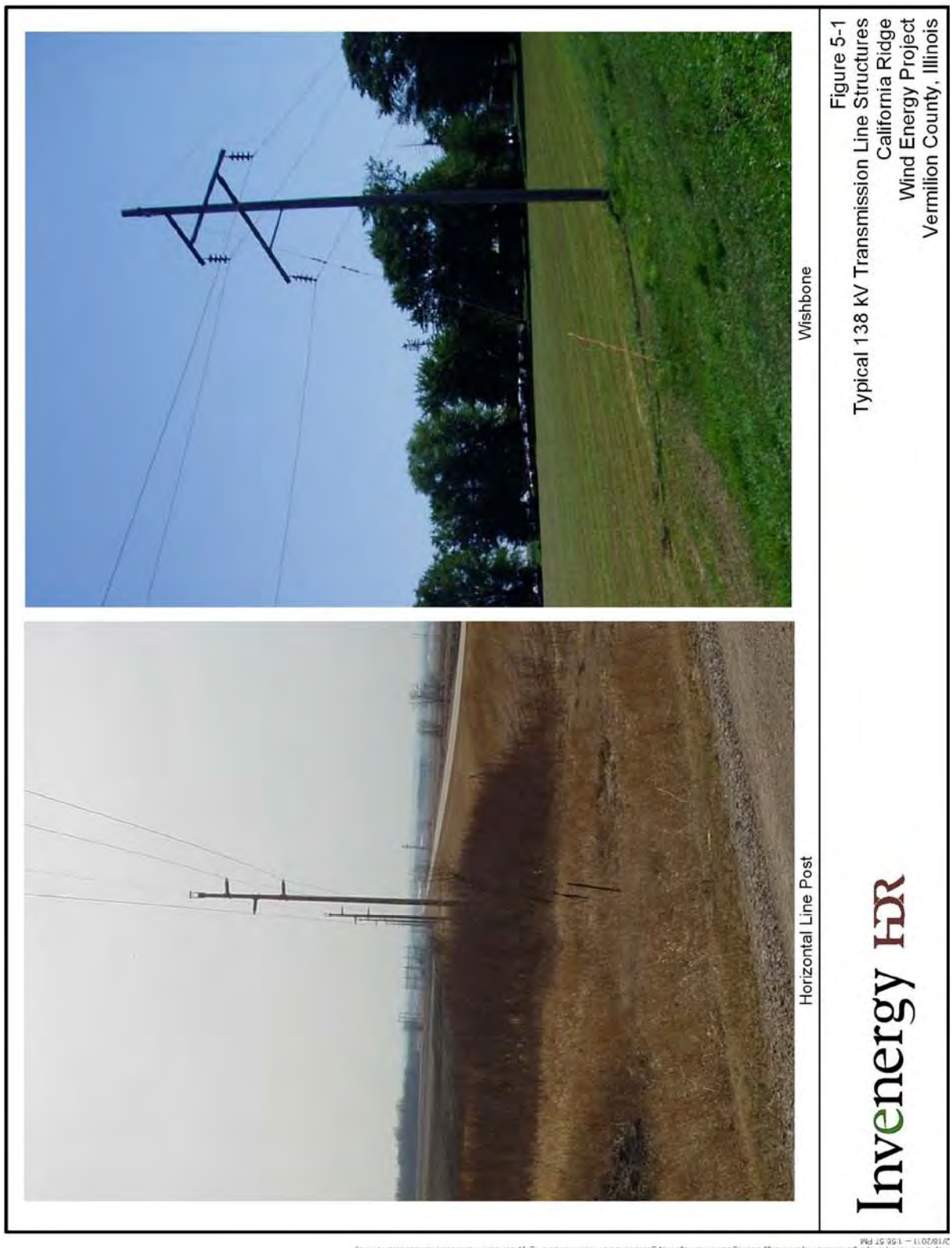
The primary utility corridors running through the Project area are local distribution lines. Several high voltage transmission lines run generally north/south and west from the Dynegy Power Station in the southeast corner of the Project area.

New 34.5 kV underground collection cable will feed power from the Project electrical collection system to the Project 34.5/138 kV substation, where the power will be stepped up to 138 kV. Power from the Project 34.5/138 kV substation will connect to the grid via an overhead 138 kV generation lead line approximately 9 miles long that will connect to the Ameren-owned POI at the existing substation by the Dynegy, Vermilion Power Plant. The Ameren Interconnection queue number for the Project is H100. The generation lead line will likely be a single pole structure (See Figure 5-1). All electrical components shall conform to applicable local, state, and national codes.

Materials Handling, Storage, and Disposal

Solid waste generated on site related to the construction, operation and maintenance of the facility will be removed from the site promptly and disposed of in accordance with all federal, state, and local requirements. Additionally, any hazardous materials related to the construction, operation, and maintenance of the facility will be handled, stored, transported, and disposed of in accordance with all applicable local, state, and federal requirements.

Refer to Section 5.5 for information regarding hazardous materials.


Wishbone
Horizontal Line Post
Figure 5-1
Typical 138 kV Transmission Line Structures
California Ridge
Wind Energy Project
Vermilion County, Illinois
Invenergy
HDR

Roads

County and township roads that run coincident with section lines characterize the majority of the existing roadway infrastructure in and around the Project area. State Highway 49 runs north/south through the middle of the Project area. The existing traffic volumes on the area's roadways are documented in Table 5-3. For purposes of comparison, the functional capacity of a two-lane paved rural highway is in excess of 5,000 vehicles per day, or average daily traffic (ADT). The highest existing ADT in or near the Project area is along State Route 49. California Ridge is currently in negotiations to finalize a comprehensive Roadway Use and Repair Agreement with the County Engineers and Township Road Commissioners in the Project area. The Roadway Use and Repair Agreement will ensure that California Ridge repairs any damage to County and Township roads as a result of constructing the Project.

Table 5-3
Existing Daily Traffic Levels

Roadway Intersection Description Vermilion County, Illinois	Existing Average Annual Daily Traffic
Along State Route 49	
Between Interstate 74 and US Route 136	1,650
Along County Road 21 (2500 North Rd)	
Between State Route 49 and East 720 East Road	900
Along County Road 500e (500 East Road)	
Between County Road 21 and Interstate 74	450
Along County Road 10	
Between Collison Road and East 2330 Road	650

Source: Illinois Department of Transportation, NAVTEQ 2009

Sewer and Water

The Project will comply with all septic and well regulations required by the County Health Department and the Illinois Department of Public Health. The Project will not include the installation of a septic system, except at the O&M facility. During construction, the construction contractor will supply portable sanitary facilities for site personnel. After commercial operation, there is no need for permanent sanitary facilities, except at the O&M facility. In addition, the Project does not include the installation of any wells, except at the O&M facility. As noted below, if it is necessary to abandon any existing wells, they will be capped as required by applicable regulations.

5.2.1 IMPACTS

The Project is expected to have a minimal effect on the existing infrastructure. The following is a brief description of the impacts that may occur during the construction and operation of the Project.

- **Pipeline.** Construction of the Project is not anticipated to affect the use of the gas pipeline in the area. California Ridge will coordinate with the pipeline owner/operator to obtain any easements required to cross the pipeline easement, and to ensure that the collection system and access roads do not interfere with the pipeline.

- **Electrical Service.** Construction of the Project will add up to 134 wind turbine generators, a pad-mounted transformer at the base of each turbine, an underground electrical collection system (34.5 kV), and a Project substation (138 kV/34.5 kV). At the Project substation, the electric voltage will be stepped up to a voltage of 138 kV, and travel to the POI where it will enter the high voltage grid. Additionally, as the System Impact Study notes, a 138 kV breaker and other ring bus modifications will need to be made to the existing substation at the Dynegy Plant.

- **Roads.** Constructing the Project will require the addition of gravel access roads connecting each turbine to local roads. In addition, during operation of the Project, the access roads will be used by O&M crews while inspecting and servicing the wind turbines. The access roads may be between towers, offset as necessary to allow for adequate crane access. The roads will be approximately 4.9 meters (16 feet) wide and low profile to allow cross-travel by farm equipment. California Ridge will work closely with the landowners to locate these access roads to minimize land-use disruptions to the extent possible. Additionally, California Ridge is working on agreements with the Township Road Commissioners and County Engineer to ensure roads are repaired if they are damaged (i.e., a Roadway Use and Repair Agreement).

  California Ridge estimates that there will be 75 large truck trips per day and up to 200 small-vehicle (pickups and automobiles) trips per day in the area during peak construction periods. The maximum construction workforce is expected to generate approximately 275 additional vehicle trips per day. Using any combination of county highways and roads throughout the Project area, the traffic impacts are considered negligible.

  Truck access to the Project area is generally served by State Highway 49 and other various state and county routes. Specific additional truck routes will be dictated by the location required for delivery. Additional operating permits will be obtained from the county for over-sized truck movements.

  The traffic projections for construction will not significantly impact public health and safety because the local roads are designed to carry more than 275 additional trips per day.

- **Water Supply.** Construction and operation of the Project will not significantly affect the water supply. The installation or abandonment of any wells is not required for the Project, with the exception of one well that will likely be installed at the O&M facility. However, in the event wells are abandoned, they will be capped as required by applicable regulations. In the event a temporary concrete batch plant is located within the Project area, a separate permit will be obtained if required by the County. At this time, California Ridge is not requesting a permit for a well to serve a concrete batch plant. The Project will not require appropriation of surface water or dewatering. It is likely that the Project will require a single domestic-sized well for the O&M facility.

- **Telephone and Fiber Optic.** Construction and operation of the Project will not negatively affect the telephone and/or fiber optic service to the Project area. The Illinois Joint Utility Locating Information for Excavators system, known as J.U.L.I.E., will be

contacted prior to construction to locate and avoid underground facilities. To the extent Project facilities cross or otherwise affect existing telephone or fiber optic lines or equipment, California Ridge will enter into agreements with service providers to avoid interference with their facilities.

5.2.2 MITIGATION MEASURES

Construction and operation of the Project will be in accordance with all applicable federal and state permits and laws, as well as industry construction and operation standards. California Ridge will enter into a comprehensive Roadway Use and Repair Agreement with Vermilion County and townships for construction of the Project. The Roadway Use and Repair Agreement will ensure that California Ridge repairs any damage to those roads resulting from Project construction activities. Due to the minor impacts expected to the existing infrastructure during Project construction and operation, extensive mitigation measures are not anticipated.

California Ridge will develop a project-specific Environmental, Health, and Safety Manual (EHS Manual) that conforms to federal Occupational Safety and Health Administration (OSHA) regulations.

In addition to the EHS Manual, California Ridge will develop a separate Emergency Response Plan for the Project. This plan will specify how to respond to a host of potential emergency situations. Employees will be trained to respond to emergency situations and this training will be offered to the local fire districts. California Ridge is also working directly with each of the four volunteer Fire Protection Districts to determine if additional training, equipment, and funding is needed to respond to potential emergency situations at the wind farm. During construction of the Project, contractors are required to develop their own Emergency Response Plans and training programs for their employees.

5.3 TELEVISION, RADIO, AND TELECOMMUNICATIONS INTERFERENCE

This section assesses the potential for interference with various types of communication, including telecommunications and broadcast communication. California Ridge contracted with Comsearch, a communications consultant, to evaluate the potential effect of the Project on existing non-federal government microwave telecom systems.

5.3.1 DESCRIPTION OF RESOURCES

Microwave Paths

California Ridge hired Comsearch to identify microwave telecommunications systems that traverse the Project area. Using Wind Power GeoPlanner software, the firm made a geographical representation of registered fixed microwave paths in the 900 megahertz (MHz) to 23 gigahertz (GHz) frequency band range.

Because microwave communication is a line-of-sight technology, any interference with microwave telecom signals can be avoided by locating the wind turbines outside of the microwave communications profile. Comsearch calculated a Worst Case Fresnel Zone (WCFZ) , the path for which radiation waves travel, for each of the microwave paths in the area. The middle of the path is where the widest (the worst case) Fresnel Zone appears. The affected paths were then overlaid on topographic base maps for the Project area.

The report shows that there is one microwave path that intersects the Project boundary in Vermilion County. There are eight total microwave paths within approximately five miles of the entire Project area. These are shown on Figure 5-2. Because federal law does not permit interference with registered or licensed microwave pathways, California Ridge plans to position the turbines outside the WCFZ to avoid any interference. Some typical size relationships are provided below:

- Microwave antenna height is 25 meters-plus (82 feet) and antennas are typically located on water towers, television towers, building roofs, and shared commercial towers.
- The width of the WCFZ for 2.1 GHz is approximately 37 meters (121 feet).
- The width of the WCFZ for 6.7 GHz is approximately 16 meters (52 feet).
- The width of the Project area is approximately 23,400 meters (14 miles).

Television

California Ridge has committed to resolve any television interference problems by improving the affected antenna, changing the antenna location, installing relays to re-transmit and boost the affected signal or installing satellite television receiver. Any television reception issues will be dealt with on a case-by-case basis by working with any affected residents to identify the best solution.

California Ridge will work with local broadcasters to address any complaint that occurs after construction of the Project. As stated previously, California Ridge will resolve any issues with television reception on a case-by-case basis.

Cellular and Two-way Radio

There is no evidence that wind turbines interfere with individual cell phones or two-way radio communication. In fact, turbine maintenance personnel often use cell and radio equipment in the performance of their work. The turbines are not likely to introduce problems with two-way radio if the towers are not adjacent to the microwave transmitting and/or receiving antennas. In some areas, cell phone antennas are installed on turbine towers.

Wireless Internet

Wireless communication has become an indispensable tool for providing data communications in a variety of industries. Point-to-multipoint links are frequently used to connect a central tower or "master" site to a group of subscriber devices. A common application of this arrangement is broadband internet service. Point-to-Point (PTP) wireless links typically connect one or more towers together or connect a tower to a network operation center, which provides access to fiber-optic or other communications media. PTP links are found in a wide range of sectors, from public safety to telecommunications to utilities. Wireless system reliability and performance is strongly affected by the strength of an incoming signal. To maximize signal strength, links are usually designed with a clear line-of-sight between antennae.

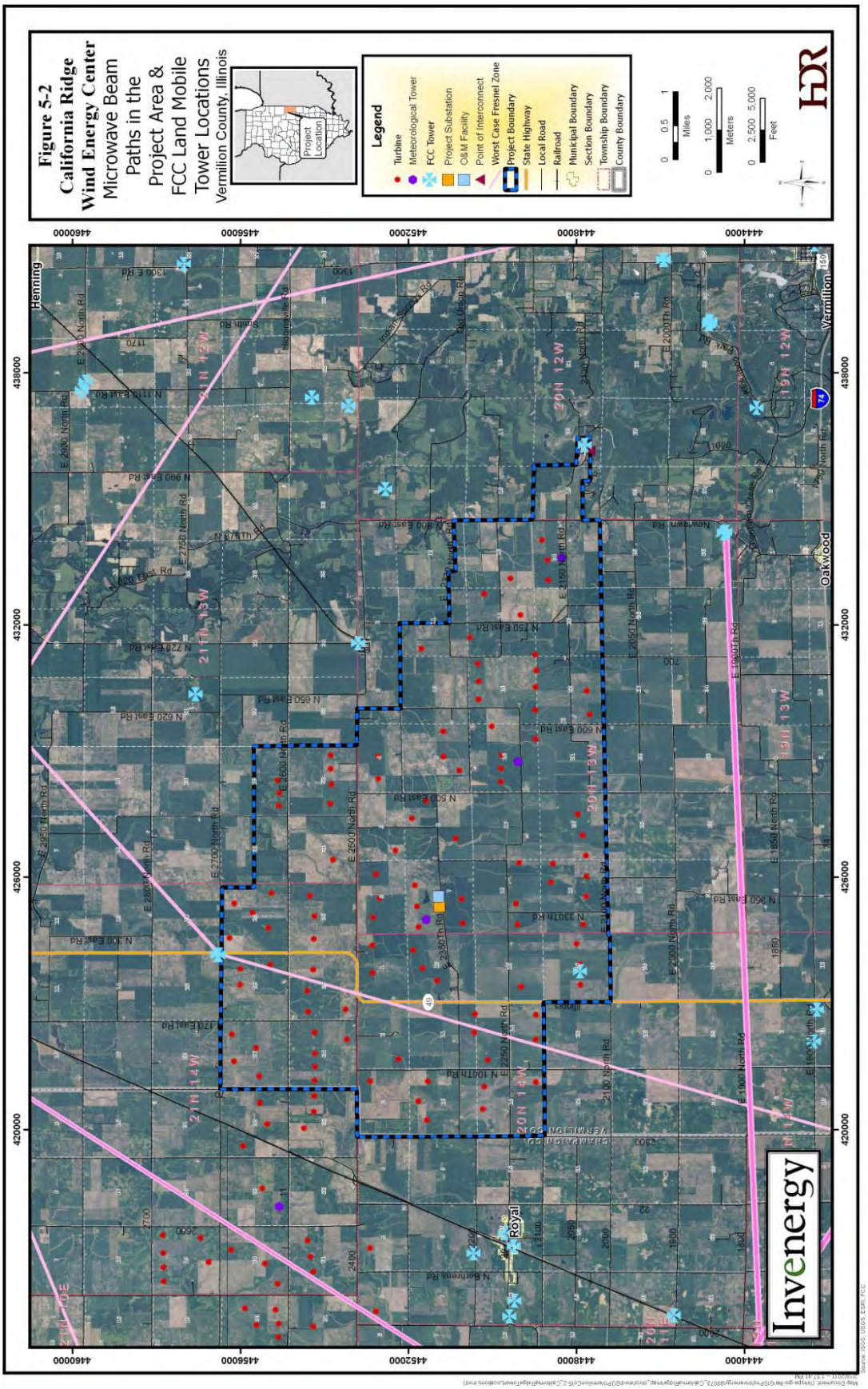


Figure 5-2
California Ridge
Wind Energy Center
Microwave Beam
Paths in the
Project Area &
FCC Land Mobile
Tower Locations
Vermilion County, Illinois
Project Location
Legend
Turbine
Meteorological Tower
FCC Tower
Project Substation
O&M Facility
Point of Interconnect
Worst Case Fresnel Zone
Project Boundary
State Highway
Local Road
Railroad
Municipal Boundary
Section Boundary
Township Boundary
County Boundary
Miles
Meters
Feet
HDR
Invenergy
Henning
Vermilion
Oakwood
Royal

Some of the new wireless Internet providers choose not to register with the Federal Communications Commission (FCC) and they may be at risk. Non-FCC registered service providers may need to provide some additional information about their microwave network to the Project staff to minimize potential interference with their signal paths.

There are two registered FCC land mobile towers located within the Vermilion County portion Project area. One is in the southeast corner (S20, T20N, R12W), another is located south central (S24, T20N, R14W). Five additional FCC land mobile towers are located outside the Project area near Royal, and a telecommunication/microwave tower is located just north of the Project boundary along Highway 49 (Figure 5-2).

5.3.2 MITIGATION MEASURES

California Ridge does not anticipate that the Project will have any negative impact on television, radio or broadband wireless internet service. Nevertheless, California Ridge will work with any affected landowners within the Project area to remedy degradation, if any, in their television, radio, or broadband wireless internet service that may result from the Project.

California Ridge has submitted the Project location to the National Telecommunications and Information Administration (NTIA) and they have confirmed that no federal agencies identified any concerns regarding blockage of their radio frequency transmissions. Preliminary turbine locations were submitted to the FAA and aided in siting final turbine layout locations. The final layout will be submitted to the FAA for final approval.

5.4 PUBLIC HEALTH AND SAFETY

5.4.1 AIR TRAFFIC

Several single-runway turf airstrips are located near the Project area, including the Flessner Landing Field, approximately four miles west of the Project. The closest public airport is the Rantoul National Aviation Airport (Frank Elliott Field), approximately 6.5 miles northwest of the Project area, by the village of Rantoul in Champaign County. This airport has two asphalt runways: a 5,000-foot east-west runway and a 4,900-foot north-south runway (Rantoul National Aviation Center, 2009). Additionally, the University of Illinois-Willard Airport, which is south of Champaign-Urbana, is over 15 miles southwest of the Project boundary.

Mitigation Measures

California Ridge will light the turbines and meteorological towers to comply with the newest FAA advisory circular (AC70/7460-1K) recommendations for wind turbines approved February 1, 2007. This requires that simultaneously flashing red or white lights be used on turbines at the ends of strings as well as lights approximately every half a mile within strings. The placement of the lights will depend upon final approval from the FAA.

5.4.2 FIRE PREVENTION AND MITIGATION

The Project will adhere to applicable electrical codes and standards. Fire protection in the Project area is primarily provided by volunteer fire protection districts, including the Fithian, Ogden/Royal, Oakwood, and Bluegrass districts. Emergency training will be provided to the construction crews by experienced contractors to handle emergency situations if they arise at the site. Local fire and ambulance crews will be called to the site to provide emergency medical

services. Turbine access roads will increase emergency access to the Project area. All wind turbines have lightning protection and grounding.

California Ridge will meet with each of the four volunteer fire protection districts that serve the Project area to discuss health and safety matters prior to construction, once the layout is finalized. California Ridge will develop a project-specific EHS Manual that conforms to federal OSHA regulations. In addition to the EHS Manual, California Ridge will develop a separate Emergency Response Plan for the Project. This plan will specify how to respond to a host of emergency situations. Employees will be trained to respond to emergency situations, and this training will also be offered to the four local fire protection districts. During construction of the Project, contractors are required to develop their own Emergency Response Plan and training program for their employees. Additionally, the minimum amount of vegetation will be removed from the vicinity of electrical gear and connections to allow for the safe operation of all electrical equipment associated with the site, while at the same time minimizing the loss of vegetation.

During operation, the Project will not present a risk of fire. The turbines, towers, and other equipment are for the most part metal, and are not easily combustible. All wind turbines will be properly protected from lightning and will be electrically grounded.

5.5 HAZARDOUS MATERIALS

5.5.1 DESCRIPTION OF RESOURCES

California Ridge is not aware of any significant hazardous waste sites within the Project area. The land is primarily rural and used for agriculture. Potential hazardous materials within the Project area will be associated with agricultural activities, and include petroleum products (fuels and lubricants), pesticides, and herbicides. Older farmsteads may also have lead-based paint, asbestos shingles, and Polychlorinated Biphenyls (PCBs) in transformers. Trash and farm equipment dumps are also potential hazards in rural settings.

There will be three types of fluids used in the operation of the wind turbines that are petroleum products. These fluids are necessary for the operation of each turbine and include:

- Gear box oil – synthetic or mineral depending on application (approximately 300 liters)
- Hydraulic fluid
- Gear grease

These fluids will be managed and, if disposal is necessary, disposed of in compliance with the requirements of applicable laws and regulations, including Illinois Administrative Code Title 35, Parts 700-739.

5.5.2 IMPACTS

California Ridge will conduct a Phase I Environmental Site Assessment prior to construction to locate and avoid any existing hazardous waste sites.

All fluids will be contained within the wind turbine structure. There should be no leakage and no need to dispose of fluids (except in the rare case of contamination) over the life of the turbine.

5.5.3 MITIGATION MEASURES

Because there are no proposed impacts to hazardous waste sites, no mitigation measures are necessary. If any wastes, fluids, or pollutants are generated during any phase of Project operation, they will be handled, processed, treated, stored, and disposed of in accordance with Illinois Administrative Code Title 35, Parts 700-739.

5.6 NATURAL RESOURCES

5.6.1 WILDLIFE

Information about existing wildlife resources in the Project area was obtained from a variety of sources including published literature, field guides, public data sets, and a meeting held with Keith Shank, Illinois Department of Natural Resources (IDNR) on March 23, 2009. HDR requested written information concerning biological resources at the site from the IDNR and the U.S. Fish and Wildlife Services (USFWS), and a letter dated May 14, 2009 was received from the USFWS (Appendix E). A letter dated December 4, 2009, was received from the IDNR (Appendix E). In addition, California Ridge completed bat and avian risk assessments for the Project area. This section covers general wildlife species within the Project area. For information about federal and state wildlife species considered to be threatened or endangered or of special concern, refer to Section 0.

Description of Resources

The Middle Fork of the Vermilion River, designated as a National Wild and Scenic River, is located less than two-tenths of a mile east of the Project area. The Orchid Hill Natural Heritage Landmark, an Illinois Natural Area Inventory (INAI) site, occurs in the southeast corner of the Project area. No other INAI sites occur within the Project area boundary, but INAI sites within five miles of the Project area include the Middle Fork of the Vermilion River (0.2 miles east), and Kennekuk Cove County Park (3.0 miles east of the site). In addition, two areas managed by the IDNR are located along the Middle Fork of the Vermilion River east of the site boundary; the Middle Fork State Wildlife Area and Kickapoo State Park. These natural areas contain native forest and prairie communities that provide habitat to wildlife species, such as squirrels, pheasants, rabbits, fox, deer, and coyote that could potentially travel through or use the Project area for foraging. However, the dominance of agricultural land in the Project area dictates the types and numbers of species that are likely to occur.

Wildlife in the Project area consists of birds, mammals, fish, reptiles, amphibians, and insects, both resident and migratory, which use the Project area habitat for forage, breeding, and/or shelter. The available habitat in the Project area is primarily agricultural row crops with adjacent roadside ditches. Trees include windbreaks, shelterbelts, and wooded riparian areas, which are primarily located along the Middle Fork of the Vermilion River. Species present in the Project vicinity are associated with agricultural fields, pasture grasslands, wetlands, and forested areas.

Breeding birds common to the largely agricultural setting include killdeer, horned lark, vesper sparrow, red-winged blackbird, and the eastern meadowlark. Woodland bird species would include hawks, doves, cuckoos, woodpeckers, flycatchers, vireos, corvids, swallows, chickadees, wrens, thrushes, and finches. The Middle Fork of the Vermilion River hosts breeding populations of Canada geese and mallards, with small populations of wood duck, blue-winged teal, hooded merganser, grebe, and green heron. Upland game birds in the region include ring-

necked pheasant and, less frequently, the bobwhite quail. Raptor species expected in agricultural areas include red-tailed hawk, American kestrel, great-horned owl, and eastern screech-owl.

The mammal population in the area includes white-tailed deer, coyote, fox, rabbit, squirrel, raccoon, other related rodents, and bats. These species use the food and cover available from agricultural fields, grasslands, farm woodlots, wetland areas, and wooded areas. Grassland areas and woody vegetation are also habitat for a variety of small mammals, including house and deer mice, and prairie and meadow voles.

Several bat species may occur within the Project area, but populations are likely limited by the dominance of row crops and the small amount of suitable tree species. Bats are dependent on forested areas for roosting as well as navigation. Bat species that occur in the region and that may be present in the Middle Fork of the Vermilion River include hoary bat, eastern red bat, eastern pipistrelle, big brown bat, silver-haired bat, little brown bat, northern long-eared bat, Indiana bat, and the evening bat (See Table 5-5).

There are many species of fish found in Vermilion County. Many of these species, including several state-listed threatened and endangered species, are expected to be more common within the Middle Fork of the Vermilion River, and the potential exists for these species to occur in tributaries to the river within the project area.

Impacts

The impact of the Project on wildlife is expected to be minimal. Operation of the wind farm will not change the existing land use. The Project will not affect the water quality entering creeks or tributaries of the Middle Fork of the Vermilion River and will not impact their fish populations. Erosion control practices will be implemented to minimize indirect impacts.

In a letter dated May 14, 2009 (Appendix E), the USFWS provided comments on the Project and noted that the agency is concerned about potential impacts to migratory birds and bats. A biological screening report for the California Ridge Wind Power Project was completed by Western EcoSystems Technology (WEST), which addressed potential impacts to avian species. To determine the type of species and numbers of birds likely to be present within the Project area, WEST conducted a site visit in March 2009 to examine topography, habitat, and birds present within that area. The biological screening report concluded that given the habitat in the Project area (primarily flat agricultural fields without defined topographic edges), there is average to low potential for raptors (nesting or general use), avian migratory pathways, or federal or state-listed species to occur. One potentially unique feature of the proposed project is the proximity to the Middle Fork of the Vermilion River. Several state listed species occur along the river and associated forested areas, and some potential exists for birds and bats to utilize the Middle Fork of the Vermilion River as a migration corridor. Potential bird and bat use in the Project area may be influenced by the distance to the Middle Fork of the Vermilion River, with areas near the river having a higher potential for bird and bat use. However, because proposed activities will avoid these areas, fatality rates and other impacts are likely to be similar to those documented in other Midwest wind farms in similar cropland habitat. Therefore, risk to birds from turbines constructed within the expansion area is not likely to be biologically significant.

There are no records of federally threatened or endangered bats in or within 5 miles of the proposed Project planning area. A Chiropteran Risk Assessment was completed by BHE

Environmental, Inc. for the California Ridge Wind Power Project in Vermilion County to determine potential impacts on bat species. The BHE report concluded that risk to bats is expected to be low, based on a lack of suitable forested habitat within the Project area.

California Ridge's risk assessments of avian and bat species within the Project area indicates that there is limited potential for species protected under the federal Endangered Species Act to occur in the project area due to the preponderance of tilled agriculture. There is potential for several state-listed species to occur at some time throughout the year on the site, primarily within non-tilled areas and streams. Although the site contains relatively low diversity, there are localized shelterbelts, grassland, hayfields, and wetland habitat, and there is potential for state-listed species to occur in these areas. Refer to Section 0 for further information on potential impacts to threatened and endangered avian and bat species.

Mitigation Measures

To help avoid potential impacts on fish and wildlife in the Project area during construction and operation, California Ridge will:

- Conduct a pre-construction inventory of existing biological resources, native prairie, and wetlands in the Project area.
- Conduct one year of pre-construction avian point count surveys within the Project area to document bird species within the Project area (point counts began in March 2009).
- Minimize wetland disturbance through avoidance or special construction methods during Project construction.
- Minimize the amount of tree and shrub removal required during construction and operation.
- Use towers with a monopole tubular design to minimize potential perching.
- Minimize turbine lighting to the extent allowed by the FAA. California Ridge anticipates installing synchronized red strobe lights (no steady-burning red or white lights).

In their comment letter, the USFWS outlined several siting and design recommendations for minimizing impacts to migrating birds and bats: (Table 5-4)

Table 5-4
USFWS Recommendations

USFWS Recommendation	Notes/Comments
Avoid siting turbines on major bird migration corridors or in areas where birds are highly concentrated unless mortality risk is low.	As appropriate, California Ridge will conduct field surveys to identify sensitive flight paths that should be avoided during siting of turbine locations. In addition pre- and post-construction surveys will be completed.
Site turbines to avoid areas or features of the landscape known to attract raptors.	The project area does not contain cliffs or ridge passes, which are typical landscapes that attract raptors. Highest probability of raptor usage would be associated with the Middle Fork of the Vermilion River. Preconstruction surveys will assist in siting turbines as appropriate to avoid raptors.
Avoid placing turbines near bat hibernation and breeding colonies, in migration corridors, and in flight paths between colonies and feeding areas.	The Project area does not contain suitable forested habitat for bats, nor does it contain documented hibernacula or known caves that could be used as hibernacula.
Avoid siting turbines in habitats of any species of wildlife, fish, or plant protected under the Endangered Species Act.	Refer to Section 5.6.2.
Configure turbines to minimize mortality	As appropriate, California Ridge will conduct field surveys to identify sensitive flight paths that should be avoided during siting of the turbine locations.
Where the height of the rotor-swept area produces a high risk to wildlife, adjust tower height where feasible to reduce strikes.	As stated above, California Ridge will conduct appropriate field surveys to identify flight paths that should be avoided
Post-construction monitoring should be conducted for impacts on wildlife.	California Ridge will conduct post-construction monitoring in consultation with USFWS and IDNR and California Ridge's avian specialist.

In addition to following the recommendations for mitigating impacts to birds and bats at the Project from the USFWS letter dated March 14, 2009, California Ridge continues to develop an Avian and Bat Protection Plan (ABPP) with the USFWS to further minimize impacts. This ABPP will address the USFWS recommendations and create further measures of mitigation, including specific siting of turbines throughout the site, construction mitigation measures, monitoring and operational measures, all to minimize impacts on birds and bats, especially threatened and endangered species. As the Project continues in operation, the ABPP will be a tool that will be modified and adjusted with the USFWS to ensure it continues its purpose of mitigating impacts on birds and bats.

5.6.2 THREATENED AND ENDANGERED SPECIES

Federal and State of Illinois regulations provide for the protection of endangered and threatened species. To ensure compliance with these regulations, the USFWS and the IDNR were consulted regarding the presence of protected species or habitats in the vicinity of the Project.

Four federally listed endangered or threatened species potentially occur in the Project area. The federally listed species include the whooping crane, eastern prairie fringed orchid, prairie bush clover, and clubshell mussel. As of August 9, 2007, the bald eagle is no longer included on the federal list of threatened and endangered species; however, it remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The INAI lists three sites

within 5 miles of the Project area within Vermilion County: the Middle Fork of the Vermilion River, the Kennekuk Cove County Park, and Orchid Hill Natural Heritage Landmark (within the Project area); and five occurrences of listed and protected natural resources: the bluebreast darter, the northern harrier, the Blanding's turtle, and two occurrences of the wavy-rayed lamp mussel. Based on a review of federal and state-protected species lists, 46 endangered or threatened species are known to occur in Vermilion County (USFWS, 2010).

The biological screening report indicated that there is not a high potential for federally listed avian, wildlife or plant species within the Project area. The study indicated that the Middle Fork Vermilion River, approximately a quarter mile east of the Project boundary, does have relatively high potential to provide habitat for state-listed species.

The Project area is within the range of only one federally listed bat, the endangered Indiana bat (*Myotis sodalis*). The closest Indiana bat hibernaculum in Illinois is 98.5 miles away and the closest maternity colony recorded is approximately 10 miles from the Project planning area. Indiana bats are not likely to be roosting, foraging, or migrating within the Project planning area, due to the poor habitat conditions. Indiana bats are likely to use the Middle Fork of the Vermilion River and Salt Fork Vermilion River within 1 mile from the Project area, but are unlikely to utilize the site because of its poor habitat quality, and therefore are not at risk.

A list of threatened or endangered species that potentially could occur in the Project area that were identified during consultations, research, or during the biological screening report or chiropteran risk assessment is included in Table 5-5.

Table 5-5
Endangered and Threatened Species Potentially Occurring in the Vicinity of the California Ridge Wind Energy Project

Species	Status		Habitat	Comments/Notes
	Federal	State		
Birds				
Henslow's Sparrow *Ammodramus henslowii*		T	Large flat fields with no woody plants, and with tall, dense grass, a dense litter layer, and standing dead vegetation.	Potentially present in winter or migration, but suitable nesting habitat is limited.
Upland Sandpiper *Bartramia longicauda*		E	Native Prairie and other dry grasslands, including airports and some croplands.	Possible summer resident and migrant.
Northern Harrier *Circus cyaneus*		E	Open wetlands, meadows, pastures, prairies, grasslands, croplands, and riparian woodlands	Potentially present in winter or migration, but suitable nesting habitat is limited.
Least Bittern *Ixobrychus exilis*		T	Freshwater or brackish marshes with tall emergent vegetation.	Possible during the breeding season or migration.
Black-Billed Cuckoo *Coccyzus erythropthalmus*		T	Interior thickets of forested tracts.	Some potential to occur in forested areas along streams and rivers.
Loggerhead Shrike *Lanius ludovicianus*		T	Savanna conditions of interspersed grasslands, shrubs, and trees.	Some potential to occur in shelterbelts or tree rows. Vermilion County not a known breeding area.
Short-eared Owl *Asio flammeus*		E	Open country including prairie, meadows, tundra, moorlands, marshes, savanna, and open woodland.	Potentially present in winter or migration, but suitable nesting habitat is limited.
Barn Owl *Tyto alba*		E	Larger tree cavities and in barns or abandoned buildings, sometimes within city limits.	Some potential for birds to occur in trees and buildings.
Whooping Crane *Grus americanus*		X	May utilize wetland areas, lakes, and small farm ponds for roost sites during migration, and may feed in crop fields.	Some potential for birds to occur in wetland areas or ponds during migration.
American Golden Plover *Pluvialis dominica*		X	May utilize shortgrass areas, soybean stubble, or bare ground with standing water during migration and feeding.	Some potential for birds to occur in cropped or grassy areas during migration.
Bald Eagle *Haliaeetus leucocephalus*		T	Breeds in forested areas near large bodies of water & winters in coastal areas, along large rivers, and large unfrozen lakes.	Unlikely to breed within the site, but may fly through the project area.
Mammals				
Indiana Bat *Myotis sodalist*	E	E	Winter in mines or caves with cool, stable temperature. Females and young are found under the loose bark of large trees.	Not likely to roost, forage, or migrate within Project planning area due to poor habitat conditions

Species	Status		Habitat	Comments/Notes
	Federal	State		
Franklin's Ground Squirrel *Spermophilus franklinii*		T	Tallgrass prairies at the border between grassy areas and woody vegetation.	Possibly occurs in grassy areas such as roadside edges.
Reptiles & Amphibians				
Silvery Salamander *Ambystoma platineum*		E	Deciduous and coniferous forests. Moist woodlands with sandy soils.	Possible in forested areas.
Blanding's Turtle *Emydoidea blandingii*		T	Shallow weedy ponds, marshes, swamps, and lake inlets and coves. Prefer slow-moving, shallow water and plenty of vegetation.	Potential to occur within wetland habitats.
Ornate Box Turtle *Terrapene ornate*		T	Open grassland areas and hibernates underground from late September through April.	Potential to occur on site. An Incidental Take Authorization may be necessary if found on site.
Four-toed Salamander *Hemidactylium scutatum*		T	Suitable breeding wetlands within or adjacent to mature forests. Prefer forests with dense canopy cover, an abundance of downed woody debris, vernal pools, ponds, bogs, shallow marshes, or other fishless bodies of water. Wooded wetlands such as seepage swamps or cedar swamps are ideal.	Unlikely to occur in site due to lack of habitat.
Mudpuppy *Necturus maculosus*		E	Clear rivers, creeks, streams, lakes and ponds but conceals itself under rocks or woody debris during the day, feeding actively at night. Only known glochidial host of the Salamander Mussel.	Some potential to occur in streams and creeks in the project area. Erosion and siltation poses indirect threat. Any planned in-stream work may require an Incidental Take Authorization.
Smooth Softshell Turtle *Apalone mutica*		E	Larger streams and rivers, in segments with sandy substrates and sand bars.	Little direct risk however; erosion and siltation poses indirect threats.
Kirtland's Snake *Clonophis kirtlandi*		N/A	Downed woody debris in woody wetland habitats such as flood plain forest, marsh, and wet prairie.	Potential to occur in the site near woody wetlands.
Fish				
Eastern Sand Darter *Ammocrypta pellucidum*		T	Medium to large rivers with extensive areas of sandy substrate. Clear, slightly turbid water is ideal.	Unlikely to occur due to lack of medium and large rivers.
Gravel Chub *Erimystax x-punctatus*		T	Gravel riffles and runs of creeks and small to larger rivers.	Some potential to occur in streams in project area.
Bluebreast Darter *Etheostoma camurum*		E	Fast, rocky riffles of small to medium rivers. Eggs are buried in the substrate.	Some potential to occur in streams in the project area
Iowa Darter *Etheostoma exile*		T	Vegetated lakes, pools of headwaters, creeks, and small to medium rivers. Eggs are attached to the substrate unguarded.	Some potential to occur in streams in project area.

Species	Status		Habitat	Comments/Notes
	Federal	State		
Bigeye Chub *Hybopsis amblops*		E	Sandy or silty sand substrates in areas of little or moderate current in larger creeks and small to medium rivers.	Some potential to occur in streams in project area.
River Redhorse *Moxostoma carinatum*		T	Rocky pools and swift runs of small to larger rivers. Also found in impoundments.	Some potential to occur in streams in project area.
River Chub *Nocomis micropogon*		E	Rocky runs and flowing pools of small to medium rivers.	Some potential to occur in streams in project area.
Bigeye Shiner *Notropis boops*		E	Flowing, usually clear and rocky, pools of creeks and small to medium rivers. Often round near emergent vegetation along the stream margin.	Some potential to occur in streams in project area.
Northern Madtom *Noturus stigmosus*		E	Mixed sand and rock riffles and runs with debris in small to large, often swift rivers.	Unlikely to occur, possibly extirpated.
Invertebrates				
Slippershell *Alasmidonta viridis*		T	Creeks and small rivers. Needs fairly good quality water and prefers to be buried in sand and gravel.	Some potential exists to occur in streams in project area.
Purple Wartyback *Cyclonaias tuberculata*		T	Rivers where definite riverine conditions with a stronger current exist.	Some potential exists to occur in streams in project area.
Wavy-rayed Lampmussel *Lampsilis fasciola*		E	Rarely found in smaller, upstream creeks or in downstream areas of large rivers. Usually found in riffles and rapid waters.	Some potential exists to occur in streams in project area.
Little Spectaclecase *Villosa lienosa*		T	Small to medium streams in sand or gravel substrate.	Some potential exists to occur in streams in project area.
Clubshell *Pleurobema clava*		E	Streams and small rivers, in well oxygenated riffles with coarse sand and gavel and little silt.	Unlikely to occur on site due to lack of stream size.
Kidneyshell *Ptychobranchus fasciolaris*		E	Small to medium rivers, usually in areas with good flow. Usually inhabits sand and/or gravel.	Unlikely to occur on site due to lack of habitat and stream size.
Rabbitsfoot *Quadrula cylindrica*		E	Medium to large rivers in mixed sand and gravel.	Unlikely to occur within the site; only known occurrences are in Wabash and Massac counties.
Purple Lilliput *Toxolasma lividus*		E	Fast-flowing small streams and medium sized rivers. Sand and gravel substrates.	Some potential exists to occur in streams in project area.
Rainbow *Villosa iris*		E	Cool, clear, upper reaches of small to medium streams. Sandy mud, coarse sand, or gravel in areas near faster currents.	Some potential exists to occur in streams in project area.

Species	Status		Habitat	Comments/Notes
	Federal	State		
Salamander Mussel *Simpsonaias ambigua*		E	Under rocks and debris, only species with a non-fish glochidial host (the Mudpuppy).	Some potential exists to occur in streams in the project area.
Swamp Metalmark *Calephelis muticum*		E	Bogs, marshes, swamps, and wet meadows.	Unlikely to occur due to lack of habitat.
Plants				
Sangamon Phlox *Phlox pilosa ssp. Sangamonensis*		E	Found in scrub shrub, shrub, and forb/herb areas.	Some potential exists for presence in site.
Ear-leafed Foxglove *Tomanthera auriculata*		T	Moderate moisture areas, prairies, and open woods.	Unlikely to occur, last known occurrence was 1933.
Mead's Milkweed *Asclepias meadii*	T	E	Tallgrass prairies or unplowed native prairie hay meadows that have well-drained or dry-mesic soils.	Unlikely to occur on-site due to lack of native prairie.
Eastern prairie fringed orchid *Platanthera leucophaea*	T		Mesic to wet prairies and native grasslands.	Very low probability of occurrence due to lack of suitable habitat.
Prairie bush clover *Lespedeza leptostachya*	T		Dry to mesic prairies and native grasslands with gravelly soil.	Very low probability of occurrence due to lack of suitable habitat.
Brome-like Sedge *Carex bromoides*		T	Wet seepy areas; wet woodlands, fens, and shaded areas.	Some potential exists for presence on site.
Fibrous-rooted Sedge *Carex communis*		T	Woodlands that are at least seasonally wet and in seepy areas on hillsides.	Some potential exists for presence on site.
Drooping Sedge *Carex prasina*		T	Rich, mesic deciduous forests, often along streams or in seepage areas, or in moist, low ground associated with springs or fens.	Some potential exists for presence on site.
Willdenow's Sedge *Carex willdenowii*		T	Woodland hilltops, ridges and prefers well-drained soils.	Some potential exists for presence on site.
Queen-of-the-Prairie *Filipendula rubra*		E	Moist black soil prairies, most sand prairies, moist meadows along rivers in woodland areas, shrubby fens, and wet areas in or around seeps and springs.	Unlikely due to lack of suitable habitat present on the site.
Wolf's Bluegrass *Poa wolfii*		E	Forests/upland forests, wetlands, border of lakes, also found on rocky bluffs and cliffs.	Unlikely to occur on site.
Royal Catchfly *Silene regia*		E	Mesic black soil prairies, openings in upland forests, savannas, scrubby barrens, and open areas along roadsides and railroads.	Possible in the site.

Status
E = Endangered
T = Threatened

Mammals

Two federal or state-listed mammals potentially occur in the Project area; the Franklin's ground squirrel and the Indiana bat.

Franklin's Ground Squirrel

The Franklin's ground squirrel is a small species of ground squirrel that historically occurred in tallgrass prairie habitats throughout the Midwest. The species experienced declines as a result of conversion of native habitats to cropland, and was listed as threatened under the Illinois Endangered Species Act in 2004. The species is currently limited to the edges of forests, roadsides, and railroads, and other edge habitats. The Project and biological screening report evaluation area contain some suitable habitat for this species along roadways, and in some planted grassland habitats. Some potential exists for this species to occur within the site.

Impacts and Mitigation

Because this species requires well-drained ground it does not appear that there are areas of suitable habitat within the project footprint, but transport of turbine components often requires rebuilding or repairing roadways some distance from the destination. Some potential exists for this species to occur within the site along railroads and highways. If present, this species habitat can be threatened through the crushing and collapse of its burrows by heavy construction equipment. Invenergy will work with the IDNR to resolve any potential issues if they arise.

Indiana Bat

The Indiana bat is a federally endangered species that potentially occurs throughout much of Illinois. To better understand the potential for the Project to impact the Indiana bat and other bats found in the area, California Ridge contracted the preparation of a chiropteran risk assessment (Table 5-5). Included below is a summary of the results of this risk assessment.

In winter (mid-November through March), Indiana bats hibernate in caves and mines. The closest Indiana bat hibernaculum in Illinois is 98.5 miles away from the Project area, and the closest maternity colony recorded is approximately 10 miles away. There are no records of Indiana bats within 5 miles of the proposed Project Area.

For the remainder of the year, Indiana bats roost in trees and forage along small stream corridors with well-developed riparian woodlands or within upland forests. Forested areas along the Middle Fork and Salt Fork of the Vermilion River occur within 1 mile east of the Project Area and the closest known colonies are along this river within 10 miles of the site. Bats from these colonies are likely to forage along the Middle Fork and among the trees surrounding the river; however, no contiguous forested corridors connect the Middle Fork of the Vermilion River to waterways in the Project Area. Although bats along the Middle Fork may venture into the open fields, most tend to remain along forested waterways as insects are more abundant and trees provide protection from aerial predators.

Impacts and Mitigation

Because the Project area is primarily devoid of trees and composed of open fields/agricultural land, the area is generally not suitable for foraging or roosting bats. Given that limited potential habitat is available and that California Ridge will avoid tree clearing to the maximum extent

practicable, construction of the Project will not likely adversely affect the Indiana bat. Operation of the Project will also not likely adversely affect the Indiana bat. Indiana bats, even if present in the Project area, generally travel and forage at heights below the rotor swept area. As such, the chance of collisions between Indiana bats and turbine blades during the summer is low. Studies completed to-date have documented very low mortality during spring and summer months.

Birds

Based on the analysis presented in the California Ridge Biological Screening Report, seven federal or state-listed endangered or threatened birds may occur in the Vermilion County portion of the Project area; the whooping crane, bald eagle, short-eared owl, Henslow's sparrow, loggerhead shrike, upland sandpiper, northern harrier, and least bittern. The IDNR's most recent list includes four additional species; the barn owl, loggerhead shrike, Black-billed cuckoo, and the American golden plover.

Whooping Crane

The Eastern Migratory Population (EMP) of whooping cranes was reintroduced to the Midwest in 2001, and has some potential to occur in the Project Area during migration. As birds become established and the population increases, the potential exists for birds to stop virtually anywhere in Illinois between their summer and winter areas. Whooping cranes were observed along the Middle Fork of the Vermilion River in Vermilion County during 2005. Based on past use of areas near the Project area, and the location of the ultra-light led migration, some potential exists for whooping cranes to use the project area during migration. This population is listed as "experimental and non-essential" under the Endangered Species Act, but is still protected under the Migratory Bird Treaty Act.

Bald Eagle

The bald eagle nests in mature trees located adjacent to or near large, fish-bearing waters. The bald eagle is a state threatened species in Illinois. Some potential exists for the bald eagle to nest along the Middle Fork of the Vermilion River, and to occasionally fly through the project area. The site lacks breeding habitat for this species.

American Golden Plover

The American golden plover breeds in the Arctic tundra and migrates south for the winter. Areas in Illinois, including Vermilion County provide important spring migration staging areas. Daytime habitat may include short grass, soybean stubble, corn stubble, or areas of bare ground with standing water or moisture. There is some potential for birds to occur in these areas in the Project area during the spring migration period.

Short-eared Owl

The short-eared owl may potentially be observed in the area during migration or in the winter, but is unlikely to nest at the Project area due to a lack of hayfields and grasslands.

Barn Owl

The barn owl nests is larger tree cavities and in barns or abandoned buildings, sometimes within the city limits. No breeding records exist in Vermilion County. The barn owl hunts in open woodlands and grasslands. Some potential exists for the barn owl to occur in wooded or grassland areas in the project area.

Henslow's Sparrow

Henslow's sparrow breeds primarily in weedy grasslands of the east-central U.S. Historically, this species would breed in tallgrass prairie; however, today it is restricted to large, flat, neglected, weedy fields, wet meadows, and salt marsh edges. Potential breeding habitat for this species within the Project area is limited because of the lack of large grassland areas (250 acres or greater). Some potential exists for the species to breed within a few large blocks of planted grasslands, and the species likely migrates through the area in spring and fall. However, since the Henslow's sparrow spends most of its time hidden in vegetation, there is little threat that individuals of this species that occur in the area would collide with turbines or turbine blades during operation of the Project.

Loggerhead shrike

Populations of loggerhead shrike in central Illinois are rare and migratory. Loggerhead shrikes generally breed in grassland areas with hedgerows or scattered trees and shrubs, and prefer hay fields and pastures to row crops (Graber et al. 1973, Bowles et al. 1981). Although the potential exists for the species to occur on the site, nesting habitat for this species is limited due to the rare nature of hedgerows, shrubs, or trees and a preponderance of row crops such as corn. The potential exists for the species to nest on the site near hedgerows, and the potential exists for the species to occasionally move through the area during migration.

Upland Sandpiper

The upland sandpiper is uncommon during migration and an uncommon-to-rare summer resident in Illinois (Kleen et al. 2004). Upland sandpipers are predominantly found in flat open country such as in grassland or prairie habitats – including but not exclusively farmland (cultivated or pasture) or golf courses. Upland sandpipers have been recorded in low numbers along the Dailey Breeding Bird Survey (BBS) route[2], which runs through the site, although the exact locations of the upland sandpiper records along the route are not known. There has been one confirmed breeding pair of upland sandpiper in Vermilion County (Kleen et al. 2004). There is the potential for upland sandpipers to breed within the site during the summer, with higher numbers occurring during spring and fall migration.

Northern Harrier

Northern harriers have a small, scattered breeding range throughout Illinois; however, three confirmed breeding pairs have been observed in Vermilion County (Kleen et al. 2004). The site contains limited amounts of grassland and wetlands that could serve as potential nesting habitat. Although breeding habitat for the species is limited at the site, the species is likely to occur on the site during migration and the winter. Because northern harriers often hunt close to the ground, the risk of collision with turbine blades is considered lower for this species compared to other raptors.

[2] The North American Breeding Bird Survey (BBS) is a cooperative effort between the U.S. Geologic Survey's Patuxent Wildlife Research Center and the Canadian Wildlife Service's National Wildlife Research Centre to monitor the status and trends of North American bird populations. Following rigorous protocol, BBS data are collected by thousands of dedicated participants along thousands of randomly established roadside routes throughout the continent. Professional BBS coordinators and data managers compile these population data and trend analyses for the general public.

Black-billed Cuckoo

The black-billed cuckoo nests in interior thickets of forested tracts and feeds heavily on caterpillars. There is potential for this species to occur along streams and rivers in the project area.

Least Bitterns

The least bittern's summer distribution occurs in the Midwest from Michigan south to Texas, west to eastern New Mexico, and east along the Atlantic shoreline. It is listed as a state threatened species in Illinois. It is an uncommon migrant and a summer resident that will use shallow freshwater lakes and marshes with tall dense emergent vegetation, especially those with cattails. They are very secretive and more often heard than seen. They eat fish and insects that they capture by quickly jabbing their long bills and impaling their prey. Least bitterns are not adequately sampled during breeding bird surveys because it is rare and secretive, but the collected data does indicate a scattered breeding distribution in Illinois. One confirmed breeding site is located within Vermilion County, although the exact location is unknown. A limited potential exists for this species to breed within wetlands in the project area.

Mitigation

California Ridge is continuing to consult with the USFWS and the IDNR regarding potential steps to avoid or minimize impacts on federal or state-listed endangered or threatened birds. California Ridge is conducting pre-construction field surveys for the project. If any sensitive flight paths or sensitive habitats are identified during the surveys, California Ridge will work with the USFWS and IDNR to implement appropriate minimization and mitigation measures.

Reptiles and Amphibians

There are five state-listed threatened species and one endangered species that potentially occur in Vermilion County; the Blanding's turtle, the ornate box turtle, Mudpuppy, Kirtland's snake, and four-toed salamander are threatened, and the silvery salamander and the smooth softshell turtle are endangered. The Kirtland's snake is neither endangered or threatened but is experiencing population decline.

Blanding's Turtle

The Blanding's turtle is associated with shallow ponds, marshes, creeks, or wetland habitats. Based on site visits, a review of aerial photographs, NWI maps, and USGS land cover data, there are limited areas of these types of aquatic/wetland habitats within the Project area. The potential for occurrence of the Blanding's turtle is greatest within 1.5 miles of the Middle Fork of the Vermilion River, although this species may occur throughout the site where suitable aquatic habitat is present.

Ornate Box Turtle

The ornate box turtle can be found in open grassland areas and hibernates underground from late September to early April. It appears to be more common in sandy soils however; it is not restricted to them. The preferred habitat of the ornate box turtle may not be present in the project area but little is known of their distribution. If one is happened upon during project construction, it is unlawful to move or capture one without first obtaining an Incidental Take Authorization from the IDNR.

Smooth Softshell Turtle

The smooth softshell turtle inhabits larger streams and rivers in segments with sandy substrates and sand bars. It has been documented in Vermilion County and is potentially present in all reaches of the Vermilion River system. Erosion and siltation pose an indirect threat to this species habitat.

Four-toed Salamander

The four-toed salamander is present in riparian forests, woodland vernal pools and sometimes found more than one thousand feet from the nearest wetlands, beneath forest floor litter and detritus where sufficient moisture is available. It is unlikely that this species occurs within the project footprint however; good water quality remains important.

Silvery Salamander

The silvery salamander is associated with deciduous and coniferous-forested habitats with moist woodlands and sandy soils. A majority (more than 90 percent) of the habitat in the Project area is cultivated agricultural lands; there are limited forested habitats available to this species. The likelihood of this species occurring on the site is low, but possible within forested areas, especially near the Middle Fork of the Vermilion River.

Mudpuppy

The mudpuppy is never found in terrestrial habitats but inhabits clear rivers, creeks, streams, lakes and ponds. It conceals itself under rocks or woody debris during the day and feeds actively at night. The mudpuppy is the only known glochidial host of the State-listed endangered Salamander Mussel (*Simpsonias ambigua*). The mudpuppy's decline may be a factor in the disappearance of the Salamander mussel. Siltation and sedimentation can be tolerated by the mudpuppy as long as clear gravelly headwaters remain available for reproduction. Any planned in-stream work may require an Incidental Take Authorization from the IDNR.

Kirtland's Snake

The Kirkland's snake occurs statewide in Illinois and is usually found in open wetlands such as wet prairies and can also occur in openings or along the edges of forested wetlands and floodplains. This species has also occurred near more urbanized areas such as parks, cemeteries, and vacant lots. There is potential habitat for this species in the Project area near wetlands.

Impacts and Mitigation

Given the rarity of these reptiles and amphibians, and the limited availability of suitable habitat, it is unlikely they will be encountered or adversely affected during construction of the Project. The habitats potentially occupied by these species will be avoided during siting of the Project facilities. For example, wind turbines and ancillary facilities will be built on uplands, which will avoid the surface water features typically located in the lower positions on the landscape. Access roads will be built to avoid impacts on waterbodies. Underground cabling will be directionally bored under wetlands and streams, avoiding impacts.

Fish

Ten state-listed endangered or threatened fish occur in Vermilion County. Many of these species are expected to be more common within the Middle Fork of the Vermilion River, and the potential exists for these species to occur in tributaries to the river within the project area.

Impacts and Mitigation

This type of habitat will be avoided during siting of the Project Facilities. For example, wind turbines and ancillary facilities will be built on uplands, which will avoid the surface water features typically located in the lower positions on the landscape. Access roads will be built to avoid impacts on waterbodies. Underground cabling will be directionally bored under wetlands and streams, avoiding impacts.

Invertebrates

Eleven federal or state-listed endangered or threatened invertebrates potentially occur in Vermilion County, including nine mussels and one butterfly. Mussels live in lakes, streams, and rivers; therefore, the potential exists for these species to occur within the Middle Fork of the Vermilion River and its tributaries, including streams within the Project area. However, some streams in the project area may have hard clay bottoms, which limit the potential for mollusks to occur (K. Shank, IDNR, personal communication).

Impacts and Mitigation

Protected mollusk species typically occur in streams with clean water and rocky or sandy substrates. Some potential exists for protected mussels to occur in streams in the project area with suitable substrates. The Swamp Metalmark prefers bogs, marshes, swamps, and wet meadows for habitat. This type of habitat will be avoided during siting of the Project facilities.

Plants

Twelve federal or state-listed endangered or threatened plants potentially occur in Vermilion County. These species are generally associated with native grassland (tallgrass prairie), wetland, or wooded habitats. A review of aerial photographs, USGS land-cover data, and field visits to the Project area indicate that the area is dominated by cropland (approximately 93 percent). The cropland is largely vast fields of corn and soybeans, where the majority of sensitive plants are unlikely to occur. During the March 26, 2009 meeting the IDNR did not express concern over natural communities in the site; however, they did express concerns about the potential impacts of the presence of a wind energy facility on the surrounding Illinois Natural Areas Inventory (INAI) sites along the Middle Fork of the Vermilion River. More information regarding vegetation impacts will be included once official project correspondence has been received.

Impacts and Mitigation

Siting of Project facilities will generally avoid areas potentially occupied by many of the protected plants found within Vermilion County (e.g., wetlands, wooded areas). Additionally, California Ridge will conduct field surveys to identify areas of native habitat potentially occupied by protected species at all proposed Project facility locations (e.g., turbine sites, access roads, and cable routes) prior to construction. As feasible, areas of native habitats, wetlands, and wooded areas that could provide habitat to protected plants will be avoided. Construction and operation of the Project is not likely to adversely affect federal or state-listed endangered or threatened plants.

6.0 AGENCY AND PUBLIC OUTREACH

Throughout the course of project development several agency personnel and public entities were contacted for the project. Below are some of the contacts made for the project. Formal agency consultation letters and responses are included as Appendix E.

6.1 FEDERAL CONTACTS

- **U.S. Fish and Wildlife Service (USFWS):** Contacted to consult on avian issues and federal threatened and endangered species

6.2 STATE CONTACTS

- **Illinois Department of Natural Resources (IDNR):** Keith Shank, Impact Assessment Section, Division of Ecosystems and Environment, was contacted to provide an environmental review of the project.

6.3 LOCAL CONTACTS

- **Vermilion County:**
  - Vermilion and Champaign County Emergency Management Agency: Mike Jobst
  - Soil and Water Conservation District: Bruce Stickers of Champaign and Cindy Johnston of Vermilion
  - Vermilion County Board Chairman: James McMahon, Vermilion County – Assistant State's Attorney: William Donahue
  - Vermilion County Highway Department County Engineer: Doug Staske

- **Townships:**
  - Pilot Township Highway Commissioner: Roy Night

- **Fire Departments:**
  - Fithian Fire Protection District - Fire Chief (Phil Hoshauer)
  - Ogden/Royal Fire Protection District - Fire Chief (Denver Phelps)
  - Oakwood Fire Protection District - Fire Chief (Tony Frye)
  - Bluegrass Fire Protection District - Fire Chief (Gary Hawker)

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Appendix A
GE 1.6 - 100 Wind Turbine Brochure

GE Power & Water
Renewable Energy

Introducing GE's **1.6-100**

Best-in-class capacity factor

a product of
ecomagination

imagination at work

Introducing GE's **1.6-100**

Product evolution. It's one of the things GE does best. Especially when it comes to the next generation of wind turbines. Building on a strong power generation heritage spanning more than a century, our onshore wind turbines deliver proven performance, availability and reliability—creating more value for our customers.

As one of the world's leading wind turbine suppliers, GE Energy's current product portfolio includes wind turbines with rated capacities ranging from 1.5 MW–4.1 MW and support services extending from development assistance to operation and maintenance.

GE's 1.6-100 Wind Turbine

GE's 1.6-100 wind turbine offers a 47% increase in swept area when compared to the 1.6-82.5 turbine, resulting in 19% increase in Annual Energy Production (AEP) at 7.5 m/s. This increase in blade swept area allows greater energy capture and improved project economics for wind developers. GE's 1.6-100 turbine has a 53% gross capacity factor, at 7.5 m/s; a class leading performance. GE's proprietary 48.7 meter blade uses the same proven aerodynamic shape as the blades found on the 2.5-100 turbine, but with the use of carbon fiber the weight is significantly reduced from the original blade predecessor.

GE's stringent design procedures result in a turbine designed for high performance, reliability and availability. The use of the rotor from the proven GE 2.5-100 turbine and selected component modifications provide increased annual production with the same reliable performance as the 1.5 MW series turbine.

Available in 80 meter and 100 meter tower heights, these sizes provide flexible options for Class III wind sites, allowing for higher energy capture in lower wind speed environments.

Building Upon the Proven 1.5 MW and 2.5 MW Platforms

The evolution of GE's 1.5 MW turbine design began with the 1.5i turbine introduced in 1996. The 65 meter rotor was increased to 70.5 meters in the 1.5s then to 77 meters in the 1.5sle turbine which was introduced in 2004. Building on the exceptional performance and reliability of the 1.5sle, GE introduced the 1.5xle with its 82.5 meter diameter in 2005. Subsequent improvements in design led to the 1.6-82.5 turbine, introduced in 2008. Ongoing investment in the industry workhorse resulted in the introduction of GE's 1.6-100 wind turbine with a 100 meter rotor. This product evolution ensures increased capacity factor while increasing AEP by 19%.

Incremental changes to the 1.6-100 resulted in a significant performance increase. These enhancements include greater blade length, use of carbon fiber, Low Noise Trailing Edge (LNTE) and gearbox improvements resulting in an increase in AEP, high capacity factor, and controlled sound performance.

GE's new, Low Noise Trailing Edge serrations are employed on this turbine to enable tailored sound as a function of wind speed for a smaller sound footprint and optimized park layout to increase AEP. Testing has shown this design for the blade enables improved turbine acoustic performance. Designed with high reliability to ensure continued operation in the field, GE's 1.6-100 can provide excellent availability comparable with the 1.5 MW series units operating in the field today.

Technical Description

GE's 1.6-100 wind turbine is a three-blade, upwind, horizontal axis wind turbine with a rotor diameter of 100 meters. The turbine rotor and nacelle are mounted on top of a tubular steel tower providing hub heights of 80 meters and 100 meters. The machine uses active yaw control to keep the blades pointed into the wind. The turbine is designed to operate at a variable speed and uses a doubly fed asynchronous generator with a partial power converter system.

Specifications:

1.6-100 Wind Turbine:

- Designed to IEC 61400-1
  — TC III: 7.5 m/s average wind speed; B turbulence intensity
- Standard and cold weather extreme options
- Standard tower corrosion protection; C2 internal and C3 external with optional C4 internal and C5 external available
- Rotational direction: Clockwise viewed from an upwind location
- Speed regulation: Electric drive pitch control with battery backup
- Aerodynamic brake: Full feathering of blade pitch

Features and Benefits

- Higher AEP than its 1.6 predecessors
- Highest capacity factor in its class
- Designed to meet or exceed the 1.5 MW platform's historic high availability
- Grid friendly options are available
  — Enhanced Reactive Power, Voltage Ride Thru, Power Factor Control
- Wind Farm Control System; WindSCADA*
- Sharing of components with family products
- GE proprietary 48.7 meter blade
- Ultra-quiet power production Low Noise Trailing Edge serrations as an acoustic enhancement for the 1.6-100
- Available in both 50 Hz and 60 Hz versions for global suitability

Construction

Towers: tubular steel sections provide variable hub heights from 80 meters to 100 meters

Blades: GE 48.7 meter blades with Low Noise Trailing Edge serrations

- Providing high energy capture with low sound emission
- Carbon spar caps within blades reduce weight, which reduces turbine loads

Drivetrain components: GE's 1.6-100 uses proven design gearboxes, mainshaft and generators with appropriate improvements to enable the larger rotor diameter on the 1.6 MW machine

Enhanced Controls Technology

The 1.6-100 wind turbine employs two enhanced control features:

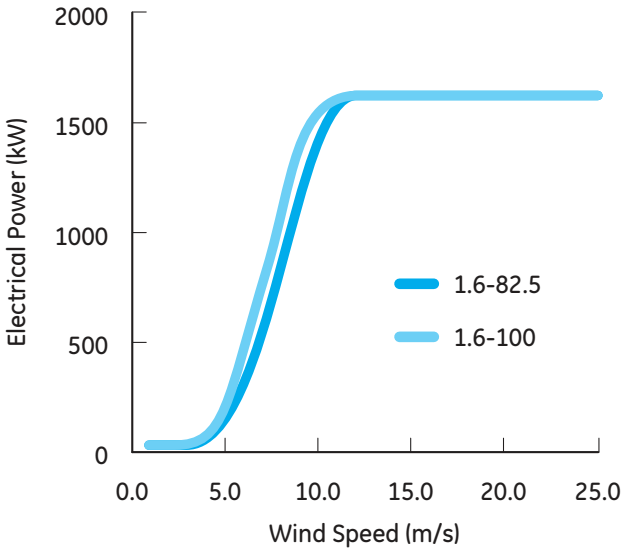
- GE's patented Advanced Loads Control reduces loads on turbine components by measuring stresses and individually adjusting blade pitch
- Controls developed by GE Global Research minimize loads including at near rated wind speeds to improve Annual Energy Production (AEP)

Condition Based Monitoring

GE's Condition Based Monitoring (CBM) and SCADA Anomaly Detection Services, a complementary suite of advanced condition monitoring solutions, proactively detect impending drive train and whole-turbine issues enabling increased availability and decreased maintenance expenses. Built upon half a century of power generation drivetrain and data anomaly monitoring experience, this service solution is available as an option on new GE Units and as an upgrade.

1.6-100 Specifications

Power Curve Improvement



Highest capacity factor in its class

- **Value.** Best in Class Capacity Factor, 52% @ 7.5 m/s
- **Reliability.** GE fleet at 98%+ availability
- **Experience.** 16,500+ fleet, most 100 meter+ rotors, 1.5 million operating hours
- **Finance-ability.** Evolutionary design using "proven technology" from GE 1.5 MW and 2.5 MW platforms

1.6 MW wind turbine, Tahachapi, California, U.S.A.

Powering the world...responsibly.

For more information please visit www.ge-energy.com/wind.

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GEA18628 (04/2011)

Appendix B
Property Owners' Names, Addresses, and Phone Numbers

Landowner Name	Address	City	State	Zip	Phone
1863 Land Trust (c/o Janet Meyer)	3208 Ledgestone Court	Fort Collins	CO	80528	
First Nat'l Bank of Ogden, Trustee of Trust No. 213 (c/o Daniel L. Ribbe)	28262 State Route 1	Alvin	IL	61811	
Derald & Florence Ackerman	519 South Main Street	Gifford	IL	61847	(217) 568-7317
Dick J. Albers	P.O. Box 213	Royal	IL	61871	(217) 469-7049
Anna Albers (c/o Country Health Nursing Home)	2304A County Road 3000 North, Apt. #107	Gifford	IL	61847	
Carl W. & Anna Albers (c/o Country Health Nursing Home)	2304A County Road 3000 North, Apt. #107	Gifford	IL	61847	
Albers Farms (c/o Sandra J. King)	PO Box 562	St. Joseph	IL	61873	(217) 469-7049
Sandra J. King	2536 CR 2600 East	Penfield	IL	61862	(217) 469-7049
Richard J. Albers	2536 CR 2600 East	Penfield	IL	61862	(217) 469-7049
David W. Albers	2536 CR 2600 East	Penfield	IL	61862	(217) 469-7049
Michele Babb	2635 County Road 2700 E	Penfield	IL	61862	(217) 841-5858
Michael Babb	2635 County Road 2700 E	Penfield	IL	61862	(217) 841-5858
Mark and Ann Beyers	2369 East 2350 North Road	Fithian	IL	61844	
John G. Blue	2148 Co. Rd. 2650 East	Ogden	IL	61859	(217) 583-3133
Douglas & Lori Bluhm	2019 Country Road 2500 East	St. Joseph	IL	61873	(217) 583-3306
Alvin & Emma Bluhm	1896 County Raod 2700 East	Ogden	IL	61859	(217) 582-2980
Floyd & Bonnie Bohlen	3680 E. 2250 North Rd.	Fithian	IL	61844	(217) 776-2287
Dwight & Patricia Bohlen	4368 East 2230 North Road	Fithian	IL	61844	(217) 776-2686
Inez Britt Living Trust	2333 County Rd 2800 East	Ogden	Il	61859	
Neil Bruns, Darrell Bruns, Marly McCartney and Kristi Bruns	516 S. Park	Gifford	IL	61847	
Neil Bruns	1113 Ascot Drive	Rantoul	IL	61866	
Darrell Bruns	1113 Ascot Drive	Rantoul	IL	61866	
Marlys McCartney	1113 Ascot Drive	Rantoul	IL	61866	
Kristi Bruns	1113 Ascot Drive	Rantoul	IL	61866	
Thomas & Patricia Buck	2640 County Road 2500 East	Penfield	IL	61862	(217) 565-7956
Vernon & Wilma Buhr	2152 CR 2400 North	St. Joseph	IL	61873	(217) 694-4149
Russell & Marilyn Buhr	2594 County Road 2300 East	Gifford	IL	61847	(217) 694-4551
Luella Busboom	2258 County Road 2500 N	St. Joseph	IL	61873	217-694-4138
Busboom Family Trust (c/o Glen & Billie Busboom)	2756 County Road 2200 North	Ogden	IL	61859	(217) 583-3350
Dale & Loretta Busboom Revocable Trust (c/o Dale & Loretta Busboom)	1587 County Road 2075 East	St. Joseph	IL	61873	(217) 469-7528
Busboom Trust (c/o Maury Busboom)	PO Box 131	Royal	IL	61871	217-202-7161
Daniel & Amy Cain	2567 County Road 2600 East	Penfield	IL	61862	217-202-1314
Alice Cain Heirs (c/o Steve Cain)	PO Box 103	Philo	IL	61864	217-684-2394
Ronald & Virginia Camp	24506 North 750 East Road	Collison	IL	61831	217-776-2740
Judith Carl	2710 County Road 2050 North	Ogden	IL	61859	217-583-3248
Charles & Judith Carl	2710 County Road 2050 North	Ogden	IL	61859	217-583-3248
Charles Carl	2710 County Road 2050 North	Ogden	IL	61859	217-583-3248
Marilyn & Kristen Carley	c/o PANB Farm Dept. 2 West Main	Danville	IL	61832	(217) 446-6450
Roger Carter	2562 County Road 3000 North	Penfield	IL	61862	217-595-5461
June Clemmons	207 S. Wilson, P.O. Box 342	Potomac	IL	61865	217-987-6642
Roseann Clifford	2008 Sunview Drive	Champaign	IL	61821	217-352-2360
James Clingan	523 East 2250 North	Ogden	IL	61859	
Jim Clingan Auction & Realty, Inc. (c/o James S. Clingan)	523 East 2250 North	Ogden	IL	61859	
Charles & Ruth Cowden and Eickenberg	PO Box 345	Baileys Harbor	WI	54202	920-839-2320
Charles A. Cowden	104 Britton Avenue	Hendersonville	NC	28791	920-839-2320
Ruth Eickenberg	5 Lake Pointe Court	Bloomington	IL	61704	920-839-2320
D & L Farms, Inc. and Rita Shelhouse	1347 Molloy Drive	Rantoul	IL	61866	
D & L Farms, Inc. (c/o Daniel B. Molloy)	1347 Molloy Drive	Rantoul	IL	61866	
Rita Shelhouse	1347 Molloy Drive	Rantoul	IL	61866	
Edward DePasque Trust	261 North Oak	Elmhurst	IL	60126	630-279-7050
Brian & Linda Diskin	5539 E 2400 North Road	Fithian	IL	61844	(217) 776-2270
Mark & Vicki Dixon	2605 South Muirfield Place	Urbana	IL	61802	217-202-0069
Douglas & Karla Duitsman	1403 East 2350 North Road	Armstrong	IL	61812	217-583-3351
John Dwyer Trust (c/o John V. Dwyer)	2527 Charter Oak Drive	Aurora	IL	60502	(630) 236-8411
Joan Dwyer Trust (c/o Joan C.Dwyer)	2527 Charter Oak Drive	Aurora	IL	60502	(630) 236-8411
Martha Edwards Trust (c/o Martha Edwards)	2515 Prarie Pl.	Champaign	IL	61822	
Mary & Charlette Elfe & Van Blokland Revocable Trust (c/o Busey Ag Services)	3002 West Windsor Road	Champaign	IL	61822	
Mary Ruth Elfe Revocable Trust (c/o Busey Ag Services)	3002 West Windsor Road	Champaign	IL	61822	
Charlotte R. Van Blokland Revocable Trust (c/o Busey Ag Services)	3002 West Windsor Road	Champaign	IL	61822	
Chris & Brian Elliott	36789 N. 370 East Road	Rankin	IL	60960	217-397-2422
Loretta Elliott and The Fruhling Family Trust	388 Gibbs Dr.	Rantoul	IL	61866	
Loretta Elliott	388 Gibbs Dr.	Rantoul	IL	61866	
The Fruhling Family Trust (c/o Julion Fruhling)	8300 E. Dixileta Dr., #300	Scottsdale	AZ	85266	
First Midwest Bank Trustee under the Will of Jeannette P. Miller	27 North Vermilon Street	Danville	IL	61832	
Kay Fiscus	105 Thomas Drive	St. Joseph	IL	61873	217-469-7512
William & Barbara Fleming	PO Box 97	Royal	IL	61871	217-841-0645
William & Barbara Fleming	303 Benjamin Street	Royal	IL	61871	217-841-0645
Jonathan Foley	9360 East 2150 North Road	Danville	IL	61834	217-776-2220
Larry Foster	28012 State Route 49	Armstrong	IL	61812	217-569-2566
Mark & M. Maureen Fourez	8698 East 2150 North Road	Danville	IL	61834	217-776-2630
Shirley Fourez	3778 East 2700 North Road	Potomac	IL	61865	217-776-2630
Albert Franzen Estate (c/o Marlene A. Chandler)	P.O. Box 206 300 Henson Drive	Broadlands	IL	61816	217-834-3259
Franzen Family Living Trust (c/o Thea M. Franzen)	200 W. International Av. Apt. B-231	Rantoul	IL	61866	
Larry Frerichs	2474 County Road 2500 East	Penfield	IL	61862	(217) 694-4198
Lois & Herbert Frerichs	305 Church	Royal	IL	61871	(217) 583-3337
Lois Arlene Frerichs	305 Church	Royal	IL	61871	(217) 583-3337
Douglas & Lori Frerichs	2634 County Raod 2300 North	Ogden	IL	61859	217-583-3128
Gene & Carolyn Frerichs	3690 East 2500 North River	Armstrong	IL	61812	217-776-2443
Gregory Frerichs	2506 County Road 2300 North	Ogden	IL	61859	(217) 469-2238
Stephen Frerichs	PO Box 61	Royal	IL	61871	
Louise Fruhling	31361 N 750 E Road	Potomac	IL	61865	(217) 893-4163
John Fruhling	2499 County Road 2600 North	Penfield	IL	61862	217-694-4135
Sylvia Fulk	P.O. Box 837	St. Joseph	IL	61873	
G & E Farms (c/o Roy Johnson)	2640 County Road 2500 East	Penfeld	IL	61862	
G.R.D Limited Partnership (c/o David Stevenson)	101 N. 10th Street	Lafayette	IN	47901	765-742-2986
Marsha Gates	104 Elizabeth St., P.O. Box 704	Tolono	IL	61880	217-485-5741
Roger & Betty Gronwald	508 E. Main Street	Royal	IL	61871	(217) 583-3135
Jason & Christina Grooms	3714 E CR 2350	Collison	IL	61831	
Stanley & Diane K. Frerichs	3714 E CR 2350 North Road	Fithian	IL	61844	
Christina Grooms	3714 E CR 2350	Collison	IL	61831	
Haldon Hadden	21240 N. 750 E. Road	Danville	IL	61834-5214	(217) 354-4325
Harry & Rachel Halliday	21740 N. 600 East	Fithian	IL	61844	217-776-2212
Betty Halverson	18 Dulzura Lane	Hot Springs Village	AR	71909	501-915-8064
Hamilton Farm Co., Inc.	394 Mesa Drive	Rifle	CO	81650	(217) 446-6450
Delores & Alan Harms (c/o Delores Ann Harms)	305 W. Main, P.O. Box 87	Royal	IL	61871	
Bernita & Marvin Harms Rev. Trust (c/o Bernita A. Harms)	2592 County Road 2145 North	St. Joseph	IL	61873	217-583-3386
George Harrison	2943 E. 2500 North Rd.	Armstrong	IL	61812	(217) 776-2286
John Harrison	5444 E. 2500 North Rd.	Armstrong	IL	61812	(217) 776-2286
William & Jeannette Hart Trust	474 Marcus Drive	Lewisville	TX	75057	(972) 436-8249
Wendy Heeren Revocable Trust (c/o Wendy M. Heeren)	50 Maywood Drive	Danville	IL	60832	(217) 442-3123
Jillene Henderson	2651 County Road 2150 North	Ogden	IL	61859	
Randall & Sandra Hendricks	825 S. Stockholm Road	Paxton	IL	60957	217-379-9645
Donald & Linda Hicks	1799 County Road 2700 East	Ogden	IL	61859	217-840-2513
Erna Hinrichs	1037 Englewood Drive	Rantoul	IL	61866	217-892-9544
Ernest Hinrichs	1982 County Road 2100 North	Urbana	IL	61802	217-694-4528
Mildred Hinrichs Family Trust (c/o Laveda Clem)	1982 County Road 2100 North	Urbana	IL	61802	217-694-4528
Carl & Anne Horneman & Mueller (c/o Steve Ludwig)	7918 E. 2250 North Road	Danville	IL	61834	217-474-8706
Carl P. Horneman Revocable Trust (c/o Steve Ludwig)	7918 E. 2250 North Road	Danville	IL	61834	217-474-8706
Anne Horneman Mueller (c/o Steve Ludwig)	7918 E. 2250 North Road	Danville	IL	61834	217-474-8706

Harold & Darlene Hoveln	P.O. Box 134	Royal	IL	61871	217-583-3380
Edgar & Sharon Hoveln	408 Moraine Drive	Rantoul	IL	61866	217-369-4741
Wilbert & Mary Jane Hoveln	2304A CR 3000N	Gifford	IL	61847	(217) 568-7206
Gary Hoveln	2518 County Road 2600 East	Penfield	Il	61862	
Claas & Grace Hoveln Trust (c/o Gary Hoveln)	2518 County Road 2600 East	Penfield	IL	61862	
Claas Edward Hoveln Trust (c/o Gary Hoveln)	2518 County Road 2600 East	Penfield	IL	61862	
Margaret Hubbard	296 Sandringham Road	Rochester	NY	14610	
Rita Huffman	43 Cavalier Court	Danville	IL	61834	217-442-0637
Marvin & Pamela Ideus	401 Eden Park Drive	Rantoul	IL	61866	217-893-1302
Royce & Shauna Ideus	2229 County Road 2600 North	Gifford	IL	61847	217-694-4766
Earl & Delores Ideus	508 North West Street	Gifford	IL	61847	217-568-7772
Alfred Ideus	2124 County Road 2400 East	St. Joseph	IL	61873	(217) 694-4760
Gina Isabelli	6070 E. 2150 North Road	Fithian	IL	61844	
Michael & Eileen Jarboe Trust	2792 County Road 2400 North	Penfield	IL	61862	217-595-5687
Roy and Barbara Johnson	2640 County Road 2500 East	Penfield	IL	61862	(217) 694-4775
Mervin Jones	2234 East 2350 North Road	Fithian	IL	61844	217-776-2486
Mervin Jones	2234 East 2350 North Road	Fithian	Il	61844	217-776-2486
Arleene Juvinall Living Trust	2805 S. Boulder Drive	Urbana	IL	61802	
Robert Kampe	1687 East 1300 North Road	Milford	IL	60953	(815) 473-4259
Thomas & Phyllis Kasting	1595 North Hurricane Road	Franklin	IN	46131	317-736-9542
Kibler Family Trust (c/o Linda K. Jensen)	789 County Road 3300 North	Dewey	IL	61840	217-897-1775
James Klassen (c/o Camp Farm Management)	P.O. Box 707	Champaign	IL	61824	
Claude Knigge	2333 East County Road 2350 North	Fithian	IL	61844	(217) 776-2350
Norma Jean Knight	24698 N. 500 E. Road	Armstrong	IL	61812	217-260-1157
Brad & Mona Knight	24484 N 500 East Road	Armstrong	IL	61812	217-621-3379
Howard Koch	6115 Route 34, PO Box 755	Oswego	IL	60543	
LeRoy & Bonita Kopman	117 Susan Drive	Dwight	IL	60420	(815) 584-2283
Judith, LeRoy & Bonita Kopmann	P.O. Box 7	Royal	IL	61871	217-583-3036
Barry & Lisa Krumwiede	665 Ritter Drive	Batavia	IL	60510	(630) 761-3097
Janet Landskroner (c/o Swires Land & Management)	112 North Vermilion	Danville	IL	61832	(217) 443-8980
Thomas & Beverly Lee	2308 Naples Court	Champaign	IL	61822	(217) 355-9905
Robert Long	411 South Pearl	Bluffs	IL	62621	217-754-3800
Brian Loschen	2692 County Road 2300 N	Ogden	IL	61859	217-583-3176
Mark Loschen	2455 County Road2050 N	St. Joseph	IL	61873	(217) 583-3225
Janis Loschen	301 E. Duitsman PO Box 92	Royal	IL	61871	217-583-3253
Randall & Deanna Loschen	2629 County Road 1800 North	Ogden	IL	61859	(217) 582-2607
Gerald & Melody Loschen	3343 E 2700 N. Road	Potomac	IL	61865	(217) 569-2291
Delores & Arnold Loschen Trust	2654 County Road 2400 N	Ogden	IL	61859	217-583-3137
Stephen & Eve Ludwig	9 Harding Place	Danville	IL	61832	217-474-8706
Mary Ludwig	7918 E. 2250 North Road	Pontiac	IL	61764	217-474-8706
John & Erna Ludwig (c/o Judy Gorham)	409 North Cherry Street	Galesburg	IL	61401	(765) 497-4842
Bradley & Sally Ludwig	23256 North 620 East Road	Fithian	IL	61844	(217) 304-3703
Bradley & Sally Ludwig	23256 N. 620 E. Road	Fithian	IL	61844	(217) 304-3703
Dennis Madigan RLT (c/o Dennis D. Madigan)	18877 Medford St.	Bevery Hills	MI	48025	(248) 646-7737
Bonnie Manion	15000 East 4000 North Road	Hoopeston	IL	60942	217-415-3321
Valerie Marran Trust (c/o Valerie Marron)	5444 Shallows Place East	Santa Rosa	CA	95409	(707) 537-1829
Linda Marron	1691 East 2250 North Road	Fithian	IL	61844	217-583-3366
Pat Marron	1691 East 2250 North Road	Fithian	IL	61844	217-583-3366
Pat and Linda Marron	1691 East 2250 North Road	Fithian	IL	61844	217-583-3366
Pat and Linda Marron	1691 East 2250 North Road	Fithian	IL	61844	217-583-3366
Douglas & Kimberly Marsh	9713 E 2150 N. Road	Danville	IL	61834	(217) 776-2604
McClain Farm Trust (c/o Larry E. Foster)	28012 State Route 49	Armstrong	IL	61812	217-569-2566
Kipling & Karen Mecum	804 Lakeshore Drive	Tuscola	IL	61953	217-253-9259
Timothy & Sharlene Mecum	P.O. Box 278	Mansfield	IL	61854	
Darrell & Marilyn Mennenga	5205 Beech Ridge Road	Nashville	TN	37221	(615) 662-1995
Virginia Miles	5625 East 2600 North Road	Collison	IL	61831	217-776-2730
Miles Children's Trust (c/o Frank Young)	c/o Frank R. Young, Trustee	Armstrong	IL	61812	
Robert & Virginia Miles Trust B	5625 E. 2600 N. Road	Collison	IL	61831	217-776-2730
Edward and Susan Miller	21339 Newtown Road	Oakwood	IL	61858	(217) 354-2376
Nancy Nash (c/o Camp Farm Management)	P.O. Box 707	Champaign	IL	61824	
Nicholson Partners L.P. (c/o Bert Nicholson)	125 Lakeridge Rd.	Danville	IL	61832	217-442-6346
Shermars Ohana Trust (c/o Mary Elizabeth Creech)	4030 E 2350 North Road	Fithian	IL	61844	217-776-2752
Michael O'Neill	PO Box 236	Philo	IL	61864	
O'Neill Farms, Inc. (c/o Eugene O'Neill)	3449 Lincoln Trail Road	Fithain	IL	61844	217-548-2530
Gene & Deanna Ostebur	3828 E Whippoorwill Lane	Byron	IL	61010	217-583-3121
Louis and Laverne Ostebur	2293 County Road 2600 East	Ogden	IL	61853	(217) 583-3129
Herbert & Rosa Osterbur	2091 E. 2355 North Road	Armstrong	IL	61812	(217) 776-2286
Herbert & Betty Osterbur Trust	PO Box 74, 302 Benjamin Drive	Royal	IL	61871	217-583-3063
Carol, Cliifford & Helen Peak & Green	417 Seymour St. PO Box 1	Oakwood	IL	61858	
Carol Sage Peak	206 Ridgeview	Danville	IL	61832	
Helen A. Green	206 Ridgeview	Danville	IL	61832	
Gebka Ehmen Sage	206 Ridgeview	Danville	IL	61832	
Carol, Helen & Gebka Peak, Green & Sage	417 Seymour St., PO Box 1	Oakwood	IL	61858	217-548-2530
Carol Sage Peak	206 Ridgeview	Danville	IL	61832	217-548-2530
Clifford Peak	206 Ridgeview	Danville	IL	61832	217-548-2530
Helen A. Green	206 Ridgeview	Danville	IL	61832	217-548-2530
Robert & Dorene Pflugmacher	866 East 2250 North Road	Ogden	IL	61859	217-568-7823
William Pflugmacher	333 Eller Drive	Gifford	IL	61847	
LaVeda Pollock Trust (c/o Lester Frerichs)	3233 Artesian Avenu	Armstrong	IL	61812	
Vernon & Norine Rademacher	306 W. Main St. P.O. Box 177	Royal	IL	61871	217-469-7487
Wayne Rademacher	22010 North 330 East Raod	Fithian	IL	61844	217-776-2480
Rademacher Farms Inc. (c/o Rich Rademacher)	2853 County Road 2600 East	Penfield	IL	61862	(217) 202-6646
Arnold & Emma Rademacher Trusts	PO Box 28	Royal	IL	61871	217-583-3272
Robert & Donna Ramm	23568 North 100 East Road	Armstrong	IL	61812	(217) 583-3356
Nancy Ramm (c/o Robert & Donna Ramm)	23568 North 100 East Rd.	Armstrong	IL	61812	
Ruth Roberts	4935 East 2500 North Road	Armstrong	IL	61812	(217) 776-2652
Reka Sage	2304A County Road 3000 North, Apt #203	Gifford	IL	61847	217-568-7570
Wayne & Roxie Sage	2545 County Road 2400 North	Ogden	IL	61853	217-694-4558
John & Susan Sandusky	9878 East 2150 North Road	Danville	IL	61834	217-504-2749
Sappenfield Family Trust (c/o Gerald F. Sappenfield)	414 E. Kyle St.	Ogden	IL	61859	217-776-2786
Joan & Robert Sattler (c/o Robert & Joan Sattler)	207 McKinley	Milford	IL	60953	(815) 889-5366
Aleta Schlueter Trust (c/o Aleta Schlueter)	2814 East 2250 North Road	Fithian	IL	61844	(217) 776-2283
Lorine Schluter	3075 CR 200 East	Rantoul	IL	61866	217-892-9304
Harm & Vernetta Schluter	522 Garden Street	Rantoul	IL	61866	217-892-5917
Leon Schluter	110 Church, P.O. Box 186	Royal	IL	61871	217-202-6956
Lawrence Schluter	27328 North 170 East Road	Armstrong	IL	61812	
Wayne Schluter	2446 E. County Road 2350 North	Fithian	IL	61844	(217) 776-2400
Schluter Family Trust (c/o Harm Schluter)	522 Garden	Rantoul	IL	61866	217-892-5917
Robert Schmidt	520 West Grove Ave.	Rantoul	IL	91866	(217) 215-4909
Rodrick Schmidt	3755 Crayton Road	Naples	FL	34103	
Robert Scott and 1863 Land Trust (c/o Janet Meyer)	3208 Ledgestone Court	Fort Collins	CO	80528	
Robert P. Scott Revocable Trust	107 Arrowhead Lane	Haines City	FL	33844	
Alsip Family Trust	107 Arrowhead Lane	Haines City	FL	33844	
Douglas Seimer	8018 E. 1800 N. Road	Oakwood	IL	61858	(217) 354-4182
Mark Seimer	402 Corbly, PO Box 27	Muncie	IL	61857	217-548-2451
Todd Seimer	1800 Perrysville Rd., Lot 51	Danville	IL	61834	217-446-4098
Frank & Joy Severs	27877 Potomac-Collison Road	Potomac	IL	61865	217-776-2702
Dan Shearin	2431 Parklake Dr.	Morris	IL	60450	(815) 483-8631
Shermars Ohana Trust (c/o Mary Elizabeth Creech)	4030 East 2350 North Road	Fithian	IL	61844	
Lorenz , Florence, & Robert Siuts & Frerichs	1205 East North Arrowhead Drive	Urbana	IL	61801	217-643-2705
Lorenz Siuts	1205 East North Arrowhead Drive	Urbana	IL	61801	217-643-2705

Florence M. Frerichs	1205 East North Arrowhead Drive	Urbana	IL	61801	217-643-2705
Robert Siuts	1205 East North Arrowhead Drive	Urbana	IL	61801	217-643-2705
Evelyn Sjuts	2331 Co. Rd. 2000 East	Urbana	IL	61802	217-694-4728
Evelyn & John Sjuts & Blue	2331 Co Rd. 2000 East	Urbana	IL	61802	217-583-3133
Alice Snyder (c/o John & Suan Sandusky)	9878 East 2150 North Road	Danville	IL	61834	217-504-2749
Charles and Linda Stark	116 E. Church Street	Savoy	IL	61874	(217) 351-8884
David & Constance Stevenson	60 Mill Drive	Lafayette	IN	47905	765-742-2986
Kenneth Suits	2738 County Road 2600 North	Penfield	IL	61862	217-595-5542
Rosetta Suits	2738 County Road 2600 North	Penfield	IL	61862	217-595-5542
Kenneth & Rosetta Suits	2738 County Road 2600 North	Penfield	IL	61862	217-595-5542
Jeffrey Suits	2703 County Road 2500 North	Penfield	IL	61862	217-595-5595
Eric Suits	2655 CR 2600 East	Penfield	IL	61862	217-595-0103
Takiff LLC (c/o Douglas Hirsh)	633 Skokie Blvd, LL-111	Northbrook	IL	60062	(847) 835-1300
Patricia Trimble	528 South Olmstead	Oakwood	IL	61858	217-354-4811
Charles Trimble (c/o Charles D. Trimble)	3285 East 2000 North Road	Fithian	IL	61844	217-474-2106
Trimble Family Trust (c/o Joann D. Trimble)	524 S. Oakwood Street, PO Box 527	Oakwood	IL	61858	217-354-4341
Carole Trowbridge	9655 E. 2150 N. Road	Danville	IL	61834	217-776-2260
David & Carole Trowbridge	9655 E. 2150 N. Road	Danville	IL	61834	217-776-2260
Steven & Douglas Tucker	4516 Wolf Road	Western Springs	IL	60558	708-246-0515
Carl & Jane Udovich	3526 Bankview Drive	Joliet	IL	60431	815-741-3026
David and Danita Uken	2146 County Road 2100 North	St. Joseph	IL	61873	(217) 694-4142
Vogel Family LP (c/o Swires Land & Management)	112 North Vermilion	Danville	IL	61832	217-443-8980
John G. Vogel Revocable Trust (c/o Swires Land & Management)	112 North Vermilion	Danville	IL	61832	217-443-8980
Mary Ellen Vogel Revocable Trust (c/o Swires Land & Management)	112 North Vermilion	Danville	IL	61832	217-443-8980
Scott Wahlfeldt	21474 North 600 East	Fithian	IL	61844	(217) 776-2620
Scott & Tracy Wahlfeldt	21474 North 600 East	Fithian	IL	61844	(217) 776-2620
Douglas & Susan Walker & Kingston	1111 Stockholm Road	Paxton	IL	60957	(217) 379-6810
Wayne Weber	1403 Waverly Drive	Champaign	IL	61821	217-356-0375
Velma Werner	312 Penny Lane	Peotone	IL	60468	
Wanda Wienke	6118 E 2500 North Road	Armstrong	IL	61812	
Gregory & Staci Wright	8553 East 2150 North Road	Danville	IL	61834	217-776-2429
Mark & Teresa Youmans	25953 N 170 East Road	Armstrong	IL	61812	217-595-5686
Mark Youmans	25953 N 170 East Road	Armstrong	IL	61812	217-595-5686
Frances Youmans	2671 East 2600 North	Armstrong	IL	61812	217-595-5686
Mark, Travis & Michael Youmans	25953 N. 170 East Road	Armstrong	IL	61812	217-595-5686

Appendix C
Decommissioning Plan

June 2011

CALIFORNIA RIDGE WIND ENERGY PROJECT DECOMMISSIONING REPORT

VERMILION COUNTY, ILLINOIS

Invenergy

Prepared for:

California Ridge Energy LLC
c/o Invenergy Wind LLC
One South Wacker Drive
Suite 1900
Chicago, IL 60606

Prepared by

HDR Engineering, Inc.
701 Xenia Avenue South
Minneapolis, MN 55416

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CALIFORNIA RIDGE WIND ENERGY

SYSTEM DESCRIPTION

The California Ridge Wind Energy, LLC (Project), is proposed to be a 200 Megawatt (MW) wind energy conversion system in Vermilion and Champaign counties, located north of the town of Royal and south of the cities of Gifford and Potomac, Illinois. The proposed wind farm will consist of the following primary components:

Item	Number	Unit measure
Wind Turbines	134	Each
Wind Turbine Foundations	134	Each
Step-Up Transformers	134	Each
Access Roads	198,026	Lineal Foot (estimate)
Medium Voltage Cable	425,937	Lineal Foot (estimate)
Note: The exact number of turbines and lengths of access roads and medium voltage cables may change prior to construction. The lengths provided here are based on a May 2011 layout. California Ridge Wind Energy will provide as-built plans to the counties following construction.		

DECOMMISSIONING SEQUENCE

In the event the Project requires decommissioning and removal, the following sequence for removal of the components will be used:

- Remove Rotors and Turbines
- Remove Towers and Internals
- Remove Collection Step-Up Transformers
- Partial Remove Wind Turbine Foundations
- Remove Access Roads

After removal of all equipment and materials the area will be regraded and topsoil will be restored.

WIND TURBINES

WIND TURBINE TECHNICAL DATA

The Project will use 134 GE 1.6-100 50/60 Hz (690 Volt electric power) Wind Turbines manufactured by General Electric for a system generating capacity of approximately 214 MW (figure 1). The towers are painted monopole tubular steel, white in color, with a hub height of 100 meters (328 feet). The project will use 100 meter (328 foot) diameter rotors. Each turbine and rotor will reach a total height of 150 meter (492 feet) above ground surface.

Properly maintained wind turbines have a minimum life of 20 years (Ton van de Wekken 2007). At the end of the project life, depending on market conditions and project viability, the wind turbines may be "re-powered" with new nacelles, towers, and/or blades. Alternatively, the wind turbines may be decommissioned and removed. The major components of the wind turbines (the tower, the nacelle, and blades) are modular items that allow for ease of construction and disassembly during decommissioning or replacement. Each tower is made up of approximately 253 tons of painted steel which is potentially salvageable. The nacelle has an overall unit weight of approximately 40 tons and is constructed of a combination of salvageable steel and various other materials. Portions of the components within the nacelle and generators can also be salvaged for scrap.

METALS SALVAGE

Based on the construction details presented for the GE 1.6-100 turbine and associated tower and components, it was assumed that the tower and nacelle will yield approximately 80% salvageable materials. Since the hub assembly and bed plate are of manufactured steel, it is anticipated that the hub assembly will yield 100 percent salvageable metallic materials. Copper estimates were derived from manufacturers' cable descriptions, from the down tower cabling and internal wiring. Since the rotor/blades are constructed of predominantly non-metallic materials (fiberglass reinforced epoxy and carbon fibers), no salvage value for the rotor blades was used to develop the decommissioning cost estimate.

The current market value of steel, based on *Steelonthenet.com* (June 2011), is approximately $380 per ton. Assuming only the steel from each turbine assembly and tower will be salvaged the salvage value of each turbine and tower assembly is estimated to be approximately $124,465 each. Turbine salvage values could range from $40,688 to $174,652 given that market values fluctuate and the price of steel historically has shifted from $106 to $455 per ton.

The market value of copper has fluctuated dramatically this past year. As of December 2009, the price is approximately $4.14 per pound ($8,280 per ton). Therefore, estimated salvage value for copper is approximately $53,820 per turbine. The total value for both copper and steel would be approximately $180,785 per turbine. The table below summarizes the potential salvage value per turbine.

Item	Unit	Price/unit	Price per Turbine
Tower (80% steel)	252.95 Ton	$380	$76,897
Nacelle (80% steel)	27.6 Ton	$380	$8,390
Hub (100% steel) and bed plate	101.1 Ton	$380	$38,418
Anchor Bolts	2.0 Ton	$380	$760
Total Steel price			**$124,465**
Copper	6.5 Ton	$8,280	$53,820
Transformers	1 each	$2,500	$2,500
Grand Total			**$180,785**

The estimated 2011 cost of erecting a turbine tower, hub, blades, and nacelle is approximately $98,000. Therefore, the dismantling costs will be approximately $98,000 per turbine location in 2011 costs. When the cost to transport the salvage unit is included, the total cost of dismantling the turbines and removing them from the site will be approximately $129,000 per turbine. The removal costs are summarized in the conclusions of this report. The remainder of this report addresses the decommissioning costs for the surface and subsurface components.

WIND TURBINE TRANSFORMERS

Wind Turbine Transformer Design/Decommissioning

Each turbine step-up transformer sits adjacent to the turbine and is approximately 6 feet high and 6 feet wide. Each transformer will be disconnected, removed from site, and disposed of according to environmental and other regulatory conditions current at the time of the decommissioning. Salvers have indicated that they would remove the transformers for a $2,500 fee per turbine. After decommissioning activities, the transformer pad areas will be scarified, as necessary and in consultation with the landowner, and the land restored as near as practicable to its original condition with native seed and soils.

WIND TURBINE FOUNDATIONS

Wind Turbine Spread Foundation Design/Decommissioning

Each octagonal spread foundation pedestal and base is required by Vermilion County to be removed to a depth of 36 inches below the proposed final ground surface. The upper 54 inches of the turbine foundation will be removed by a jack hammer mounted on a bobcat or excavator. Complete off-site removal for demolition and disposal of the removed portions of the foundations is required per the lease agreement between the Project and the landowners hosting turbines. For the purpose of this report, the cost of removal and disposal off site is used to estimate the decommissioning costs of the foundations.

There is essentially no salvage value to the turbine foundations. The spread footing foundation design will consist of a solid reinforced concrete circular pedestal with dimensions of approximately 17 feet diameter, and an overall pedestal height of approximately 4 feet, 6 inches. Below the foundation pedestal is the foundation base section, an estimated octagonal geometry that is approximately 60 feet across the flat sides of the octagon, with an overall base thickness of 8 feet, 6 inches. The base sits on the supporting sub-grade approximately 12 feet below finish grade. A typical spread footing design is shown in Figure 2. The removal and disposal of the foundations are estimated as follows:

Activity	Cost	Unit
Mobilization and Excavation - Assume 1 Foundation per Day	$2,500	per Foundation
Concrete Demolition - Assume 1/2 of a Foundation Pedestal per Day	$10,000	per Foundation
Disposal/Backfill - Assume 1 Foundation per Day	$3,500	per Foundation
Subtotal	$16,000	per Foundation
Total Estimated Cost for 134 Foundation Removals	**$2,144,000**	**Total**

ACCESS ROADS

Typical Access Road Construction Details

For the purposes of this report, the total length of access roads for the Project has been estimated at 198,026 linear feet, or 37.5 miles. The typical access road detail is included as Figure 3. The final access roads to each turbine will be approximately 16 feet wide with enlarged areas at the turbine sites and at intersections with connecting public roads. The existing soils will be excavated, shaped, and graded to match the typical contour of the land adjacent to the access road and compacted prior to construction of the roads. The construction of the access roads may consist of a geotextile fabric placed on a prepared subgrade with 6 inches of aggregate base (pit run gravel) and 6 inches of aggregate surface course Type B (CA-6), resulting in the estimated quantities as shown below:

Item	Number	Unit
Geotextile Fabric	352,046	Square Yards
Aggregate Base Course	58,674	Cubic Yards
Aggregate Surface Course	58,674	Cubic Yards

Access Road Decommissioning and Public Street Repair

Access road decommissioning will involve the removal and transportation of the aggregate materials from the site to a nearby site where the aggregate can be processed for salvage. It is possible that the local townships or farmers may accept this material without processing to use on their local roads; however, for the purpose of this report it is assumed that the materials will be removed and hauled to a reprocessing

site within 25 miles of the wind farm site. Any public streets damaged due to the reclamation process shall be repaired.

The decommissioning will also involve the removal and proper disposal of the geotextile fabric. It is assumed that during excavation of the aggregate a large portion of the geotextile will be "picked up" and sorted out of the aggregate at the aggregate reprocessing site. Geotextile fabric that is remaining, or large pieces that can readily be removed from the excavated aggregate, will be disposed of off site at a landfill.

In determining salvage value for the road materials, it was assumed that 75 percent of the aggregate surface course can ultimately be salvaged for future use as aggregate base course. It was also assumed that 50 percent of the aggregate base course could be reused as aggregate base course and that the remaining materials would be viable for general fill in non-structural fill areas. The geotextile fabric would not be suitable for use after removal so was not considered to have a salvage value. The following salvage values are used for the road materials assuming they will be picked up and hauled from the process site by others:

Removal Items	Cost	Unit
Reprocessed Aggregate to be used as Base Course	$5.30	per Cubic Yard
Remaining Aggregate to be used as Fill	$1.60	per Cubic Yard

The only scenario that could offer a lower cost for removal and salvage of the aggregate would be disposal at a nearby site that needed inert fill. There are no known sites in the area. Therefore, the decommissioning cost of the roads is based upon removal and salvage of the aggregate for use as base course or inert fill within a 25-mile radius of the wind farm site. The estimated costs for access road decommissioning would be as follows:

Removal Items	Quantity	Cost	Salvage	Net Cost
Geotextile Fabric (Square Yards)	352,046	$176,023	-	$176,023
Aggregate Base Course (Cubic Yards) (Reprocessed as Aggregate Base Course)	29,337	$357,914	$155,487	$202,427
Aggregate Base Course (Cubic Yards) (Reprocessed as Fill)	29,337	$357,914	$46,939	$310,974
Aggregate Surface Course (Cubic Yards) (Reprocessed as Aggregate Base Course)	44,006	$536,870	$233,231	$303,640
Aggregate Surface Course (Cubic Yards) (Reprocessed as general fill in non-structural fill areas)	14,669	$178,957	$23,470	$155,487
Totals		$1,607,678	$459,127	$1,148,551

CRANE PADS

Crane pads will be approximately 60 feet by 40 feet and consist of compacted native material and approximately 1 foot of base fill. Crane pad aggregate will be removed and pad areas will be filled and scarified after decommissioning activities. The restoration will be performed in consultation with the landowner and pad sites will be restored as near as practicable to their original condition with native seed and soils. The estimated costs for crane pad decommissioning would be as follows:

Removal Items	Quantity	Cost	Salvage	Net Cost
Geotextile Fabric (Square Yards)	35,733	$17,867	-	$17,867
Aggregate Base Course (Cubic Yards) (Reprocessed as Aggregate Base Course)	2,978	$36,329	$15,782	$20,547
Aggregate Base Course (Cubic Yards) (Reprocessed as Fill)	2,978	$36,329	$4,764	$31,564
Aggregate Surface Course (Cubic Yards) (Reprocessed as Aggregate Base Course)	5,956	$72,658	$31,564	$41,093
Aggregate Surface Course (Cubic Yards) (Reprocessed as general fill in non-structural fill areas)	1,489	$18,164	$2,382	$15,782
Totals		$181,347	$54,493	$126,853

CABLES

Cable Wire and Trench Typical Installation

All cable trenches will be a minimum of 48 inches below the ground surface. In all cable locations outside of access roads, the trenches are backfilled with on-site earthen materials with at least 6 inches of topsoil. At roads, the cables will be in conduits which are a minimum of 48 inches below the final surface. The estimated total medium voltage cable length is 425,937 lineal feet.

Cable Wire and Trench Decommissioning

Since the cables will be located well below the ground surface and will not impose an obstacle to farm activities, physical removal of the cables is not considered to be required to restore the former use of the ground.

EARTHWORK AND TOPSOIL RESTORATION

Once all of the aboveground improvements are removed, the remaining work to complete Project decommissioning will consist of shaping and grading of the areas to as near as practicable to their original contour prior to construction of the turbine sites and access roads.

It is estimated that approximately 58,674 cubic yards of earthwork and topsoil will be necessary for restoration. Based upon the typical cost for this type of work within the Vermilion and Champaign county area, and the assumption that earth and topsoil can be found within 25 miles of the wind farm site, the following estimate of decommissioning cost for earthwork and topsoil restoration is provided:

Item	**Quantity (Cubic Yards)**	**Cost per Cubic Yard**	**Total Cost**
Earth Fill (cubic yards) (access roads, crane pad and foundation pedestal areas)	64,630	$10.60	$685,078
Topsoil (cubic yards) and seed planting	64,630	$10.60	$685,078

SUMMARY OF DECOMMISSION COSTS

The following is a summary of the total estimated costs for Project decommissioning. This estimate was developed using the various cost resources listed below:

- R.S. Means
- HDR Historical Data
- Vendor Quotes
- Current/Historic Commodity Prices
- Estimator Judgment

Salvage Value	
Turbine Component Salvage Value (134 Turbines x $180,785)	$24,225,217
Decommissioning Costs	
Turbine Removal (134 x $129,000)	$17,286,000
Turbine Foundation Removal	$2,144,000
Access Roadway Removal	$1,148,551
Crane Pad Removal	$126,853
Cable Removal	$0
Earthwork and Topsoil	$1,370,154
Subtotal	**$22,075,559**
Salvage Less Decommissioning	**$2,149,658**
Net Salvage Value per Turbine (134 Total)	**$16,042**

The estimated total decommissioning costs of the Project can be completely recovered by the salvage and resale value of the turbine components. These values are based on estimated 2011 costs and do not assume any inflation costs or market fluctuations.

FINANCIAL ASSURANCE

To ensure accuracy in the material quantities outline above, HDR recommends that this report and the final engineering drawings be reviewed by our office prior to operation of the Project to verify final material quantities.

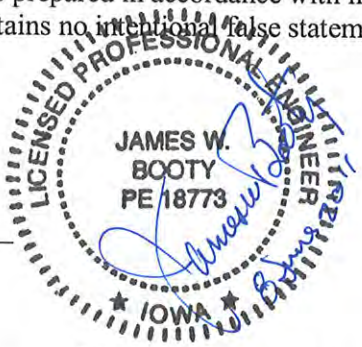
For Vermilion County, financial assurance in an amount sufficient to adequately perform the required decommissioning per this plan and according to all local, state, and federal environmental regulations will be secured by California Ridge Wind Energy LLC. California Ridge Wind Energy LLC will provide financial assurance in the amount equal to the professional engineer's certified estimate of the decommissioning costs.

CONCLUSION

I certify that this report is an accurate representation of the anticipated decommissioning costs (or salvage value) at this preliminary stage of development and was prepared in accordance with industry standards of care for engineering evaluations of this type and contains no intentional false statements or misrepresentations.

Signed: _____
Matt Redington, PE, Project Manager

Signed: _____
James W. Booty, PE, Senior Project Engineer



I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Illinois.

_____

Date 6/8/2011 **Reg. No.** 062.062441

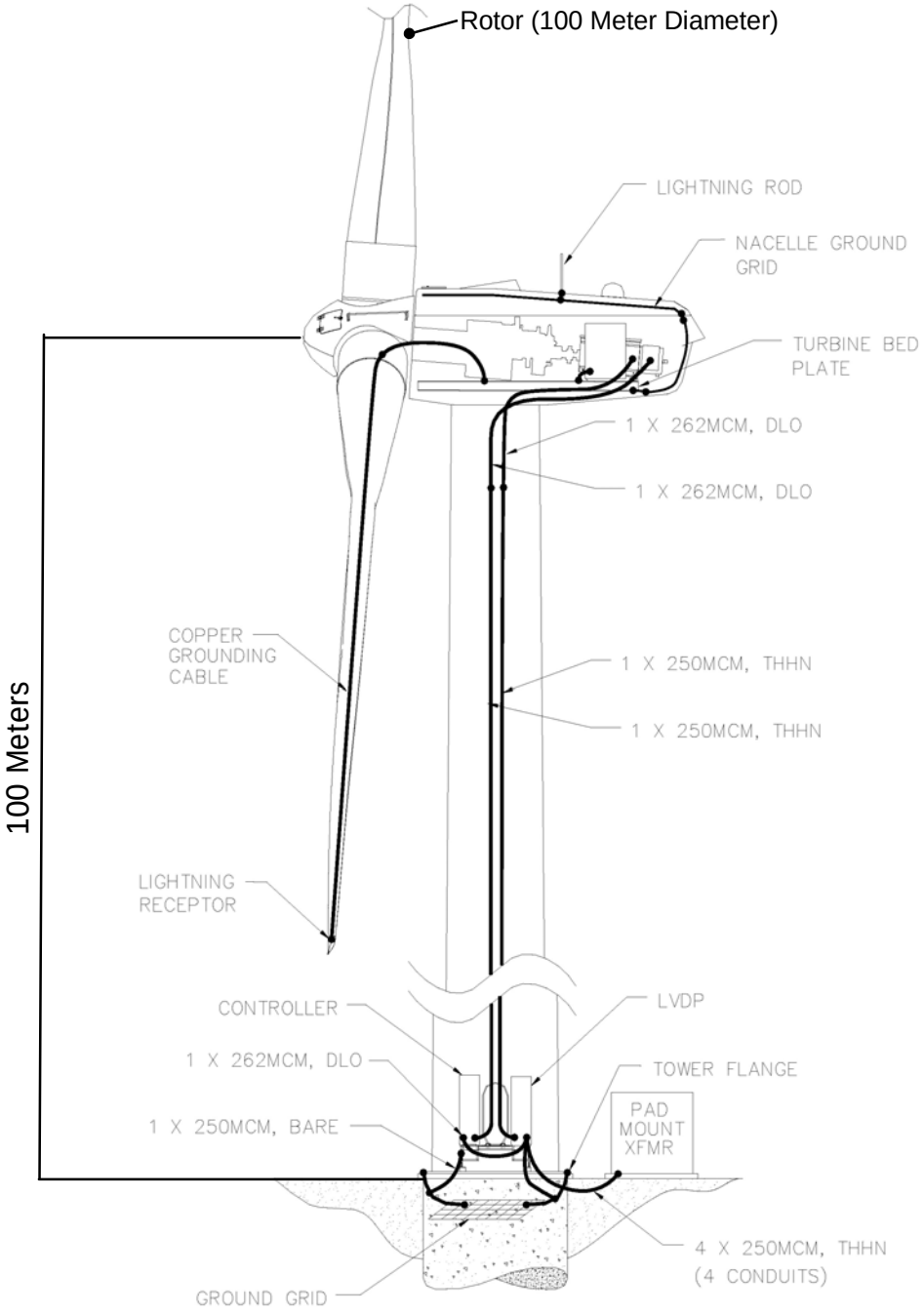
REFERENCES

GE Energy Commercial Documentation Wind Turbine Generator Systems 1.6-100 – 50 & 60 Hz, Weights and Dimensions; 2010 (1.6-100 xxHz_GD_all Comp_ContrDocWSDxxx00.doc)

Ton van de Wekken, KEMA Nederland B.V. 2007. *Distribution Generation and Renewables*. Wind Farm Case Study.

Steelmaking Commodity Prices, World steel raw materials & energy prices. Steelonthe net.com, accessed June 6, 2011. http://www.steelonthenet.com/commodity_prices.html

FIGURE 1
INVENERGY WIND LLC
CALIFORNIA RIDGE DECOMMISSIONING PLAN
TYPICAL WIND TURBINE GENERATOR



Note: Referenec Image from Technical Documentation, Wind Turbine Generator Systems, GE.

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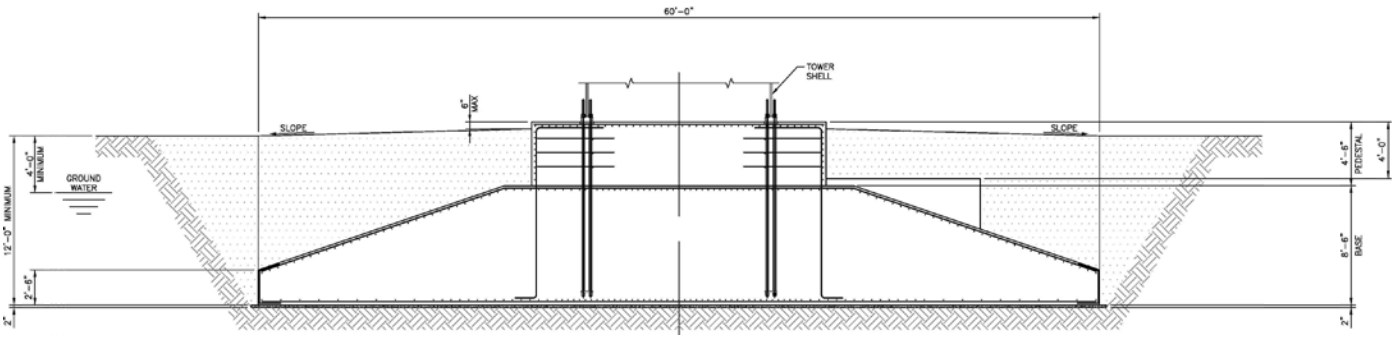
FIGURE 2
INVENERGY WIND LLC
CALIFORNIA RIDGE DECOMMISSIONING PLAN
TYPICAL FOUNDATION SECTION



TYPICAL FOUNDATION SECTION 1
SCALE: NONE SK-1

HDR

Invenergy

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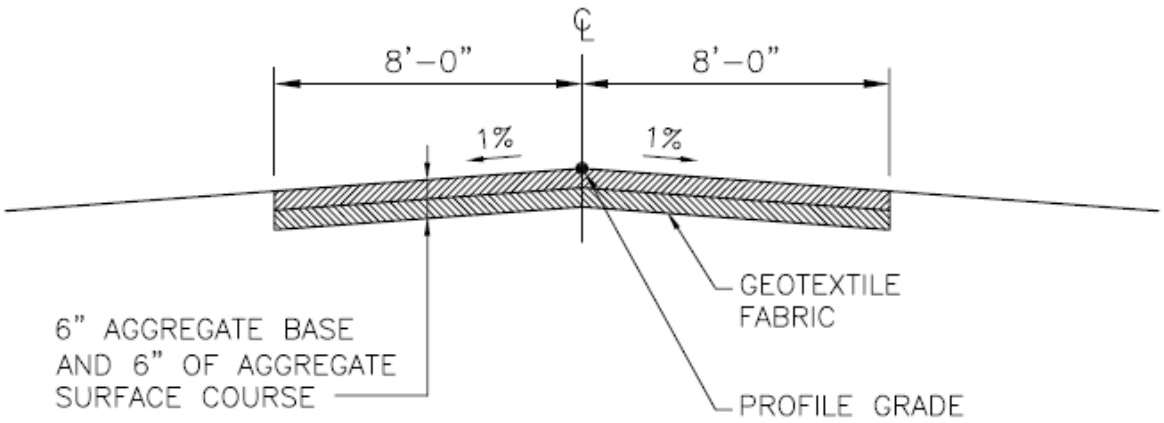
FIGURE 3
INVENERGY WIND LLC
CALIFORNIA RIDGE DECOMMISSIONING PLAN
TYPICAL ACCESS ROAD SECTION



TYPICAL ACCESS ROAD– SECTION A

SCALE: NONE

1
SK–2

HDR

Invenergy

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Appendix D
Noise Monitoring

California Ridge Wind Energy Project
Sound Analysis Report

Executive Summary

California Ridge Energy LLC, a wholly owned subsidiary of Invenergy Wind LLC (together with its subsidiaries, Invenergy), is proposing to construct up to 134 wind turbine generators (WTG), using the 1.6 MW GE 1.6-100, manufactured by General Electric (GE) as part of the California Ridge Wind Energy Project (Project). The Project is located in Vermilion and Champaign counties, Illinois, in the townships of Pilot, Ogden, and Compromise. Of the 134 proposed wind turbine generators, 104 are anticipated to be located within Vermillion County. This report addresses project-related sound from all proposed turbines in both Vermillion and Champaign counties.

HDR Engineering, Inc. (HDR) performed a sound analysis in support of the proposed Project. HDR collected 24-hour ambient sound measurements at four locations within the Vermillion County portion of the Project that are representative of the Project area. HDR modeled 134 wind turbine generators in the evaluation of Project-related sound using the Cadna-A model. The Cadna-A model is widely used throughout the environmental acoustics community and is an appropriate tool for this Project; its use was enhanced by the inclusion of site-specific terrain. Modeling results were compared with maximum allowable sound emissions under Illinois rules to determine compliance at all noise-sensitive receivers within 1 mile of the Project area. The monitoring, modeling, and compliance determinations were applied on a spectral basis and evaluated based on sound emissions limits as stated in Illinois Rules Title 35: Environmental Protection, Subtitle H: Noise, Chapter I: Pollution Control Board, Part 901 – Sound Emissions Standards and Limitations for Property Line Noise Sources.

Results of the sound analysis are as follows:

- Existing ambient sound levels were measured within the Project area and ranged from 34 to 59 dBA on an hourly equivalent (L_{eq}) basis.
- Existing ambient sound levels in Vermillion County exceed daytime maximum allowable noise limits in a total of three octave bands (1 kHz, 2 kHz, and 4 kHz).
- Existing ambient sound levels at Vermillion County monitoring sites exceed nighttime maximum allowable noise limits in a total of four octave bands (1 kHz, 2 kHz, 4 kHz, and 8 kHz).

- Daytime analysis results indicate that sound from 134 wind turbines is at least 7 dB below the maximum allowable noise limit in all octave bands at all noise-sensitive receivers within the Vermillion County portion of the Project area.
- Nighttime analysis results indicate that sound from 134 wind turbines meets the maximum allowable noise limit in all octave bands at all noise-sensitive receivers within the Vermillion County portion of the Project area.

HDR's analysis concludes that Project-related sound levels, as modeled from 134 GE 1.6-100 wind turbines in Vermillion and Champaign counties, will comply with Illinois Rules Title 35: Environmental Protection, Subtitle H: Noise, Chapter I: Pollution Control Board, Part 901 – Sound Emissions Standards and Limitations for Property Line Noise Sources.

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Appendices

1.0 Introduction

California Ridge Energy LLC, a wholly owned subsidiary of Invenergy Wind LLC (together with its subsidiaries, Invenergy), is proposing to construct up to 134 wind turbine generators (WTG), using the 1.6 MW GE 1.6-100, manufactured by General Electric (GE) as part of the California Ridge Wind Energy Project (Project). The Project is located in Vermilion and Champaign counties, Illinois, in the townships of Pilot, Ogden, and Compromise. Of the 134 proposed wind turbine generators, 104 are anticipated to be located within Vermillion County. This report addresses project-related sound from all proposed turbines in both Vermillion and Champaign counties.

HDR Engineering, Inc. (HDR) performed a sound analysis in support of the proposed Project. HDR collected 24-hour ambient sound measurements at four locations in Vermillion County that are representative of the Project area. HDR evaluated Project-related sound using the Cadna-A model. The Cadna-A model is widely used to assess sound from wind turbines and is an appropriate tool for this Project; its use was enhanced by the inclusion of site-specific terrain. Modeling results were compared with maximum allowable sound emissions under Illinois rules to determine compliance at all noise-sensitive receivers within the Vermillion County portion of the Project area. The monitoring, modeling, and compliance determinations were performed on a spectral basis, i.e. each of the nine frequency octave bands that comprise the applicable Illinois regulation (Illinois Rules Title 35: Environmental Protection, Subtitle H: Noise, Chapter I: Pollution Control Board, Part 901 – Sound Emissions Standards and Limitations for Property Line Noise Sources).

2.0 Fundamentals of Environmental Acoustics

Noise is defined as unwanted sound. Sound is made up of tiny fluctuations in air pressure. Sound, within the range of human hearing, can vary in intensity by over one million units. Therefore, a logarithmic scale, known as the decibel scale (dB), is used to quantify sound intensity and to compress the scale to a more manageable range.

Sound is characterized by both its amplitude (how loud it is) and frequency (or pitch). The human ear does not hear all frequencies equally. In fact the human hearing organs of the inner ear deemphasize very low and very high frequencies. The A-weighted scale (dBA) is used to reflect the selective sensitivity of human hearing at moderate sound levels, approximately 40 dBA. This scale puts more weight on the range of frequencies that the average human ear perceives, and less weight on those frequencies we do not hear as well. The human range of hearing extends from approximately 3 dBA to around 140 dBA. Table 1 shows a range of typical sound levels from common activities.

Table 1
Common Sound Sources and Levels

Sound Pressure Level (dBA)	Typical Sources
120	Jet aircraft takeoff at 100 feet
110	Same aircraft at 400 feet
90	Motorcycle at 25 feet Gas lawn mower at 3 feet
80	Garbage disposal
70	City street corner
60	Conversational speech
50	Typical office
40	Living room (without TV)
30	Quiet bedroom at night

Source: Environmental Impact Analysis Handbook, ed. by Rau and Wooten, 1980.

Using the decibel scale, sound levels from two or more sound sources cannot be arithmetically added together to determine the overall sound level. Rather, the combination of two sounds at the same level yields an increase of 3 dB. On average, a 3-dB change in the A-weighted sound level is generally considered a noticeable change in loudness, whereas a 5-dB increase is clearly noticeable. A 10-dB change is perceived by most people as a doubling or halving of the perceived loudness.

The sounds that we hear are a combination of many different pitches. These different pitches represent different frequencies and it is possible to use a frequency analyzer to separate sound into its different frequency components, low to high. The frequency ranges used within this analysis are called octave bands; frequency is measured in Hertz (Hz), or cycles per second. Data that has been sorted into these octave bands is called spectral data.

Environmental sound is often expressed as a sound level occurring over a stated period of time, typically one hour. When the acoustic energy is averaged over the stated period of time, the resulting equivalent sound level represents the energy-based average sound level. This is called the equivalent level, or L_{eq}. Therefore, the L_{eq} represents a constant sound that, over the specified period, has the same acoustic energy as the time-varying sound.

3.0 Existing Ambient Sound Levels

HDR measured existing ambient sound levels in the Project area. HDR selected monitoring locations by reviewing digital aerial photographs of the Project area and identifying areas whose ambient acoustical environment appeared to be representative of the Project area. Therefore, the monitoring data represents the ambient acoustic environment of rural, agricultural areas in the Project area that

were generally expected to have quiet ambient daytime and nighttime sound levels. The sound monitoring locations are shown in Appendix A.

HDR performed four 24-hour measurements in the Vermillion County portion of the Project area. A sound level meter (SLM) was used to collect noise monitoring data every hour for a continuous 24-hour period. Each hour, the SLM stored unweighted spectral (in whole-octave bands) hourly L_{eq}, minimum sound level, maximum sound level, L_{10}, L_{50}, and L_{90} values. The SLM also stored broadband, A-weighted, hourly sound levels. 24-hour noise measurements were performed during the week of May 4, 2009. The Vermillion County sound measurement locations are listed in Table 2.

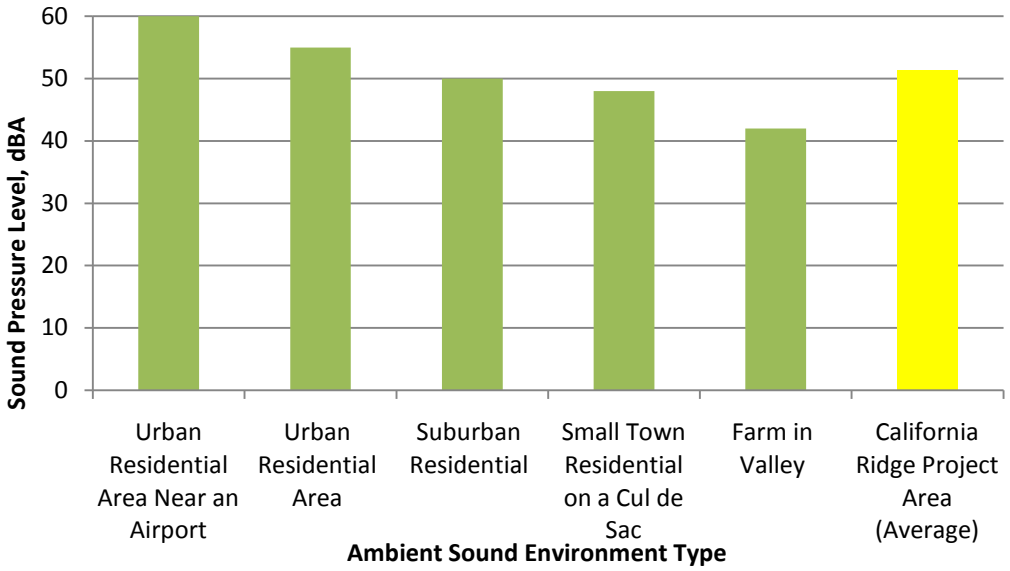
Table 2
Measurement Locations

Measurement Location	County	Measurement Period
ML1	Vermillion	05/05/09-05/06/09
ML2	Vermillion	05/05/09-05/06/09
ML3	Vermillion	05/06/09-05/07/09
ML4	Vermillion	05/06/09-05/07/09

The ambient acoustic environment in the Project area is dominated by sound from wind and vehicular traffic, with additional contributions from agriculture-related activities. Existing ambient sound levels were measured within the Project area and ranged from 34 to 59 dBA, on an L_{eq} basis. Daytime ambient sound levels were dominated by vehicular traffic and natural sources. Nighttime ambient sound levels were generally dominated by natural sources.

Figure 1 presents typical daytime sound levels, as stated in the *Handbook of Noise Control* by Cyril Harris, for various residential areas.

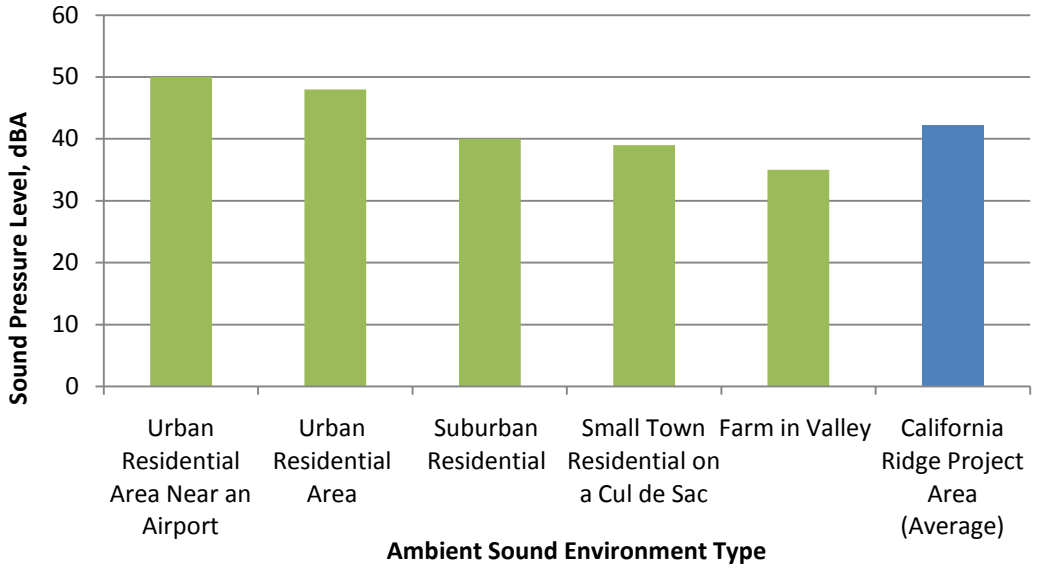
Figure 1
Average Daytime Sound Levels



As demonstrated in Figure 1, the outdoor ambient sound levels throughout the Project Area are comparable to a suburban residential area during daytime sound level surveys. Measured daytime sound levels for the Project Area averaged 51 dBA on an hourly, L_{eq} basis. Elevated sound levels occurred in areas near truck haul routes.

Figure 2 presents typical nighttime sound levels for various residential areas in comparison to measured sound levels in the California Ridge project area.

Figure 2
Average Nighttime Sound Levels



As demonstrated in Figure 2, the outdoor ambient sound levels throughout the Project Area during nighttime are also comparable to a suburban residential area sound level survey. Measured nighttime sound levels for the Project Area averaged 42 dBA on an hourly, L_{eq} basis. This is approximately 10 dB lower than daytime hours, which is typical of diurnal sound patterns.

Table 3 summarizes the number of hours in which measured ambient sound levels exceeded the Illinois Pollution Control Board (IPCB) maximum allowable sound level limits.

Table 3
Existing Sound Levels and IPCB Limits

Monitoring Location	Number of Hours Exceeding IPCB Sound Limits		
	Daytime	Nighttime	Total
ML1	7.00	2.00	9.00
ML2	3.00	2.00	5.00
ML3	9.00	5.00	14.00
ML4	10.00	4.00	14.00
Average	7.25	3.25	10.50

As shown in Table 3, daytime and nighttime monitoring data exceeds the maximum allowable sound level limits defined in Illinois Rules Title 35: Environmental Protection, Subtitle H: Noise, Chapter I: Pollution Control Board, Part 901 – Sound Emissions Standards and Limitations for Property Line Noise Sources. Daytime sound levels exceed IPCB limits in three octave bands, the 1 kHz, 2 kHz, and 4 kHz octave bands. Nighttime monitoring data shows existing sound levels exceeding sound limits in four octave bands, the 1 kHz, 2 kHz, 4 kHz, and 8 kHz octave bands.

HDR's monitoring results show that existing ambient sound levels in the Project area exceed three or more of the Illinois Environmental Protection Agency (IEPA) spectral noise limits during both the daytime and the nighttime. This is consistent with noise monitoring data HDR collected in other rural areas of Illinois with high quality wind resources..

Appendix B presents detailed sound monitoring results.

4.0 Project-Related Sound Levels

Wind turbine sound emissions data were provided by General Electric, the turbine manufacturer. Table 4 presents the spectral sound power level (SWL) data provided by General Electric. Manufacturer's data consists of octave band sound emissions data measured at ground level with

corresponding wind speeds measured at a height of 10 meters and corresponding wind speeds at hub height.

Table 4
Spectral Sound Emissions Data – GE 1.6-100

Turbine	Octave Band SWL (dBA)								
	31.5	63	125	250	500	1 k	2 k	4 k	8 k
GE 1.6-100 Wind Turbine	82.5	92.2	95.9	95.2	95.5	99.9	99.3	90.5	71.6

HDR used Cadna-A, an acoustical analysis software package designed for evaluating environmental sound from stationary and mobile sources, to evaluate Project-related sound. Cadna-A is a three-dimensional sound model based on International Standards Organization (ISO) 9613, "Attenuation of Sound during Propagation Outdoors," adopted by ISO in 1996. This standard provides a widely accepted engineering method for the calculation of outdoor environmental sound levels from sources of known sound emission.

General Electric's sound power levels were based on the results where a GE 1.6-100 turbine was tested at a 14 meters/second (31 miles/hour) wind speed, the wind speed that produces the loudest turbine sound level. Therefore, turbine sound emission levels are maximized within the model. Use of this data is a conservative analysis and overestimates turbine sound levels during lower wind conditions. Newer generation turbines, such as the GE 1.6-100, use variable speed rotors which produce lower levels of aerodynamic sound at low wind speeds, as opposed to previous generation constant-speed designs, which generate the same amount of sound regardless of wind speed. Given this, older designs tend to be more audible during low wind conditions. This conservative modeling minimizes the chance that turbine sound levels are under-predicted at receptors.

HDR modeled the 134 wind turbine generators located in Champaign and Vermillion counties. Project-related sound levels were calculated at 293 residences (the noise-sensitive receptors) in the Vermillion County portion of the Project area. The entire digital terrain model reproduced the physical terrain of the area encompassing approximately 33,532 acres. Coordinates for the turbine and residence locations, as well as the terrain contours, were obtained from the geographic information system (GIS) database created for this Project.

5.0 Analysis Results

The operational conditions in the model were not differentiated for the time of day. The model result, therefore, is the project-related noise for an hour at any time of the day. The receptor—or home—with the highest modeled project-related sound level was selected for analysis.

Table 5 summarizes the daytime sound analysis. The daytime sound analysis compares Cadna-A results with the maximum allowable daytime sound emissions per octave band to determine compliance with applicable Illinois sound limits at Class A land uses, such as residences.

Table 5
Summary of Daytime Sound Analysis

Data Type	Octave Band (dB)								
	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Cadna-A Modeling Results	68	64	54	43	38	40	35	18	0[1]
Maximum allowable daytime sound level	75	74	69	64	58	52	47	43	40
Δ Maximum allowable daytime sound level versus maximum predicted Project related sound levels	-7	-10	-15	-21	-20	-12	-12	-25	-40

[1]*Negative sound levels have been rounded to 0 dB*

Daytime sound analysis results in Table 5, above, indicate that noise from 134 wind turbines are at least 7 dB below the maximum allowable sound limit in all octave bands at all noise-sensitive receivers included in this analysis. Existing daytime ambient sound levels within the Project Area exceed the maximum Project-related sound levels in all eight octave bands. Existing sound levels exceed project-related sound levels by at least 9 dB in all octave bands.

Table 6 summarizes the nighttime sound analysis. The daytime sound analysis compares Cadna-A results with the maximum allowable nighttime noise level per octave band to determine compliance with applicable Illinois sound regulations.

Table 6
Summary of Nighttime Sound Analysis

Data Type	Octave Band (dB)								
	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Cadna-A Modeling Results	68	64	54	43	38	40	35	18	0[1]
Maximum allowable nighttime sound levels	69	67	62	54	47	41	36	32	32
Δ Maximum allowable nighttime sound levels versus maximum predicted Project related sound levels	-1	-3	-8	-11	-9	-1	-1	-14	-32

[1]*Negative sound levels have been rounded to 0 dB*

Nighttime sound analysis results in Table 6, above, indicate that sound from 134 wind turbines meets the maximum allowable sound limit in all octave bands at all noise-sensitive receivers within 1 mile of the Project Area. Predicted project-related sound levels are anticipated to be at least 1 dB below

IPCB nighttime sound emissions limits. Existing nighttime ambient sound levels within the Project Area exceed the maximum Project-related sound levels in six of the nine octave bands.

The highest overall predicted wind turbine noise level, expressed as an hourly average noise level (L_{eq}) is 45 dBA. When the IEPA daytime and nighttime sound limits are converted to a single, A-weighted Leq value, those limits are 51 dBA and 61 dBA, respectively. These values are 6 and 16 dBA higher than predicted turbine sound levels.

Sound contours depicting Project-related sound on an overall hourly L_{eq} basis are presented in Appendix A. Appendix C shows raw Cadna-A modeling results.

6.0 Discussion of Operational Noise

As modeled, the loudest predicted turbine sound level at a receptor within Vermillion County is 45 dBA This is a relatively low level of outdoor sound and is comparable to a quiet living room, a quiet bedroom, a soft whisper at 5 feet, or an operating refrigerator (with closed door).

Predicted wind turbine sound levels can be related to more familiar sources in the Project area. For example, a food blender or garbage disposal at 3 feet (85 dBA), a diesel truck driving 50 mph at 50 feet (85 dBA), a vacuum cleaner at 10 feet (70 dBA), normal speech at 3 feet (60-65 dBA), heavy traffic at 300 feet (60 dBA), and background sound levels in a theatre or large conference room (35 dBA).

Due to technological advancements, (i.e., upwind versus downwind rotor placement, low-noise gearboxes, insulated nacelles, pitch-control rotors, vibration-isolated mechanical equipment, and variable-speed operation) sound levels for today's generation of wind turbines are lower than that of their predecessors.

Furthermore, the character of sound produced is more broadband in nature, and therefore largely absent of tones (whines, whirrs, buzzes, or hums) as well as impulsive (or thumping) qualities.

Portions of HDR's analysis produce overestimates of project-related sound levels during turbine operation. One element of conservatism in the acoustical modeling includes basing turbine noise emissions on a wind speed of 14 meters/second for each turbine, the maximum operating condition. Additionally, the Cadna-A modeling done for this project did not use project-specific meteorological data (wind rose). By eliminating wind rose data, the Cadna-A conservatively calculates sound levels at all receptors by assuming efficient downwind propagation from all directions all the time. These conservative additions result in predicted sound levels in excess of sound levels likely to be generated during turbine operation.

With the conservative additions, the analysis indicates that the majority of locations would experience turbine sound levels of less than 40 dBA (outdoors). This level is sufficiently low to minimize or eliminate any potential for sleep interference or indoor/outdoor speech interference, as defined by the US Environmental Protection Agency (EPA). Furthermore, these average hourly levels are compatible with parameters for acceptable levels of noise within residential land uses established by the EPA guidelines and the State of Illinois' requirements – per Title 35, Chapter I, Part 901.

7.0 Construction Noise

Activities associated with construction of access roads and foundations, excavation for and assembly of turbines, and equipment deliveries are likely to be the loudest sources of construction sound. Like most major projects, construction activities increase outdoor sound levels for a limited period of time. Sound levels would vary widely, depending on the phase of construction and specific tasks being performed. Construction would primarily occur over the course of a daytime shift during normal working hours, although it is possible that extensions of the basic workday, or moderate amounts of evening or weekend work would occur. However, increases in ambient sound associated with construction activities would typically take place only during weekday daytime hours from 7 a.m. to 10 p.m., so there would be little if any construction noise at night.

The average individual is likely to tolerate sound associated with construction, given its temporary nature, and the fact that the majority of construction will take place during daytime hours, (i.e., when acceptance of noise is higher, and the risk of sleep disturbance and interference with relaxation activities is low). While construction sound emissions will be discernable at some locations, they are not expected to increase ambient noise levels significantly for any appreciable period of time.

8.0 Conclusions

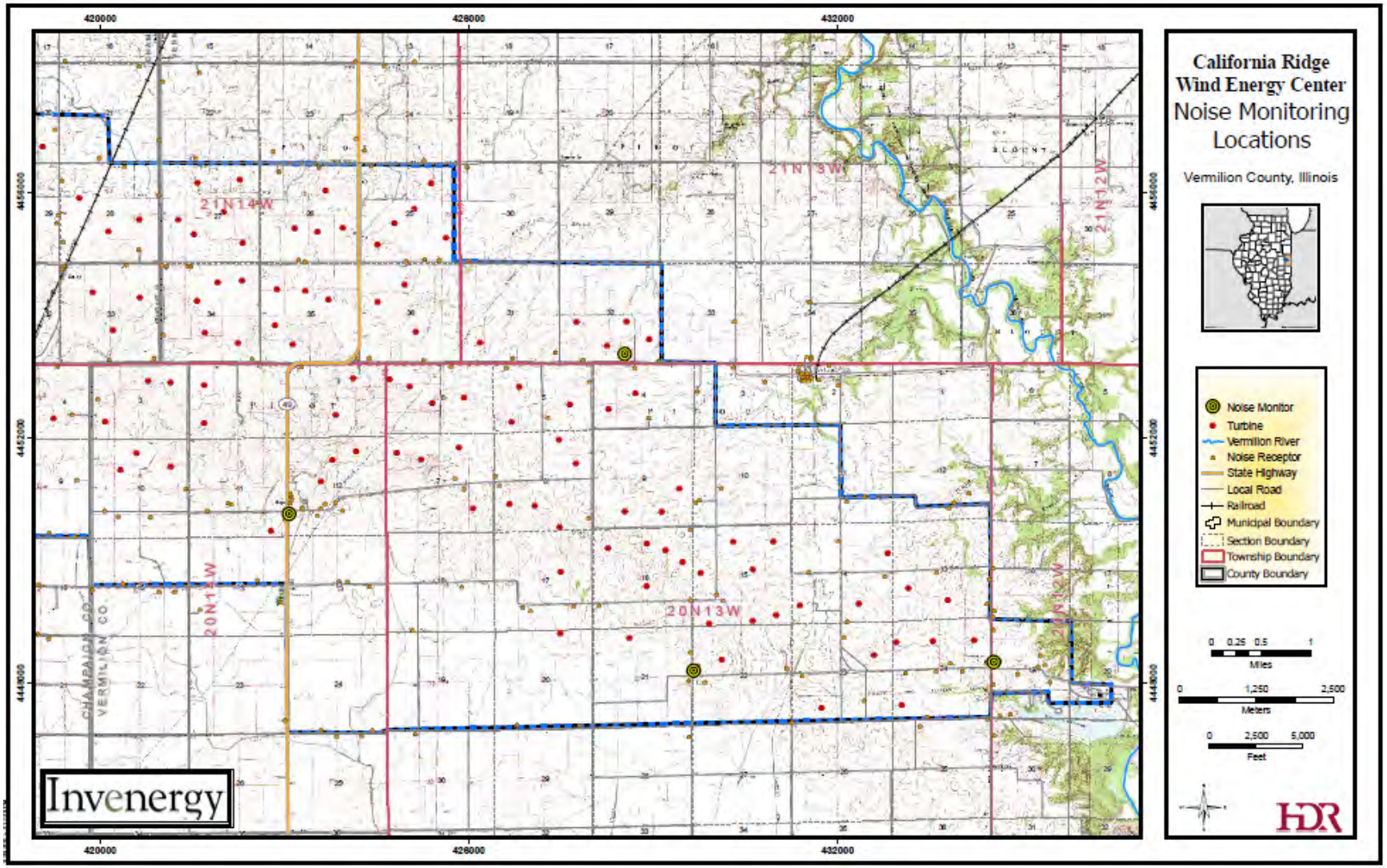
Analysis results indicate the following:

- The sound analysis was conducted in accordance with the accepted environmental impact assessment practices in the industry.
- Existing ambient sound levels were measured within the Vermillion County portion of the Project area and ranged from 34 to 59 dBA, on an L_{eq} basis.
- Existing sound levels at Vermillion County monitoring sites exceed daytime maximum allowable noise limits in a total of 3 octave bands (1 kHz, 2 kHz, and 4 kHz).
- Existing sound levels Vermillion County monitoring sites exceed nighttime maximum allowable noise limits in a total of four octave bands (1 kHz, 2 kHz, 4 kHz, and 8 kHz).

- Daytime analysis results indicate that sound emissions from 134 wind turbines are at least 7 dB below the maximum allowable noise limit in all octave bands at all noise-sensitive receivers within the Vermillion County portion of the Project area.
- Nighttime analysis results indicate that sound emissions from 134 wind turbines meet the maximum allowable noise limit in all octave bands at all noise-sensitive receivers within the Vermillion County portion of the Project area.
- Due to technological advancements in design, sound levels for today's generation of wind turbines are lower than that of their predecessors, especially at wind speeds lower than 31 mph. Furthermore, the character of sound produced is more broadband in nature and largely absent of tones or impulsive qualities.
- Wind turbine sound levels in the Project area are sufficiently low as to minimize or eliminate any potential for sleep interference or indoor/outdoor speech interference as defined by the EPA. These average hourly noise levels are compatible with guidelines established by the EPA for acceptable levels of noise within residential land uses and with Illinois Law Title 35, Chapter I, Part 901.
- While construction sound will be discernable at some locations, it is not expected to increase ambient sound levels significantly for any appreciable period of time. Construction would occur primarily during weekday daytime hours; there would be little or no construction sound at night.

HDR's analysis concludes that overall, A-weighted sound levels as modeled from 134 GE 1.6-100 wind turbines will be consistent with levels that are considered to be within a tolerance of safety for human health and welfare, and at or below ambient environmental noise levels existing on-site today.

Appendix A
Project Monitoring Locations and Predicted Sound Contours


420000
426000
432000
4456000
4452000
4448000
21N14W
21N13W
21N12W
20N14W
20N13W
20N12W
CHAMPAIGN CO
VERMILION CO
Invenergy
California Ridge
Wind Energy Center
Noise Monitoring
Locations
Vermilion County, Illinois
Noise Monitor
Turbine
Vermilion River
Noise Receptor
State Highway
Local Road
Railroad
Municipal Boundary
Section Boundary
Township Boundary
County Boundary
0 0.25 0.5 1
Miles
0 1,250 2,500
Meters
0 2,500 5,000
Feet
HDR

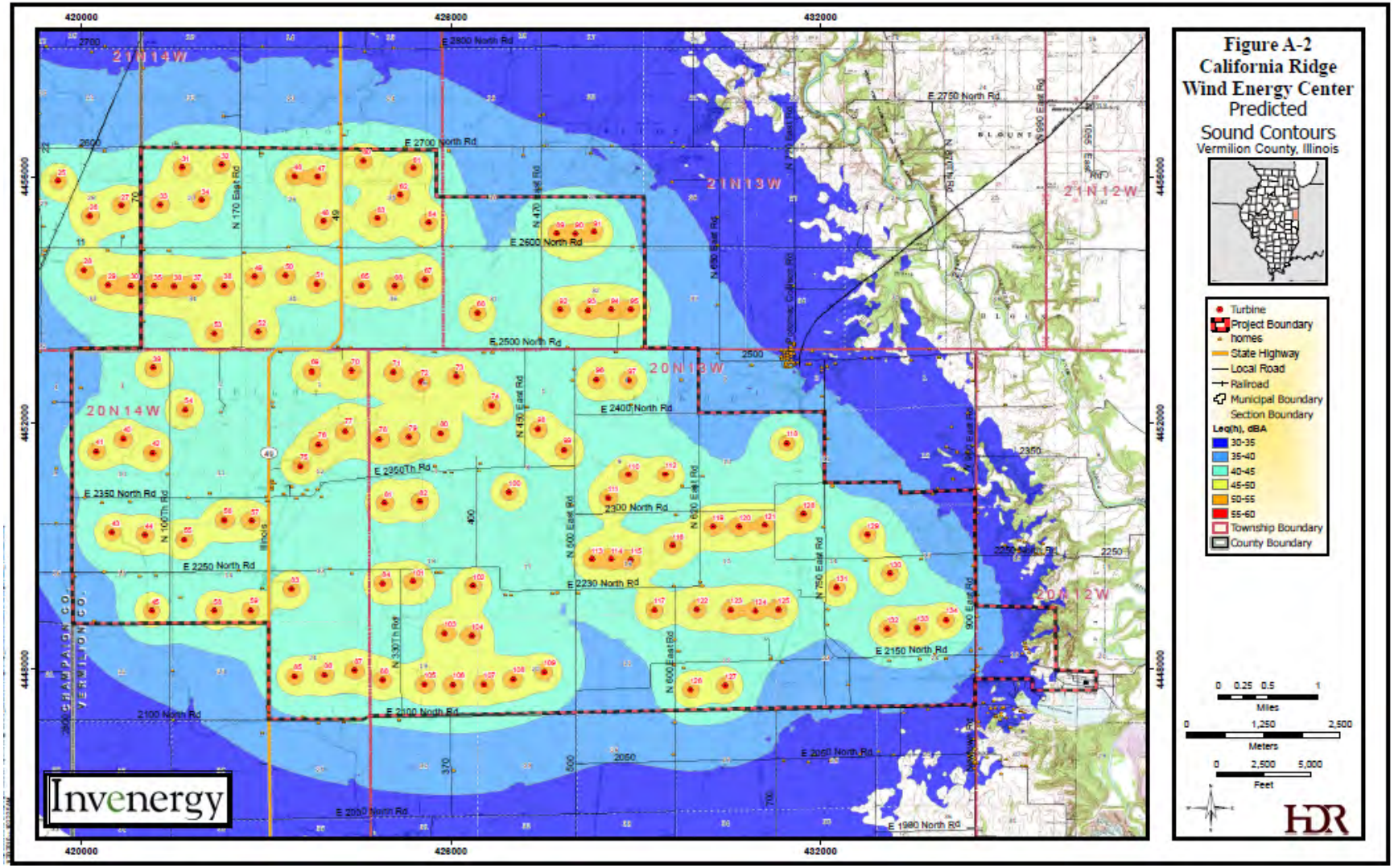


Figure A-2
California Ridge
Wind Energy Center
Predicted
Sound Contours
Vermilion County, Illinois
Turbine
Project Boundary
homes
State Highway
Local Road
Railroad
Municipal Boundary
Section Boundary
Leq(h), dBA
30-35
35-40
40-45
45-50
50-55
55-60
Township Boundary
County Boundary
Miles
Meters
Feet
Invenergy
HDR
21N14W
21N13W
21N12W
20N14W
20N13W
20N12W
E 2800 North Rd
E 2700 North Rd
E 2600 North Rd
E 2500 North Rd
E 2400 North Rd
E 2350Th Rd
E 2300 North Rd
E 2250 North Rd
E 2230 North Rd
E 2150 North Rd
E 2100 North Rd
E 2050 North Rd
E 2000 North Rd
E 1980 North Rd
E 2750 North Rd
N 170 East Rd
N 300Th Rd
N 100Th Rd
N 430 East Rd
N 500 East Rd
N 600 East Rd
N 750 East Rd
N 900 East Rd
420000
428000
432000
4456000
4452000
4448000

Appendix B
Detailed Sound Monitoring Data

Existing Ambient Sound Levels

HDR measured existing ambient sound levels in the Project area. HDR selected monitoring locations by reviewing digital aerial photographs of the Project area and identifying areas whose ambient acoustical environment appeared to be representative of the Project area. Therefore, the monitoring data represent the ambient acoustic environment of rural, agricultural areas in the Project area that were generally expected to have quiet ambient daytime and nighttime sound levels. The sound monitoring locations are shown in Appendix A.

HDR performed four 24-hour measurements in the Vermillion County portion of the Project area. A sound level meter (SLM) was used to collect noise monitoring data every hour for a continuous 24-hour period. Each hour, the SLM stored unweighted spectral (in whole-octave bands) hourly L_{eq}, minimum sound level, maximum sound level, L_{10}, L_{50}, and L_{90} values. The SLM also stored broadband, A-weighted hourly sound levels. 24-hour noise measurements were performed during the week of May 4th 2009. The Vermillion County sound measurement locations are listed in Table B-1.

Table B-1
Measurement Locations

Measurement Location	County	Measurement Period
ML1	Vermillion	05/05/09-05/06/09
ML2	Vermillion	05/05/09-05/06/09
ML3	Vermillion	05/06/09-05/07/09
ML4	Vermillion	05/06/09-05/07/09

The ambient acoustic environment in the Project area is dominated by sound from wind and vehicular traffic, with additional contributions from agriculture-related activities. Existing ambient sound levels were measured within the Project area and ranged from 34 to 59 dBA, on an L_{eq} basis. Daytime ambient sound levels were dominated by vehicular traffic and natural sources Nighttime ambient sound levels were generally dominated by natural sources.

Monitoring Location 1 (ML1)

Monitoring location 1 (ML1) was located in Pilot township in Vermillion County. Sound surveys at ML1 were performed in the front yard of a residence, across the street from Oakwood School. The primary sound sources at this location were vehicular traffic and natural sources.

Table B-2 summarizes the hourly measurements performed at ML1.

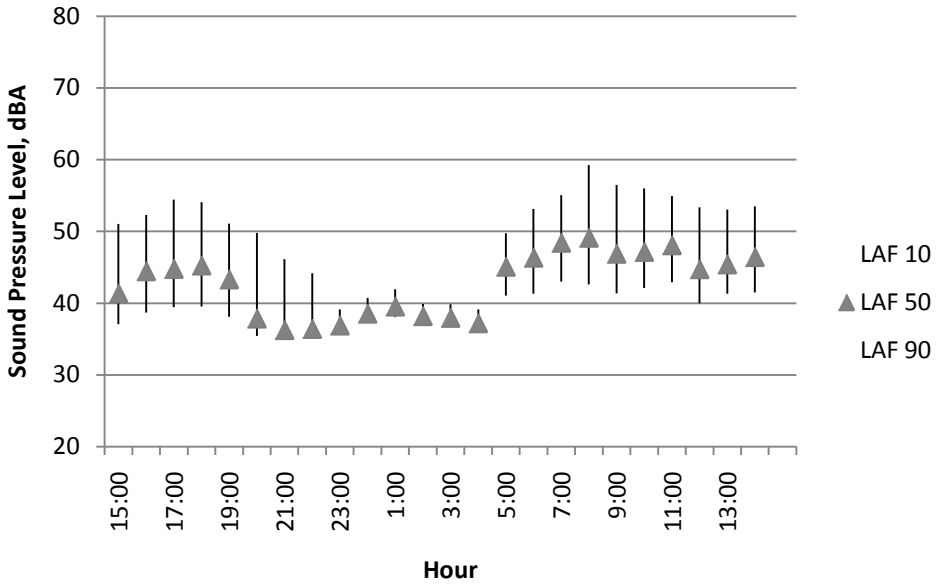
Table B-2
ML1 – Hourly Summary

Hour	Date (day-month-year)	Time (hh:mm:ss)	Duration (hh:mm:ss)	L_{eq} (dBA)
1	5-May-09	15:00:00	1:00:00	49
2	5-May-09	16:00:00	1:00:00	49
3	5-May-09	17:00:00	1:00:00	54
4	5-May-09	18:00:00	1:00:00	51
5	5-May-09	19:00:00	1:00:00	48
6	5-May-09	20:00:00	1:00:00	50
7	5-May-09	21:00:00	1:00:00	45
8	5-May-09	22:00:00	1:00:00	43
9	5-May-09	23:00:00	1:00:00	40
10	6-May-09	0:00:00	1:00:00	42
11	6-May-09	1:00:00	1:00:00	42
12	6-May-09	2:00:00	1:00:00	39
13	6-May-09	3:00:00	1:00:00	39
14	6-May-09	4:00:00	1:00:00	39
15	6-May-09	5:00:00	1:00:00	47
16	6-May-09	6:00:00	1:00:00	50
17	6-May-09	7:00:00	1:00:00	52
18	6-May-09	8:00:00	1:00:00	55
19	6-May-09	9:00:00	1:00:00	52
20	6-May-09	10:00:00	1:00:00	52
21	6-May-09	11:00:00	1:00:00	52
22	6-May-09	12:00:00	1:00:00	50
23	6-May-09	13:00:00	1:00:00	51
24	6-May-09	14:00:00	1:00:00	51

Hourly sound levels at ML1 varied from 39 to 55 dBA on an hourly L_{eq} basis. Examination of the table reveals that the highest hourly L_{eq} value (the loudest hour) occurred from 8:00 a.m. to 9:00 a.m., this likely coincides with morning bus traffic. Generally daytime sound levels were 10 dB louder than nighttime sound levels due to the presence of anthropogenic sound.

Figure B- 1 depicts the distribution of sound on an hourly basis. The top of each line represent the loudest 10% of the hour and the bottom of the line represents the quietest 10% of the hour. The triangle represents the median sound level.

Figure B- 1
ML1 - Sound Distribution



Median sound levels at ML1 ranged from 36 to 49 dBA dependant on the hour. There was a wide range of sound levels at ML1during daytime hours. During the daytime hours sound levels varied greatly, due to increased human activity. Sound levels during nighttime hours were fairly consistent with the L_{10} and L_{90} varying by 5 decibels on average.

Monitoring Location 2 (ML2)

Monitoring location 2 (ML2) was located in Pilot Township near 600 E Road and 2150 North Road. Sound surveys at ML2 were performed between May 5, 2009 and May 6, 2009. The primary sound sources at this location were vehicular traffic and agriculture related activities.

Table B-3 summarizes the hourly measurements performed at ML2.

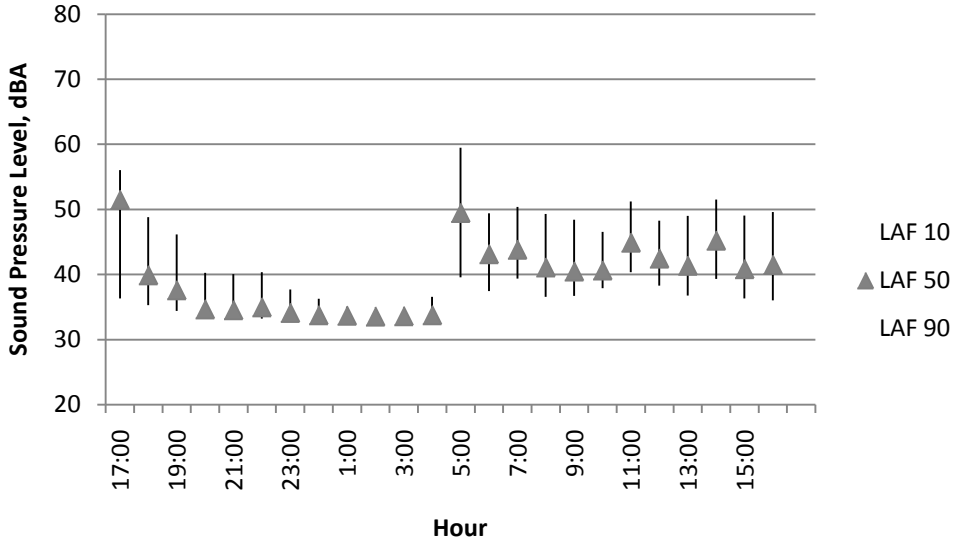
Table B-3
ML2 – Hourly Summary

Hour	Date (day-month-year)	Time (hh:mm:ss)	Duration (hh:mm:ss)	Leq (dBA)
1	5-May-09	17:00:00	1:00:00	56
2	5-May-09	18:00:00	1:00:00	53
3	5-May-09	19:00:00	1:00:00	47
4	5-May-09	20:00:00	1:00:00	46
5	5-May-09	21:00:00	1:00:00	40
6	5-May-09	22:00:00	1:00:00	43
7	5-May-09	23:00:00	1:00:00	40
8	6-May-09	0:00:00	1:00:00	35
9	6-May-09	1:00:00	1:00:00	34
10	6-May-09	2:00:00	1:00:00	34
11	6-May-09	3:00:00	1:00:00	34
12	6-May-09	4:00:00	1:00:00	42
13	6-May-09	5:00:00	1:00:00	59
14	6-May-09	6:00:00	1:00:00	49
15	6-May-09	7:00:00	1:00:00	51
16	6-May-09	8:00:00	1:00:00	47
17	6-May-09	9:00:00	1:00:00	45
18	6-May-09	10:00:00	1:00:00	45
19	6-May-09	11:00:00	1:00:00	49
20	6-May-09	12:00:00	1:00:00	46
21	6-May-09	13:00:00	1:00:00	46
22	6-May-09	14:00:00	1:00:00	49
23	6-May-09	15:00:00	1:00:00	50
24	6-May-09	16:00:00	1:00:00	46

Hourly sound levels at ML2 varied from 34 to 59 dBA on an hourly L_{eq} basis. Examination of the table reveals that the highest hourly L_{eq} value (the loudest hour) occurred from 5:00 a.m. to 6:00 a.m. Daytime sound levels were more than 10 dB louder than nighttime sound levels due to increased human activity. Sound levels during evening hours may be lower than depicted due to internal instrumentation noise.

Figure B-2 depicts the distribution of sound on an hourly basis for monitoring location2.

Figure B-2
ML2 - Sound Distribution



Median sound levels at ML2 ranged from 34 to 52 dBA dependant on the hour. As shown in Figure B-2, peak sound levels occurred during daytime and evening rush hours. Sound levels during nighttime hours were fairly consistent with the L_{10} and L_{90} varying by 6 decibels on average.

Monitoring Location 3 (ML3)

Monitoring location 3 (ML3) was located in the front yard of a residence in Pilot Township. Sound surveys at ML3 were performed between May 6, 2009 and May 7, 2009. The primary sound sources at this location were vehicular traffic, including truck traffic, and natural sources.

Table B-4 summarizes the hourly measurements performed at ML3.

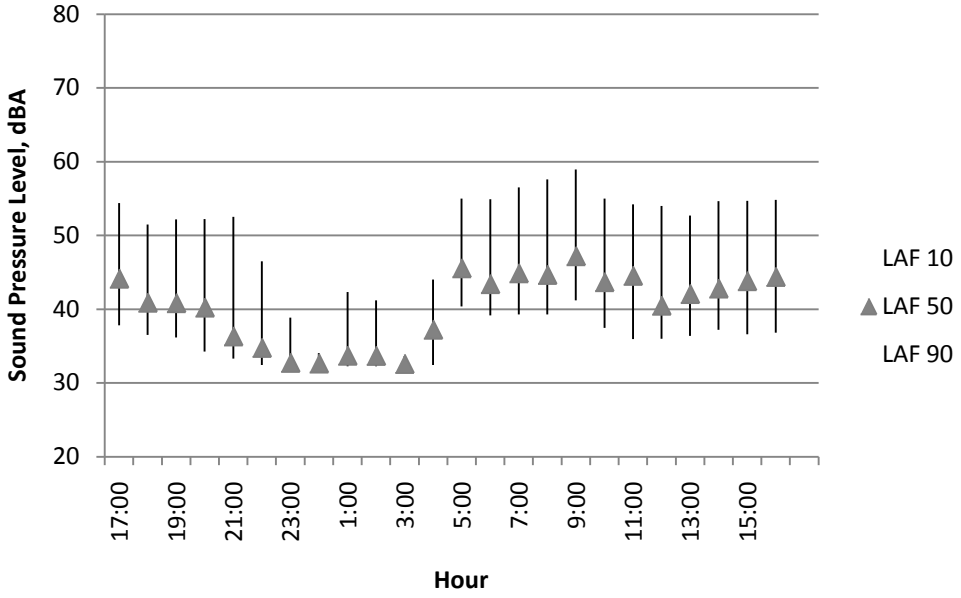
Table B-4
ML3 – Hourly Summary

Hour	Date (day-month-year)	Time (hh:mm:ss)	Duration (hh:mm:ss)	Leq (dBA)
1	6-May-09	17:00:00	1:00:00	55
2	6-May-09	18:00:00	1:00:00	50
3	6-May-09	19:00:00	1:00:00	50
4	6-May-09	20:00:00	1:00:00	50
5	6-May-09	21:00:00	1:00:00	50
6	6-May-09	22:00:00	1:00:00	45
7	6-May-09	23:00:00	1:00:00	41
8	7-May-09	0:00:00	1:00:00	36
9	7-May-09	1:00:00	1:00:00	44
10	7-May-09	2:00:00	1:00:00	42
11	7-May-09	3:00:00	1:00:00	36
12	7-May-09	4:00:00	1:00:00	45
13	7-May-09	5:00:00	1:00:00	52
14	7-May-09	6:00:00	1:00:00	52
15	7-May-09	7:00:00	1:00:00	55
16	7-May-09	8:00:00	1:00:00	56
17	7-May-09	9:00:00	1:00:00	56
18	7-May-09	10:00:00	1:00:00	54
19	7-May-09	11:00:00	1:00:00	58
20	7-May-09	12:00:00	1:00:00	54
21	7-May-09	13:00:00	1:00:00	53
22	7-May-09	14:00:00	1:00:00	54
23	7-May-09	15:00:00	1:00:00	56
24	7-May-09	16:00:00	1:00:00	54

Hourly sound levels at ML3 varied from 36 to 58 dBA on an hourly L_{eq} basis. Examination of the table reveals that the loudest hour occurred from 11:00 a.m. to 12:00 p.m. Sound level during this period were likely elevated due to increase truck traffic. Sound levels during the daytime and evening hours were influenced by vehicular traffic resulting in elevated sound levels throughout the day.

Figure B- 3 depicts the distribution of sound on an hourly basis for monitoring location 3.

Figure B- 3
ML3 – Sound Distribution



Median sound levels at ML3 ranged from 33 to 47 dBA dependant on the hour. During both daytime and nighttime period sound levels in any given hour varied greatly. On average sound levels varied 14 dB between the L_{10} and L_{90}. This indicates the presence of intermittent loud events such as infrequent truck passbys.

Monitoring Location 4 (ML4)

Monitoring location 4 (ML4) was located in a field between two residences in Pilot Township. The sound level meter was placed in the field at a distance from the roadway that was representative of the two adjacent homes. The primary sound sources at this location were vehicular traffic and agriculture related activities.

Table B-5 presents the hourly L_{eq} values HDR measured over 24 hours in the Vermillion County Project area at monitoring location 4.

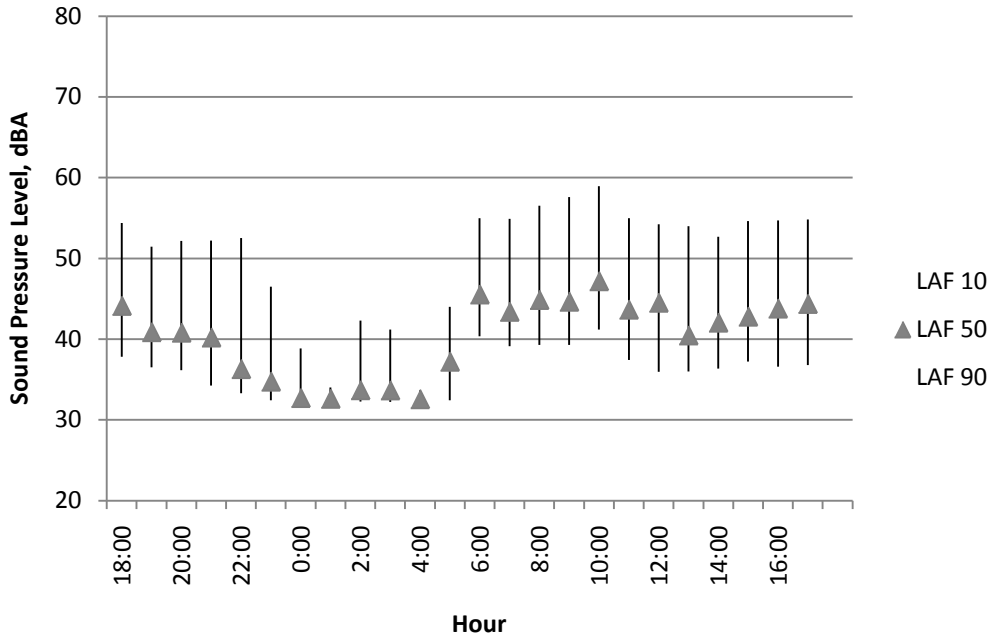
Table B-5
ML4 – Hourly Summary

Hour	Date (day-month-year)	Time (hh:mm:ss)	Duration (hh:mm:ss)	Leq (dBA)
1	6-May-09	18:00:00	1:00:00	55
2	6-May-09	19:00:00	1:00:00	50
3	6-May-09	20:00:00	1:00:00	50
4	6-May-09	21:00:00	1:00:00	50
5	6-May-09	22:00:00	1:00:00	50
6	6-May-09	23:00:00	1:00:00	45
7	6-May-09	0:00:00	1:00:00	41
8	7-May-09	1:00:00	1:00:00	40
9	7-May-09	2:00:00	1:00:00	35
10	7-May-09	3:00:00	1:00:00	34
11	7-May-09	4:00:00	1:00:00	36
12	7-May-09	5:00:00	1:00:00	45
13	7-May-09	6:00:00	1:00:00	52
14	7-May-09	7:00:00	1:00:00	52
15	7-May-09	8:00:00	1:00:00	55
16	7-May-09	9:00:00	1:00:00	56
17	7-May-09	10:00:00	1:00:00	56
18	7-May-09	11:00:00	1:00:00	55
19	7-May-09	12:00:00	1:00:00	52
20	7-May-09	13:00:00	1:00:00	52
21	7-May-09	14:00:00	1:00:00	53
22	7-May-09	15:00:00	1:00:00	54
23	7-May-09	16:00:00	1:00:00	56
24	7-May-09	17:00:00	1:00:00	54

Hourly sound levels at ML3 varied from 36 to 58 dBA on an hourly L_{eq} basis. Examination of the table reveals that the loudest hour occurred from 9:00 a.m. to 10:00 a.m. Sound levels during the daytime and evening hours were influenced by local vehicular traffic resulting in elevated sound levels throughout the day.

Figure B-4 depicts the distribution of sound measured at ML4. The distribution of sound is presented on an hourly basis.

Figure B- 4
ML4– Sound Distribution

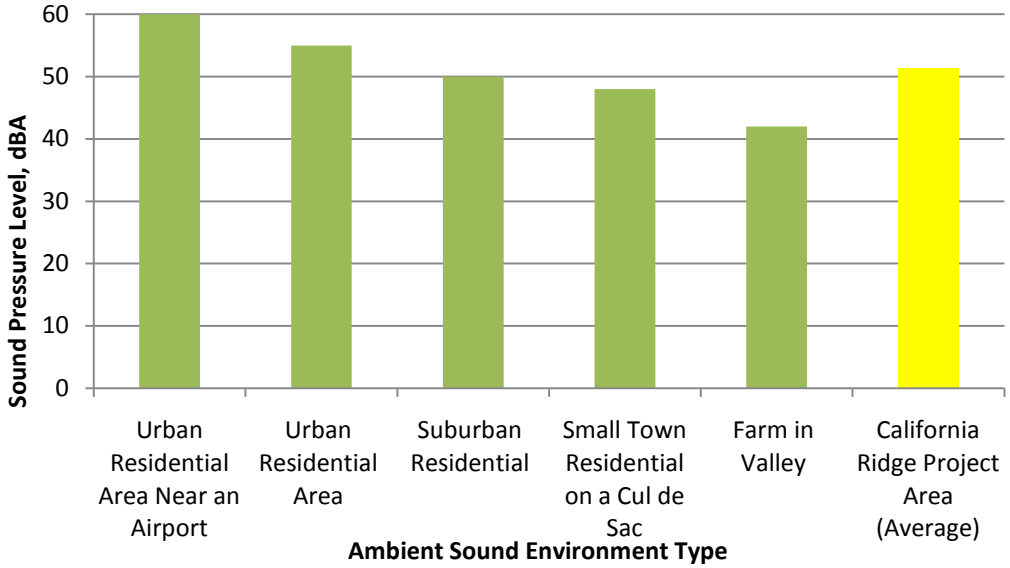


As shown in Figure B-4, median sound levels at ML4 ranged from 33 to 47 dBA. During both daytime and nighttime period sound levels in any given hour varied greatly. This indicates the presence of intermittent loud events.

Results

Results of the ambient sound monitoring indicate that sound levels found in the California Ridge project area are typical of those found in rural agricultural communities with high quality wind resources. Figure B5 presents typical daytime sound levels, as stated in the *Handbook of Noise Control* by Cyril Harris, for various residential areas.

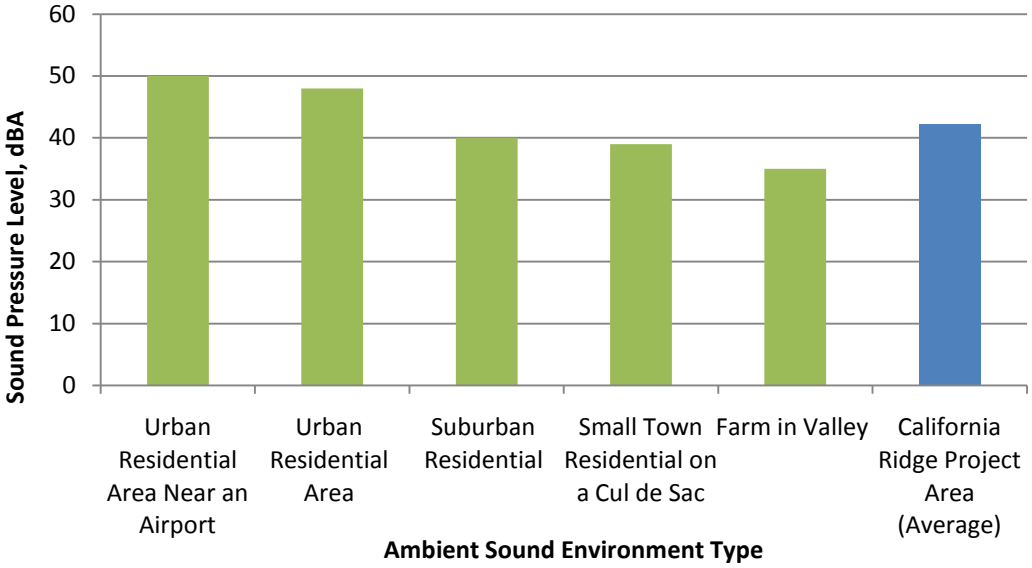
Figure B-5
Average Daytime Sound Levels



As demonstrated in Figure B-5 the outdoor ambient sound levels throughout the Project Area are comparable to a suburban residential area during daytime sound level surveys. Measured daytime sound levels for the Project Area averaged 51 dBA on an hourly, L_{eq} basis. Elevated sound levels occurred in areas near truck haul routes.

Figure B-6 presents typical nighttime sound levels for various residential areas in comparison to measured sound levels in the California Ridge project area.

Figure B-6
Average Nighttime Sound Levels



As demonstrated in Figure B-6, the outdoor ambient sound levels throughout the Project Area are also comparable to a suburban residential area during nighttime sound level surveys. Measured nighttime sound levels for the Project Area averaged 42 dBA on an hourly, L_{eq} basis. This is approximately 10 dB lower than daytime hours, which is typical of diurnal sound patterns.

presents spectral monitoring data for the loudest daytime hours (from the 24 hour period at each measurement location), and compares it with maximum allowable sound levels.

Table B-6
Daytime Spectral Ambient Sound Monitoring Data

Data Type	Leq	1/1 Octave Band (dB)							
	dBA	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
ML1 Loudest Daytime Hour	55	61	60	52	45	47	51	47	39
ML2 Loudest Daytime Hour	59	68	60	51	50	52	49	44	40
ML3 Loudest Daytime Hour	58	65	61	56	54	53	50	49	38
ML4 Loudest Daytime Hour	56	65	60	54	51	52	51	47	37
Maximum Allowable Daytime Sound Level		74	69	64	58	52	47	43	40

Note: bold font indicates exceedance

As shown in Table B-6, daytime monitoring data in exceeds the maximum allowable daytime sound levels in the 1 kHz, 2 kHz, and 4 kHz octave bands.

Table B-7 presents spectral monitoring data for the loudest nighttime hours (from the 24 hour period at each measurement location), and compares it with maximum allowable sound levels.

Table B-7
Nighttime Spectral Ambient Sound Monitoring Data

Data Type	Leq	1/1 Octave Band (dB)							
	dBA	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
ML1 Loudest Nighttime Hour	39	58	54	45	42	45	43	42	36
ML2 Loudest Nighttime Hour	34	55	57	43	42	41	56	53	45
ML3 Loudest Nighttime Hour	36	57	57	47	45	48	47	43	31
ML4 Loudest Nighttime Hour	34	53	46	43	47	47	43	31	28
Maximum Allowable Nighttime Sound Level		67	62	54	47	41	36	32	32

Note: bold font indicates exceedance

As shown in Table B-7, monitoring data in exceed the maximum allowable nighttime noise levels in four octave bands, the 1 kHz, 2 kHz, 4 kHz, and 8 kHz octave bands.

HDR's monitoring results show that existing ambient sound levels in the Project area exceed three or more of the IEPA spectral noise limits during both the daytime and the nighttime. This is consistent with noise monitoring data HDR collected in other rural areas of Illinois with high quality wind resources.

Appendix C
Cadna-A Modeling Results

Table C-1
Cadna-A Modeling Results

Receptor #	Hourly Leq (dB)									
	Overall dBA	Octave Band (Hertz)								
		31.5	63	125	250	500	1000	2000	4000	8000
V_11	32.5	59.5	55.5	42.9	30.7	22.7	19.5	0	0	0
V_12	32.3	59.3	55.3	42.7	30.5	22.5	19.2	0	0	0
V_13	32.8	59.5	55.5	43	31.2	23.7	21.5	5.8	0	0
V_14	32.8	59.8	55.7	43.1	31	23.4	21	4.6	0	0
V_15	31.5	58.6	54.5	41.9	29.7	21.8	18.6	0	0	0
V_16	31.3	58.8	54.7	41.6	29	20.7	17	0	0	0
V_17	30	56.9	52.9	40.6	28.4	20.2	16.7	0	0	0
V_18	31.6	58.8	54.7	41.8	29.5	21.7	18.8	0	0	0
V_19	30	57.2	53.2	40.5	28.1	19.7	15.8	0	0	0
V_20	27.8	53.7	49.8	39	27.2	19.2	15.8	0	0	0
V_21	24.7	49.3	45.2	37	25.4	16.3	10.7	0	0	0
V_22	27.6	51.2	48.6	39.8	27.6	19.5	14.6	0	0	0
V_23	25	50.7	46.7	36.6	24.7	16.6	11.6	0	0	0
V_24	32.3	59.2	55.2	42.5	30.5	23.1	20.9	3.1	0	0
V_25	30.4	56.1	52.3	41	29.7	22.5	20.6	2.9	0	0
V_26	31.2	56.7	52.9	41.8	30.7	23.4	21.5	4.7	0	0
V_27	32.7	59.4	55.4	42.9	31.1	24	22.3	6.2	0	0
V_28	32.4	58.6	54.7	42.7	31.3	24.2	22.6	6.8	0	0
V_29	25	49.1	45.1	37	26	17.8	13.9	0	0	0
V_30	30.7	56.9	53	41	29.5	22.4	21	5.2	0	0
V_31	28.1	52.6	48.7	38.9	28.1	21	19.8	5.7	0	0
V_32	28.3	52.8	48.9	39.1	28.3	21.3	20.1	6.3	0	0
V_33	29.7	54.5	50.7	40.2	29.2	22.6	21.8	7.6	0	0
V_34	29.7	54.3	50.5	40.3	29.5	22.8	21.9	8.3	0	0
V_35	28.3	52.8	48.9	39.3	28.6	21.3	19.4	4.3	0	0
V_36	27.3	50.5	46.6	38.9	28.4	20.9	18.3	5.5	0	0
V_37	31.5	56.5	52.7	41.6	30.7	24.3	23.8	10.7	0	0
V_38	31.4	55.8	52	41.5	30.9	24.6	24.5	12.4	0	0
V_39	31.5	55.9	52.2	41.6	31	24.8	24.6	12.2	0	0

Receptor #	Hourly Leq (dB)									
	Overall dBA	Octave Band (Hertz)								
		31.5	63	125	250	500	1000	2000	4000	8000
V_40	30.3	55.6	51.8	40.6	29.5	22.9	22	7.9	0	0
V_41	26.2	49.7	45.7	37.9	27.3	19.6	16.6	2.7	0	0
V_42	30.7	56	52.2	40.9	30	23.5	22.7	9.3	0	0
V_43	31.1	56.5	52.7	41.2	30.2	23.6	23	9.9	0	0
V_44	31.3	57	53.1	41.4	30.3	23.7	23	9.9	0	0
V_45	31.3	57.5	53.6	41.4	29.9	23.1	22.1	8.2	0	0
V_46	31.3	57.6	53.6	41.3	29.8	22.9	21.8	7.5	0	0
V_47	30.9	57.5	53.5	41	29.3	22.1	20.7	5.3	0	0
V_48	30.3	56.6	52.7	40.5	28.9	21.9	20.4	5.1	0	0
V_49	29.7	55.3	51.4	40.1	28.8	22	20.8	5.9	0	0
V_50	28.9	53.7	49.9	39.4	28.4	21.7	20.8	6.6	0	0
V_51	29.6	54.1	50.3	40.2	29.6	23.1	21.6	7	0	0
V_52	29.8	55.1	51.3	40.4	29.4	22.4	20.7	5.1	0	0
V_53	29.5	55	51.2	40.1	28.8	21.9	20.4	4.4	0	0
V_54	29.4	54.8	51	40.1	29	22.1	20.2	4	0	0
V_55	28.9	54.6	50.7	39.5	28.1	21	19.2	2.2	0	0
V_57	29.1	54.8	50.9	39.8	28.4	21.3	19.7	3.1	0	0
V_58	29.5	55.5	51.6	40.1	28.6	21.4	19.5	2.5	0	0
V_59	30.1	56.6	52.6	40.5	28.8	21.4	19.4	2.2	0	0
V_60	30.8	58	53.9	40.9	28.7	21.2	18.9	1.2	0	0
V_61	29.1	55.9	51.9	39.6	27.5	19.8	17.1	0	0	0
V_62	29.1	55.7	51.7	39.6	27.7	20.2	18	0	0	0
V_63	30.2	57.4	53.2	40.4	28.3	20.7	18.4	0.6	0	0
V_64	23.6	48.2	44	35.8	24.3	15.6	11.1	0	0	0
V_65	23.4	48.1	43.9	35.6	24.1	15.2	10.3	0	0	0
V_66	38.6	61.6	57.9	47.2	36.9	31.8	33.5	27.3	3	0
V_67	32.7	59.3	55.3	42.8	31.1	24.1	22.5	6.6	0	0
V_68	32.5	58.5	54.6	42.7	31.4	24.5	23	7.2	0	0
V_69	31.8	57.3	53.5	42.3	31.1	24.3	22.8	6.3	0	0
V_70	31.7	57	53.2	42.2	31.1	24.3	22.8	6.1	0	0
V_71	31.5	56.5	52.7	42.1	31.2	24.4	23.1	8.2	0	0

Receptor #	Hourly Leq (dB)									
	Overall dBA	Octave Band (Hertz)								
		31.5	63	125	250	500	1000	2000	4000	8000
V_72	32.5	58.1	54.3	42.9	31.8	24.9	23.5	8.1	0	0
V_73	33.4	58.9	55.1	43.6	32.6	25.9	25	11.6	0	0
V_74	36.1	61.6	57.7	45.7	34.7	28.4	28.4	18.6	0	0
V_75	36.5	62.1	58.2	46.3	35.3	29	28.8	17.2	0	0
V_76	36.5	61.8	57.9	46.2	35.3	29.1	29.3	19.5	0	0
V_77	36.8	61.4	57.6	46.3	35.7	29.7	30.2	20.9	0	0
V_78	34.5	61	57	44.6	33	26	24.7	10.3	0	0
V_79	34.7	61.2	57.2	44.8	33.2	26.1	24.6	9.3	0	0
V_80	34.6	61.1	57.1	44.7	33.1	26	24.4	8.9	0	0
V_81	43.9	66.7	63	52.6	42	36.9	38.6	33.4	14.5	0
V_R0366	41.9	63.7	60.1	50.2	39.8	35	37.1	32	10.5	0
V_R0367	41.4	64	60.3	49.9	39.5	34.5	36.4	30.9	9.2	0
V_R0368	41.8	64.3	60.6	50.2	39.8	34.9	36.9	31.6	9.9	0
V_R0369	39.9	61.9	58.3	48.3	38.1	33.1	35.1	29.4	5.5	0
V_R0370	35.7	60	56.2	44.8	34.3	28.7	29.6	21.2	0	0
V_R0371	36.6	61.2	57.4	46.1	35.6	29.8	30.1	19.6	0	0
V_R0372	35	59.8	56	44.6	34	28	28.4	18.1	0	0
V_R0373	32.9	58.4	54.5	42.7	31.7	25.4	25.2	13.6	0	0
V_R0374	31.3	55.9	52.1	41.4	30.7	24.5	24.3	12.5	0	0
V_R0375	33.4	57.4	53.6	42.9	32.5	26.8	27.4	18	0	0
V_R0376	37.6	61.5	57.7	46.4	35.9	30.6	32.1	25.2	0	0
V_R0377	28.5	50.5	46.6	39.1	29.1	22.4	22.3	12.7	0	0
V_R0378	26.6	49.7	45.7	38	27.5	20.2	18.5	7.8	0	0
V_R0379	29.9	53	49.3	40	30	24	23.7	12.3	0	0
V_R0380	30.3	53.5	49.7	40.2	30.1	24.1	24.1	13.7	0	0
V_R0381	40.2	63.1	59.4	48.7	38.1	33.1	35.1	29.8	8.9	0
V_R0382	39.4	62.7	58.9	48	37.4	32.3	34.1	28.3	5.7	0
V_R0383	38.5	62.2	58.4	47.2	36.8	31.5	33	26.4	1.4	0
V_R0384	38.5	62.2	58.4	47.3	36.7	31.5	33.1	26.6	2.1	0
V_R0385	36.4	61.3	57.4	45.6	35	29.3	30.1	21.1	0	0
V_R0386	35.5	60.8	56.9	44.9	34.1	28.2	28.6	18.4	0	0

Receptor #	Hourly Leq (dB)									
	Overall dBA	Octave Band (Hertz)								
		31.5	63	125	250	500	1000	2000	4000	8000
V_R0387	40.6	63.3	59.6	49.2	38.9	33.8	35.6	29.4	6.3	0
V_R0388	33.9	58.7	54.9	43.8	33.2	27	26.8	15.1	0	0
V_R0389	34.8	59.7	55.9	44.6	33.9	27.8	27.8	16.8	0	0
V_R0390	32.1	56.8	53	42.3	31.6	25.1	24.5	11.1	0	0
V_R0391	44.7	66.7	63.1	53	42.4	37.6	39.8	35.1	15.8	0
V_R0392	38.6	63.1	59.4	47.9	37.4	31.8	32.4	23	0	0
V_R0393	39.8	63.7	60	48.8	38.5	33.1	34.1	26	0	0
V_R0395	37.5	62.4	58.5	46.9	36.2	30.4	30.9	22	0	0
V_R0396	43.8	66.3	62.6	52.3	41.6	36.7	38.7	33.9	15.3	0
V_R0397	42.2	65.3	61.6	50.9	40.4	35.3	37	31.2	9.8	0
V_R0398	41.9	64.8	61.1	50.6	40.4	35.2	36.8	30.2	4.3	0
V_R0399	39.5	63.8	60	48.6	38	32.4	33.5	26.2	0	0
V_R0400	42.6	65.6	61.9	51.2	40.7	35.6	37.4	31.6	9	0
V_R0401	40.7	64.5	60.8	49.6	39.1	33.8	35.1	28	0.4	0
V_R0402	40.3	64.1	60.4	49.1	38.6	33.2	34.6	28	2.5	0
V_R0403	39.5	63.7	59.9	48.5	37.9	32.4	33.6	26.8	2.2	0
V_R0404	44.6	67	63.4	53.1	42.4	37.4	39.5	34.6	15.3	0
V_R0405	41.1	65.4	61.6	50.3	39.8	34.2	35	27	0	0
V_R0406	42.2	65.9	62.2	51.2	40.6	35.2	36.5	30	7.9	0
V_R0407	42.5	66	62.3	51.3	40.9	35.6	37.1	30.4	3.7	0
V_R0408	43.2	66.5	62.8	51.9	41.5	36.3	37.8	31.4	7.4	0
V_R0409	44.1	66.7	63.1	52.7	42.2	37.1	39	33.6	14	0
V_R0410	41.4	65.3	61.6	50.5	40.1	34.6	35.6	28.1	2.9	0
V_R0411	42.1	65.6	61.9	51	40.6	35.2	36.5	29.9	7.3	0
V_R0412	40.4	64.8	61	49.7	39.3	33.5	34.1	25.1	0	0
V_R0413	42	65.5	61.8	50.9	40.5	35.1	36.3	29.6	5.6	0
V_R0414	42.8	65.7	62.1	51.4	41.1	36	37.6	31.5	8.4	0
V_R0415	44.4	66.6	63	52.8	42.5	37.6	39.5	33.9	12	0
V_R0416	44.9	67.3	63.7	53.3	42.9	38	39.9	34.6	14.8	0
V_R0417	44.4	67	63.4	52.9	42.6	37.6	39.4	33.6	12.1	0
V_R0418	41.4	64.8	61.1	50.1	39.8	34.6	36.1	29.3	4.8	0

Receptor #	Hourly Leq (dB)									
	Overall dBA	Octave Band (Hertz)								
		31.5	63	125	250	500	1000	2000	4000	8000
V_R0419	44	66.3	62.6	52.4	41.8	36.9	39	34.2	16.2	0
V_R0420	42.5	65.7	62.1	51.1	40.9	35.8	37.3	30.2	3.2	0
V_R0421	43.7	66.2	62.5	52.2	41.6	36.7	38.7	33.7	14.9	0
V_R0422	39	63.3	59.5	48.1	37.6	32.1	33.1	25	0	0
V_R0423	40.3	64	60.3	49.1	38.7	33.3	34.6	27.7	2.1	0
V_R0424	41.8	65.3	61.6	50.7	40.3	35	36.3	29.3	4.7	0
V_R0425	44	66.6	63	52.5	42.2	37.2	38.9	32.9	10.4	0
V_R0426	44.8	67.1	63.5	53.3	42.7	37.7	39.8	35.1	17.8	0
V_R0427	42.4	65.9	62.2	51.3	41	35.6	36.9	29.8	4.8	0
V_R0428	42.2	66	62.3	51.2	40.8	35.3	36.5	29.3	4.6	0
V_R0430	43	66	62.3	51.8	41.3	36	37.6	31.8	11.2	0
V_R0433	42.6	65.8	62.1	51.5	41.1	35.8	37.2	31.1	8.6	0
V_R0434	42.7	66.2	62.5	51.6	41.1	35.7	37.1	30.8	7.3	0
V_R0435	43.2	66.5	62.8	52	41.5	36.2	37.8	32.1	11	0
V_R0436	43.7	66.7	63	52.4	41.8	36.6	38.4	33	13.5	0
V_R0437	42.7	66.2	62.5	51.6	41.1	35.7	37.1	30.8	7.4	0
V_R0438	42.7	66	62.3	51.5	41.1	35.8	37.2	30.9	8.3	0
V_R0439	42.6	65.7	62	51.4	41	35.7	37.2	31.1	8.9	0
V_R0440	42.7	66.1	62.4	51.6	41.1	35.8	37.3	31.2	9.2	0
V_R0441	42	65.3	61.6	50.9	40.6	35.3	36.7	29.8	3.6	0
V_R0442	42.8	66	62.3	51.5	41	35.9	37.6	31.5	7.9	0
V_R0443	43.1	65.9	62.2	51.8	41.3	36.2	37.9	32.3	12.3	0
V_R0444	42.1	65.4	61.7	50.8	40.3	35	36.7	30.8	8.4	0
V_R0445	43	65.7	62	51.6	41	35.9	37.8	32.7	13.4	0
V_R0446	34.7	60.6	56.8	45	33.7	26.8	25.3	10.2	0	0
V_R0447	43.6	66.6	62.9	52.2	41.8	36.6	38.3	32.5	11.4	0
V_R0448	41.7	65.3	61.6	50.6	40.1	34.8	36.2	29.5	4.5	0
V_R0449	38.7	62.9	59.2	48	37.5	31.8	32.5	24.3	0	0
V_R0450	39.9	63.9	60.2	49	38.5	32.9	34	26.4	0	0
V_R0451	41.8	65.2	61.5	50.5	40	34.7	36.3	30.2	7.8	0
V_R0452	43.9	66.3	62.6	52.4	41.7	36.8	38.9	34.2	15.9	0

Receptor #	Hourly Leq (dB)									
	Overall dBA	Octave Band (Hertz)								
		31.5	63	125	250	500	1000	2000	4000	8000
V_R0453	34.2	60.9	56.9	44.4	32.7	25.4	23.7	8.2	0	0
V_R0454	34.3	60.5	56.6	44.6	33.1	26	24.5	9.5	0	0
V_R0455	40	64.1	60.4	49.1	38.5	32.9	34.1	27.2	2.5	0
V_R0456	45.1	67.6	63.9	53.6	43	38	40	34.8	15.3	0
V_R0458	42.7	66	62.3	51.5	41.1	35.8	37.3	31.1	8.7	0
V_R0459	35.8	61.8	57.9	45.9	34.6	27.9	26.9	13.8	0	0
V_R0460	36.5	62.3	58.4	46.5	35.4	28.9	28.1	15.1	0	0
V_R0461	38.9	63.5	59.8	48.4	37.7	31.8	32.2	23.2	0	0
V_R0462	42.7	65.9	62.2	51.4	40.9	35.8	37.4	31.4	7.6	0
V_R0463	43.9	66.5	62.9	52.5	41.8	36.8	38.7	33.7	15.2	0
V_R0464	44.3	67	63.3	52.7	42.3	37.3	39.2	33.7	11.6	0
V_R0465	35.9	61.8	57.9	45.8	34.6	28	27.2	14.5	0	0
V_R0466	32.5	59.3	55.4	43	31.1	23.3	20.3	0.1	0	0
V_R0467	35.4	61.4	57.5	45.3	34	27.3	26.5	15.1	0	0
V_R0468	35.3	61.4	57.4	45.3	33.9	27.2	26.4	15.1	0	0
V_R0469	35.2	61.3	57.4	45.2	33.9	27.1	26.3	15	0	0
V_R0470	35	61.2	57.3	45	33.6	26.8	25.9	14.2	0	0
V_R0471	35.1	61.2	57.3	45.1	33.7	26.9	25.9	14.1	0	0
V_R0472	35.1	61.3	57.3	45.1	33.7	26.9	25.9	14.1	0	0
V_R0473	35.1	61.3	57.4	45.2	33.8	27	26	14.1	0	0
V_R0474	34.9	61.2	57.2	45	33.5	26.6	25.5	13.3	0	0
V_R0475	35	61.2	57.3	45.1	33.6	26.8	25.6	13.2	0	0
V_R0476	35	61.2	57.3	45.1	33.6	26.7	25.5	12.7	0	0
V_R0477	34.6	60.9	57	44.8	33.3	26.3	24.8	11.2	0	0
V_R0478	34.2	60.6	56.7	44.4	32.8	25.6	23.8	9.3	0	0
V_R0479	34.2	60.7	56.7	44.5	32.9	25.7	23.9	9.4	0	0
V_R0480	34.2	60.6	56.7	44.4	32.8	25.7	24	9.7	0	0
V_R0481	34.1	60.6	56.7	44.3	32.6	25.4	23.8	10.2	0	0
V_R0482	32.5	56.8	53.1	43.1	32.3	25.7	24.9	14	0	0
V_R0483	44.2	66.8	63.2	52.9	42.3	37.2	39	33.8	14.4	0
V_R0484	43.9	66.8	63.1	52.6	42	36.9	38.7	33.3	14.3	0

Receptor #	Hourly Leq (dB)									
	Overall dBA	Octave Band (Hertz)								
		31.5	63	125	250	500	1000	2000	4000	8000
V_R0485	42.9	65.9	62.3	51.6	41.3	36.1	37.7	31.2	6.6	0
V_R0486	42.4	66	62.3	51.3	40.9	35.5	36.8	30	6.9	0
V_R0487	42.2	65.9	62.2	51.2	40.8	35.4	36.6	29.6	5.6	0
V_R0488	42.9	66.5	62.7	51.8	41.4	36	37.3	30.7	6.8	0
V_R0489	44.1	67	63.3	52.8	42.4	37.3	38.9	32.9	10.7	0
V_R0490	44.3	67.1	63.5	53	42.6	37.5	39.1	33.3	12.5	0
V_R0491	42.1	65.5	61.9	51.1	40.8	35.4	36.5	29.1	2.4	0
V_R0492	42.2	65.8	62.1	51.3	40.9	35.4	36.6	29.4	4.7	0
V_R0493	43.1	66.7	63	52	41.6	36.3	37.6	30.9	6.3	0
V_R0494	43.8	66.7	63	52.5	42.2	37	38.7	32.7	10	0
V_R0495	43.7	66.9	63.2	52.5	42.1	36.8	38.4	32.4	11	0
V_R0496	45.1	67.5	63.9	53.7	43.1	38.1	40	35.1	16.1	0
V_R0497	44.7	67.6	63.9	53.4	42.8	37.7	39.5	34	15	0
V_R0498	44.3	67.3	63.7	53	42.5	37.3	38.9	33.1	12.2	0
V_R0499	38.9	63.5	59.8	48.4	37.9	31.9	32.2	22.5	0	0
V_R0500	40.5	64.5	60.7	49.4	38.9	33.5	34.7	27.7	0.9	0
V_R0501	44	66.9	63.2	52.6	42.3	37.2	38.9	32.7	8.7	0
V_R0502	44.3	67.1	63.4	52.9	42.6	37.5	39.2	33.2	11.6	0
V_R0503	44.5	67.5	63.8	53.1	42.8	37.7	39.4	33	8.4	0
V_R0505	44.4	67.2	63.5	52.9	42.7	37.7	39.4	33	8	0
V_R0507	41.5	65	61.3	50.2	39.7	34.5	36.1	29.8	4.9	0
V_R0508	42.1	65.4	61.7	50.8	40.3	35.1	36.8	30.7	6.7	0
V_R0509	40.3	64.2	60.5	49.2	38.6	33.2	34.7	28	3	0
V_R0510	37.5	62.6	58.8	46.9	36	30	30.6	21.7	0	0
V_R0511	42.5	65.7	62	51.1	40.7	35.6	37.3	31.2	7.4	0
V_R0512	42.8	65.9	62.2	51.4	40.9	35.8	37.6	32	10.2	0
V_R0513	44.6	67.4	63.7	53.2	42.8	37.7	39.5	33.8	13.4	0
V_R0514	44.3	67.2	63.6	53	42.6	37.5	39.2	33.1	10.7	0
V_R0515	41.6	65.5	61.8	50.7	40.2	34.6	35.6	28.4	5.1	0
V_R0516	41.4	65.6	61.9	50.6	40.2	34.5	35.2	26.5	0	0
V_R0517	41.3	65.6	61.9	50.6	40.2	34.5	35.2	26.4	0	0

Receptor #	Hourly Leq (dB)									
	Overall dBA	Octave Band (Hertz)								
		31.5	63	125	250	500	1000	2000	4000	8000
V_R0518	42.4	66.2	62.5	51.4	40.9	35.5	36.7	29.5	3.6	0
V_R0519	44.1	66.9	63.2	52.8	42.1	37.1	38.9	33.8	15.4	0
V_R0520	40.5	64.2	60.5	49.4	39	33.7	35	28	1.6	0
V_R0521	42.7	65.9	62.2	51.6	41.1	35.8	37.3	31.2	10	0
V_R0522	42.9	66.2	62.5	51.7	41.2	35.9	37.4	31.3	9.2	0
V_R0523	42.7	66.4	62.7	51.7	41.3	35.9	37.1	30	4.2	0
V_R0524	40.7	65	61.3	50	39.5	33.8	34.5	26	0	0
V_R0527	38.7	61.5	57.9	47.4	37.3	32.1	33.6	26.4	0	0
V_R0528	35.8	59.4	55.7	44.9	34.6	29.2	30.3	22.3	0	0
V_R0529	35.9	59.5	55.8	45.2	34.8	29.2	30.3	22.3	0	0
V_R0530	34.3	60.8	56.8	44.6	33	25.7	23.7	6.8	0	0
V_R0531	34.3	60.5	56.6	44.6	33.1	26	24.1	7.8	0	0
V_R0532	36.9	62.3	58.4	46.4	35.5	29.4	29.8	20.9	0	0
V_R0533	43.6	66.3	62.7	52.3	41.8	36.7	38.5	32.8	11.7	0
V_R0534	36.5	62.1	58.3	46.4	35.4	29	28.5	16.4	0	0
V_R0535	36.1	61.9	58	46	34.7	28.2	27.6	15.5	0	0
V_R0536	39.3	63.5	59.8	48.4	37.9	32.3	33.3	25.7	0	0
V_R0537	35.9	61.3	57.4	45.6	34.7	28.4	28.3	17.9	0	0
V_R0538	35.2	61.3	57.4	45.1	33.7	27.1	26.6	14.9	0	0
V_R0539	33.8	59.4	55.5	43.9	32.8	26.2	25.6	13	0	0
V_R0540	33.3	60	56	43.5	31.6	24.2	22.4	7	0	0
V_R0541	33.2	60.1	56	43.4	31.3	23.8	21.9	5.9	0	0
V_R0542	33.9	60.4	56.5	44.1	32.4	25.2	23.5	8	0	0
V_R0543	34.6	60.9	57	44.7	33.2	26.2	24.9	10.5	0	0
V_R0544	34.9	61.2	57.2	45	33.5	26.6	25.3	12.5	0	0
V_R0545	34.8	61.1	57.1	44.9	33.4	26.5	25.2	12.3	0	0
V_R0546	34.9	61.2	57.2	45	33.6	26.6	25.5	13	0	0
V_R0547	34.7	61	57.1	44.8	33.3	26.3	24.9	11.7	0	0
V_R0548	34.6	61	57	44.8	33.2	26.2	24.8	11.6	0	0
V_R0549	34.7	61	57	44.8	33.3	26.3	24.9	11.8	0	0
V_R0550	34.8	61	57.1	44.9	33.4	26.4	25.2	12.5	0	0

Receptor #	Hourly Leq (dB)									
	Overall dBA	Octave Band (Hertz)								
		31.5	63	125	250	500	1000	2000	4000	8000
V_R0551	34.6	60.9	57	44.8	33.3	26.2	24.7	11.1	0	0
V_R0552	34.5	60.9	57	44.7	33.2	26.1	24.6	11	0	0
V_R0553	34.5	60.9	56.9	44.6	33.1	26	24.5	10.9	0	0
V_R0554	34.5	60.9	56.9	44.7	33.1	26	24.5	10.9	0	0
V_R0555	34.4	60.8	56.8	44.6	33	25.9	24.3	10.3	0	0
V_R0556	35.2	61.3	57.4	45.2	33.9	27.1	26.1	14.5	0	0
V_R0557	35.1	61.3	57.3	45.1	33.7	26.8	25.7	13.2	0	0
V_R0558	34.8	61.1	57.2	44.9	33.4	26.4	24.9	11.2	0	0
V_R0559	34.5	60.9	56.9	44.7	33.2	26.2	24.8	11.7	0	0
V_R0560	31.2	54.6	50.8	41.8	31.4	24.6	24	13.4	0	0
V_R0561	31.4	55.3	51.5	42	31.5	24.7	24	13.2	0	0
V_R0562	34.1	59.6	55.8	44.3	33.3	26.5	25.6	13.8	0	0
V_R0563	35	61.2	57.2	45	33.6	26.7	25.7	13.9	0	0
V_R0564	34.8	61.1	57.2	44.9	33.4	26.4	25	11.7	0	0
V_R0565	32.3	57.1	53.3	42.7	31.8	25	24.3	13	0	0
V_R0566	31.6	56.4	52.6	42.2	31.3	24.3	23.4	12	0	0
V_R0567	31	55.7	51.8	41.7	30.8	23.7	22.7	10.6	0	0
V_R0568	35.9	61.2	57.4	45.6	34.6	28.4	28.5	19.8	0	0
V_R0569	37.1	62.1	58.2	46.5	35.6	29.6	30.3	22.7	0	0
V_R0570	37.4	62.2	58.4	46.7	35.9	30	30.8	23.5	0	0
V_R0571	38.6	62.8	59	47.7	37	31.4	32.6	25.8	1	0
V_R0572	27.4	50.8	46.8	39.1	28.5	20.7	17.5	2.3	0	0
V_R0573	31.9	56.4	52.6	42.1	31.5	25.1	24.8	11.8	0	0
V_R0574	29.5	50.6	46.8	39.6	30.4	24.5	23.7	12.6	0	0
V_R0575	30.5	54.4	50.6	40.5	30.1	23.9	24	13.3	0	0
V_R0776	44.3	66.7	63.1	52.9	42.2	37.2	39.1	34.2	16.3	0
V_R0971	34.7	59.9	56.2	44.6	33.6	27.4	27.4	16.2	0	0
V_R0972	33.1	58.3	54.5	42.9	32	25.8	25.7	14.3	0	0
V_R0973	31.2	56.4	52.6	41.4	30.4	23.9	23.3	10.1	0	0
V_R0974	39.7	63.6	59.8	48.6	38	32.6	34	27.9	4.9	0
V_R0975	41.1	64.8	61.1	49.9	39.5	34.2	35.6	28.6	2.5	0

Receptor #	Hourly Leq (dB)								
	Overall dBA	Octave Band (Hertz)							
		31.5	63	125	250	500	1000	2000	4000	8000
V_R0976	40.1	64.2	60.4	49	38.6	33.1	34.3	26.8	0	0
V_R0977	39.7	63.8	60.1	48.7	38.1	32.6	33.8	26.4	0	0
V_R0978	32.1	57.8	53.9	42.1	30.9	24.5	24	11.5	0	0
V_R0979	31.8	57.4	53.5	41.8	30.7	24.2	23.7	10.9	0	0
V_R0980	30.3	54.9	51.1	40.6	29.9	23.5	23	9.8	0	0
V_R0981	32.6	58.9	54.9	42.4	31	24.3	23.7	10.9	0	0
V_R0982	29.6	54.1	50.3	40	29.3	22.9	22.3	9.1	0	0
V_R0983	30.6	55.6	51.8	40.9	30	23.4	22.8	9.3	0	0
V_R0984	34.8	60.3	56.4	44.4	33.5	27.3	27.5	16.8	0	0
V_R0987	33.9	60.1	56.2	44.3	32.8	25.7	23.9	7.5	0	0
V_R0988	33	59.4	55.5	43.4	31.7	24.4	22.3	5.6	0	0
V_R0989	34.2	60.7	56.7	44.5	32.8	25.7	24	8.1	0	0

Negative sound levels are represented as 0 dB

Appendix E
Agency and Public Outreach

February 27, 2009

Mr. Keith Shank
Division of Ecosystems & Environment, Impact Assessment Section
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702-1271

Re: California Ridge Wind Project, Vermilion and Champaign Counties, Illinois

Dear Mr. Shank:

California Ridge Energy LLC, an affiliate of Invenergy Wind LLC, is proposing to construct an up to 200-Megawatt (MW) wind farm in Vermilion and Champaign Counties, Illinois. This project is known as the California Ridge Wind Project. The attached figure identifies the project.

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads and underground and overhead transmission lines. Although final turbine locations, access roads, and electrical connections have not been determined at this time, Table 1, below, identifies sections potentially affected by the project.

California Ridge Energy LLC is planning to submit a Special Use Permit (SUP) application for the project to both Vermilion and Champaign Counties during August 2009. At this time, HDR Engineering, Inc. (HDR) requests your review of the sections identified in Table 1. Your agency's comments will be incorporated into the SUP review process for the project.

Table 1 – Sections within Project Area

County	Township	Range	Section(s)
Champaign County	21N	10E	16, 25
	21N	11E	30, 31
	21N	14W	19-21, 28-33
	20 N	14W	4-6, 8, 9
Vermilion County	21N	14W	25-27, 34-36
	21N	13W	31, 32
	20N	14W	1-3, 10-15, 24
	20N	13W	3-24
	20N	12W	19, 20

HDR Engineering, Inc.
701 Xenia Avenue South
Minneapolis, MN 55416-3636
Phone (763) 591-5400
Fax (763) 591-5413
www.hdrinc.com

The enclosed map details the location of California Ridge Wind Project Area to facilitate your review. If you require further information or have questions regarding this matter, please contact me at (763) 591-5432 or at Jacqueline.Hamilton@hdrinc.com.

Sincerely,

HDR Engineering, Inc.

Jacque Hamilton
Environmental Project Manager

Attachment: Project Location Map

cc: Rhett Good, Western EcoSystems Technology, Inc.
Russ Romme, BHE Environmental, Inc.
John Doster, Invenergy

California Ridge Wind Energy Center

Project Location

Vermilion and
Champaign Counties, Illinois

Legend

- Project Boundary
- State Highway
- Local Road
- Railroad
- Municipal Boundary
- Section Boundary
- Township Boundary
- County Boundary

0 0.25 0.5 1
Miles

0 1,250 2,500
Meters

0 2,500 5,000
Feet

N
W E
S

HDR

Invenergy

Gifford
Potomac
Royal
136
49
CHAMPAIGN CO.
VERMILION CO.
21N10E
21N11E
21N14W
21N13W
21N12W
20N10E
20N11E
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February 27, 2009

Mr. Rich Gerard, Regional Manager
Illinois Environmental Protection Agency, Region
42125 South First Street
Champaign, IL 61820

Re: California Ridge Wind Project, Vermilion and Champaign Counties, Illinois

Dear Mr. Gerard:

California Ridge Energy LLC, an affiliate of Invenergy Wind LLC, is proposing to construct an up to 200-Megawatt (MW) wind farm in Vermilion and Champaign Counties, Illinois. This project is known as the California Ridge Wind Project. The attached figure identifies the project.

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads and underground and overhead transmission lines. Although final turbine locations, access roads, and electrical connections have not been determined at this time, Table 1, below, identifies sections potentially affected by the project.

California Ridge Energy LLC is planning to submit a Special Use Permit (SUP) application for the project to both Vermilion and Champaign Counties during August 2009. At this time, HDR Engineering, Inc. (HDR) requests your review of the sections identified in Table 1. Your agency's comments will be incorporated into the SUP review process for the project.

Table 1 – Sections within Project Area

County	Township	Range	Section(s)
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	21N	11E	30, 31
	21N	14W	19-21, 28-33
	20 N	14W	4-6, 8, 9
Vermilion County	21N	14W	25-27, 34-36
	21N	13W	31, 32
	20N	14W	1-3, 10-15, 24
	20N	13W	3-24
	20N	12W	19, 20

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The enclosed map details the location of California Ridge Wind Project Area to facilitate your review. If you require further information or have questions regarding this matter, please contact me at (763) 591-5432 or at Jacqueline.Hamilton@hdrinc.com.

Sincerely,

HDR Engineering, Inc.

Jacque Hamilton
Environmental Project Manager

Attachment: Project Location Map

cc: Rhett Good, Western EcoSystems Technology, Inc.
Russ Romme, BHE Environmental, Inc.
John Doster, Invenergy

February 27, 2009

Mr. William J. Gradle, State Conservationist
USDA - Natural Resources Conservation Service
2118 W Park Court
Champaign, IL 61821

Re: California Ridge Wind Project, Vermilion and Champaign Counties, Illinois

Dear Mr. Gradle:

California Ridge Energy LLC, an affiliate of Invenergy Wind LLC, is proposing to construct an up to 200-Megawatt (MW) wind farm in Vermilion and Champaign Counties, Illinois. This project is known as the California Ridge Wind Project. The attached figure identifies the project.

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads and underground and overhead transmission lines. Although final turbine locations, access roads, and electrical connections have not been determined at this time, Table 1, below, identifies sections potentially affected by the project.

California Ridge Energy LLC is planning to submit a Special Use Permit (SUP) application for the up to 200-MW project to both Vermilion and Champaign Counties during August 2009. At this time, HDR Engineering, Inc. (HDR) requests your review of the sections identified in Table 1. Your agency's comments will be incorporated into the SUP review process for the project.

Table 1 – Sections within Project Area

County	Township	Range	Section(s)
Champaign County	21N	10E	16, 25
	21N	11E	30, 31
	21N	14W	19-21, 28-33
	20 N	14W	4-6, 8, 9
Vermilion County	21N	14W	25-27, 34-36
	21N	13W	31, 32
	20N	14W	1-3, 10-15, 24
	20N	13W	3-24
	20N	12W	19, 20

HDR Engineering, Inc.
701 Xenia Avenue South
Minneapolis, MN 55416-3636
Phone (763) 591-5400
Fax (763) 591-5413
www.hdrinc.com

The enclosed map details the location of California Ridge Wind Project Area to facilitate your review. If you require further information or have questions regarding this matter, please contact me at (763) 591-5432 or at Jacqueline.Hamilton@hdrinc.com.

Sincerely,

HDR Engineering, Inc.

Jacque Hamilton
Environmental Project Manager

Attachment: Project Location Map

cc: Rhett Good, Western EcoSystems Technology, Inc.
Russ Romme, BHE Environmental, Inc.
John Doster, Invenergy

February 27, 2009

Ms. Anne E. Haaker
Deputy State Historic Preservation Officer
Illinois Historic Preservation Agency
1 Old State Capitol Plaza
Springfield, IL 62701-1512

Re: California Ridge Wind Project, Vermilion and Champaign Counties, Illinois

Dear Ms. Haaker:

California Ridge Energy LLC, an affiliate of Invenergy Wind LLC, is proposing to construct an up to 200-Megawatt (MW) wind farm in Vermilion and Champaign Counties, Illinois. This project is known as the California Ridge Wind Project. The attached figure identifies the project.

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads and underground and overhead transmission lines. Although final turbine locations, access roads, and electrical connections have not been determined at this time, Table 1, below, identifies sections potentially affected by the project.

At this time, there is no federal agency involvement or Section 106 consultation process anticipated for this project. The project will be built solely on private property using private funds. However, California Ridge LLC is planning to submit a Special Use Permit (SUP) application to Vermillion and Champaign Counties in August 2009. At this time, HDR Engineering, Inc. (HDR) anticipates the need for certification under Section 401 of the Clean Water Act and the need for a National Pollutant Discharge Elimination System (NPDES) permit from the Illinois Environmental Protection Agency.

HDR requests your review under *Illinois State Agency Historic Resources Preservation Act* (20 ILCS 3410) specifically of the project sections (Table 1) for potential effects on known cultural resources. HDR anticipates a request for archaeological inventory of areas within the project construction footprint that have a high probability for buried resources; we also anticipate a request for an inventory of standing structures in the project constriction footprint. IHPA comments will be considered during the planning process.

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Sincerely,

HDR Engineering, Inc.

Jacque Hamilton
Environmental Project Manager

Attachment: Project Location Map

cc: Rhett Good, Western EcoSystems Technology, Inc.
Russ Romme, BHE Environmental, Inc.
John Doster, Invenergy

February 27, 2009

Mr. James Townsend, Chief
US Army Engineer District Louisville
ATTN: CELRL-OP-F
P.O. Box 59
Louisville, KY 40201-0059

Re: California Ridge Wind Project, Vermilion and Champaign Counties, Illinois

Dear Mr. Townsend:

California Ridge Energy LLC, an affiliate of Invenergy Wind LLC, is proposing to construct an up to 200-Megawatt (MW) wind farm in Vermilion and Champaign Counties, Illinois. This project is known as the California Ridge Wind Project. The attached figure identifies the project.

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads and underground and overhead transmission lines. Although final turbine locations, access roads, and electrical connections have not been determined at this time, Table 1, below, identifies sections potentially affected by the project.

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Sincerely,

HDR Engineering, Inc.

Jacque Hamilton
Environmental Project Manager

Attachment: Project Location Map

cc: Rhett Good, Western EcoSystems Technology, Inc.
Russ Romme, BHE Environmental, Inc.
John Doster, Invenergy

February 27, 2009

Mr. Mike Ricketts, Chief
Newburgh Field Office
US Army Corps of Engineers
P.O. Box 489
Newburgh, IN 47629-0489

Re: California Ridge Wind Project, Vermilion and Champaign Counties, Illinois

Dear Mr. Ricketts:

California Ridge Energy LLC, an affiliate of Invenergy Wind LLC, is proposing to construct an up to 200-Megawatt (MW) wind farm in Vermilion and Champaign Counties, Illinois. This project is known as the California Ridge Wind Project. The attached figure identifies the project.

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads and underground and overhead transmission lines. Although final turbine locations, access roads, and electrical connections have not been determined at this time, Table 1, below, identifies sections potentially affected by the project.

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Sincerely,

HDR Engineering, Inc.

Jacque Hamilton
Environmental Project Manager

Attachment: Project Location Map

cc: Rhett Good, Western EcoSystems Technology, Inc.
Russ Romme, BHE Environmental, Inc.
John Doster, Invenergy

February 27, 2009

Ms. Heidi Woeber
U.S. Fish and Wildlife Service
Rock Island Field Office
4469 48th Avenue Court
Rock Island, IL 61201

Re: California Ridge Wind Project, Vermilion and Champaign Counties, Illinois

Dear Ms. Woeber:

California Ridge Energy LLC, an affiliate of Invenergy Wind LLC, is proposing to construct an up to 200-Megawatt (MW) wind farm in Vermilion and Champaign Counties, Illinois. This project is known as the California Ridge Wind Project. The attached figure identifies the project.

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads and underground and overhead transmission lines. Although final turbine locations, access roads, and electrical connections have not been determined at this time, Table 1, below, identifies sections potentially affected by the project.

California Ridge Energy LLC is planning to submit a Special Use Permit (SUP) application for the up to 200-MW project to both Vermilion and Champaign Counties during August 2009. At this time, HDR Engineering, Inc. (HDR) requests your review for potential effects on known federal and state listed threatened or endangered species and rare natural features. Your agency's comments will be incorporated into the SUP review process for the project.

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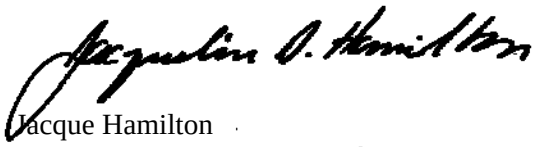
Sincerely,

HDR Engineering, Inc.



Jacque Hamilton
Environmental Project Manager

Attachment: Project Location Map

cc: Rhett Good, Western EcoSystems Technology, Inc.
Russ Romme, BHE Environmental, Inc.
John Doster, Invenergy

April 30, 2009

Mr. Hector Santiago
National Park Service
Midwest Regional Office – Planning and Compliance Division
601 Riverfront Dr.
Omaha, NE 68102

Mr. Louis Yockey
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702-1271

Re: California Ridge Wind Project, Vermilion and Champaign Counties, Illinois

Dear Messrs. Santiago and Yockey:

California Ridge Energy LLC, an affiliate of Invenergy Wind LLC, is proposing to construct a 200-Megawatt (MW) wind farm, referred to as the California Ride Wind Project, in Vermilion and Champaign Counties, Illinois. The attached figure shows the project location.

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads and underground and overhead transmission lines. Although final turbine locations, access roads, and electrical connections have not been determined at this time, Table 1 identifies sections potentially affected by the project.

California Ridge Energy LLC is planning to submit a Special Use Permit (SUP) application for the project to both Vermilion and Champaign Counties during August 2009. At this time, HDR Engineering, Inc. (HDR) requests your review of the project. We are contacting your offices specifically in regards to the Middle Fork of the Vermilion River, which we understand is both a State and National Scenic River. Please note that the project does not overlap the 1,000-foot designated scenic river corridor; the farthest eastern edge of the project boundary is approximately a quarter mile west of the Middle Fork of the Vermilion River. Your agency's comments on this project will be incorporated into the SUP review process. We have also contacted Mr. Keith Shank at the Illinois Department of Natural Resources and Ms. Joyce Collins at the U.S. Fish and Wildlife Service requesting their offices' comments.

HDR Engineering, Inc.

701 Xenia Avenue South
Minneapolis, MN 55416-3636

Phone (763) 591-5400
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Table 1 – Sections within Project Area

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The enclosed map shows the location of California Ridge Wind Project area to facilitate your review. If you require further information or have questions regarding this matter, please contact me at (763) 591-5432 or at Jacqueline.Hamilton@hdrinc.com.

Sincerely,

HDR Engineering, Inc.

Jacque Hamilton
Environmental Project Manager

Attachment: Project Location Map

cc: John Doster, Invenergy

March 9, 2009

Ms. Joyce Collins
U. S. Fish and Wildlife Service
8588 Route 148
Marion, Il 62959-4565

Re: California Ridge Wind Project, Vermilion and Champaign Counties, Illinois

Dear Ms. Collins:

California Ridge Energy LLC, an affiliate of Invenergy Wind LLC, is proposing to construct an up to 200-Megawatt (MW) wind farm in Vermilion and Champaign Counties, Illinois. This project is known as the California Ridge Wind Project. The attached figure identifies the project.

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Sincerely,

HDR Engineering, Inc.

Jacque Hamilton
Environmental Project Manager

Attachment: Project Location Map

cc: Rhett Good, Western EcoSystems Technology, Inc.
Russ Romme, BHE Environmental, Inc.
John Doster, Invenergy

EcoCAT
Ecological Compliance Assessment Tool

Applicant:	HDR Engineering,Inc. - MN	*IDNR Project #:*	0906735
Contact:	Jacqueline Hamilton	Date:	03/11/2009
Address:	701 Xenia Ave., Suite 600 Minneapolis, MN 55416		

Project: Invenergy California Ridge Wind Energy Center
Address: Rural Royal, Royal

Description: 200-MW 102-turbine utlity scale wind energy project.

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)
The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

INAI Site
Kennekuk Cove County Park INAI Site
Middle Fork Of The Vermilion River INAI Site
Spoon River INAI Site
Orchid Hill Natural Heritage Landmark
Bluebreast Darter *(Etheostoma camurum)*
Northern Harrier *(Circus cyaneus)*
Wavy-Rayed Lampmussel *(Lampsilis fasciola)*
Wavy-Rayed Lampmussel *(Lampsilis fasciola)*

An IDNR staff member will evaluate this information and contact you within 30 days to request additional information or to terminate consultation if adverse effects are unlikely.

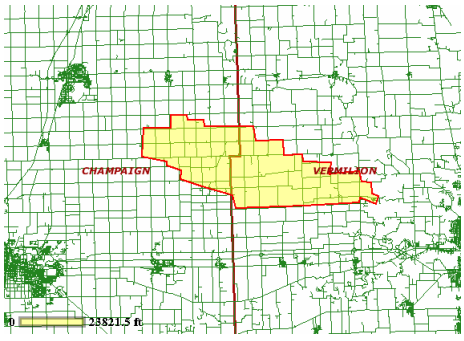
Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Champaign

Township, Range, Section:

20N, 10E, 1	20N, 10E, 2
20N, 10E, 3	20N, 10E, 12
20N, 11E, 6	20N, 11E, 7
20N, 11E, 18	20N, 14W, 4
20N, 14W, 5	20N, 14W, 6
20N, 14W, 7	20N, 14W, 8
20N, 14W, 9	20N, 14W, 16
20N, 14W, 17	20N, 14W, 18
21N, 10E, 22	21N, 10E, 23



21N, 10E, 24	21N, 10E, 25
21N, 10E, 26	21N, 10E, 27
21N, 10E, 33	21N, 10E, 34
21N, 10E, 35	21N, 10E, 36
21N, 11E, 19	21N, 11E, 30
21N, 11E, 31	21N, 14W, 19
21N, 14W, 20	21N, 14W, 21
21N, 14W, 28	21N, 14W, 29
21N, 14W, 30	21N, 14W, 31
21N, 14W, 32	21N, 14W, 33

County: Vermilion

Township, Range, Section:

20N, 12W, 7	20N, 12W, 17
20N, 12W, 18	20N, 12W, 19
20N, 12W, 20	20N, 12W, 29
20N, 13W, 3	20N, 13W, 4
20N, 13W, 5	20N, 13W, 6
20N, 13W, 7	20N, 13W, 8
20N, 13W, 9	20N, 13W, 10
20N, 13W, 11	20N, 13W, 12
20N, 13W, 13	20N, 13W, 14
20N, 13W, 15	20N, 13W, 16
20N, 13W, 17	20N, 13W, 18
20N, 13W, 19	20N, 13W, 20
20N, 13W, 21	20N, 13W, 22
20N, 13W, 23	20N, 13W, 24
20N, 14W, 1	20N, 14W, 2
20N, 14W, 3	20N, 14W, 10
20N, 14W, 11	20N, 14W, 12
20N, 14W, 13	20N, 14W, 14
20N, 14W, 15	20N, 14W, 22
20N, 14W, 23	20N, 14W, 24
21N, 13W, 30	21N, 13W, 31
21N, 14W, 22	21N, 14W, 23
21N, 14W, 25	21N, 14W, 26
21N, 14W, 27	21N, 14W, 34
21N, 14W, 35	21N, 14W, 36

IL Department of Natural Resources Contact

Keith Shank

217-785-5500

Division of Ecosystems & Environment

Local or State Government Jurisdiction

Vermilion County

Kolby J. Riggle

200 S. College St.

Danville, Illinois 61832

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.

3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

Security

EcoCAT operates on a state of Illinois computer system. We may use software to monitor traffic and to identify unauthorized attempts to upload, download, or change information, to cause harm or otherwise to damage this site. Unauthorized attempts to upload, download, or change information on this server is strictly prohibited by law. Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.

Attachment

Invenergy California Ridge Wind Energy Center
Champaign County

Wildlife Impact Recommendations

Champaign County may wish to consider permit conditions requiring the applicant to monitor, assess, and report possible fish and wildlife effects of the proposed action in the following ways.

- Incorporate best management practices to minimize risk to federally-listed and state-listed species, as outlined in this Attachment. Focus should be on appropriate avoidance and minimization of habitat disturbance, with mitigation measures implemented as applicable.

- Where feasible, permanent engineering solutions to soil erosion and water quality issues should be required and maintained, particularly with reference to service and access roads.

- Perform pre-construction assessments of avian and bat usage within the project area. Such assessments should include inventories of habitat types in and near the project area, including crop rotations or choices, and observations of both migratory and resident bird usage. Consideration of all seasons should be included, although spring migration is anticipated to be of greatest interest. Acoustic bat activity monitoring is also appropriate, particularly during the fall migratory season when activity would be expected to be highest. Specific federally-listed and state-listed species of interest are discussed in the following narrative. Risks to protected species should be evaluated and appropriate regulatory permits sought for potential incidental taking of protected animals.

- Perform at least one year of post-construction monitoring and assessment, noting any changes in wildlife usage patterns and evaluating potential causes of such changes.

- Consideration should be given to periodic repetition of the post-construction wildlife surveys during the life of the project.

Natural resources within, or in the vicinity of, the proposed wind energy facility are listed below, along with a discussion of potential issues.

Coal Resources

According to the Illinois State Geological Survey databases, the only known past coal mining location in Champaign County is a late-19th-Century underground mine west of Sidney, well - outside the project area. However, the developer may wish to verify the ownership of the

mineral rights beneath turbine lease locations to determine if mining conflicts might exist in the future which might pose issues of geologic stability for wind turbines.

State Lands; Nature Preserves; Land & Water Reserves; and INAI Sites

National Scenic River - Middle Fork of the Vermilion River

A portion of the Middle Fork comprises the State's only designated National Scenic River. The River is formally protected as a National Scenic River where title (fee or easement) is held by the Illinois Department of Natural Resources, but this legal protection extends only 500 feet from the River's center-line.

The nearest point of the project area in Champaign County lies approximately seven miles from the National Scenic River. However, in this area the River lies in a valley more than 100 feet below the uplands to the west, and the valley walls are typically forested, circumstances which should prevent the visibility of turbines in Champaign County to recreational users of the River. Nevertheless, it may be that from some points on the River, upstream of the designated Scenic River, turbines in Champaign County might be visible. A visibility analysis is appropriate to determine to what degree the operation of wind turbines in the project area may degrade the recreational experience of persons on the River.

The river's riparian corridor forms an important avenue for the movement of all forms of wildlife, providing food and shelter for both migrant and resident species. By no means is wildlife limited to this area, however. Recent radar-based studies along the Illinois River demonstrate that even waterfowl may arrive and depart cross-country, rather than following the river. Hence, distance from the river provides no assurance that wildlife commonly found there will not also occur within the project area.

Erosion related to wind energy facility construction and operation has the potential to adversely affect the Middle Fork and its tributaries through siltation and sedimentation, while disruption of field tile systems may temporarily or permanently adversely modify the prevailing thermal regime in feeder stream habitats essential to Middle Fork fish, reptiles, amphibians, and mussels, including many State-listed endangered or threatened species, several of which are unique to the Vermilion River system in Illinois.

Measures should be adopted to minimize erosion and siltation related to construction and maintenance of the project and facilitate tile repairs. Fortunately, much of the project is located outside of the watershed of that portion of the Middle Fork which is designated as National Scenic River.

Middle Fork of the Vermilion River INAI Site

The Middle Fork of the Vermilion River is a designated Illinois Natural Areas Inventory (INAI) Site, from its confluence with the Salt Fork east of Oakwood, upstream to the northern boundary

of Champaign County, well beyond the reaches designated as National Scenic River. The Middle Fork, its tributaries, and its riparian forests support a plethora of federally-listed and State-listed endangered and threatened species, including protected mussels, fish, amphibians, reptiles, bats, raptors and other birds. All drainage from the north side of the project in Champaign County enters the Middle Fork INAI Site.

High water quality is a hallmark of this stream. Erosion related to wind facility construction and operation has the potential to adversely affect tributaries and the Middle Fork through siltation and sedimentation, and to adversely modify feeder stream habitats essential to Middle Fork fish and mussels, several of which are unique to the Vermilion River system in Illinois.

Salt Fork of the Vermilion River INAI Site

The Salt Fork is designated as an INAI Site from a point northwest of Homer downstream to its confluence with the Middle Fork in Vermilion County. This reach of the River supports numerous aquatic listed species of fish, mussels, reptiles, and amphibians, including the Mudpuppy Salamander, the Bigeye Chub, Bluebreast Darter, River Redhorse, Blanding's Turtle, Wavy-Rayed Lampmussel, Purple Wartyback, and the Salamander Mussel.

The Salt Fork receives the drainage from the Spoon River INAI Site, and from portions of the Stoney Creek watershed in Champaign County. Both of these streams drain significant portions of the proposed project area.

Spoon River INAI Site

The Spoon River is a tributary of the Salt Fork of the Vermilion River, located entirely within Champaign County south of Gifford. Although it is completely channelized and maintained by the Spoon River Drainage District, it has been designated because it retains an unusually high fish diversity, likely due to its constant influx of cool tile drainage.

The Spoon River INAI could be adversely modified by erosion and siltation related to turbine construction, and by disruption of the numerous agricultural tile drains which feed it and maintain its temperature.

Edgewood Farm land and Water Reserve and INAI Site

Located along the Salt Fork southeast of Ogden, and more than seven miles from the project area, the higher elevations of the LWR exceed 660 feet MSL, about the same elevation as the wind farm. Consequently, wind turbines may be visible from the higher elevations within the LWR unless forests on the opposite side of the Salt Fork valley are tall enough to screen them. However, at that distance, visibility is not likely to be intrusive on the senses of site users.

Pelville Cemetery INAI Site

Pelville Cemetery lies 14 miles north of the project area, just west of Rankin in Vermilion County and on the opposite side of the Middle Fork's valley. A keen-eyed observer at Pell Cemetery might possibly be able to see California Ridge turbines under conditions of excellent visibility, but they are unlikely to intrude on a visitor's experience. The Cemetery supports breeding pairs of the **Henslow's Sparrow** and other migratory birds, whose migratory passages could pose issues for the project.

Henschel Workman State Habitat Area

The Department's 135-acre Henschel Workman State Habitat Area is located southeast of Rankin in Vermilion County, about 13 miles north of the project footprint. It supports breeding **Henslow's Sparrows** and provides a large expanse of suitable wintering habitat and migratory staging area attractive to other State-listed bird species, whose migratory passages could pose issues for the project.

Sleeter State Habitat Area

The 103-acre Sleeter SHA is located about 1.5 miles northwest of Gifford in Champaign County. It lies eight miles northwest of project areas within Vermilion County, but only four miles from the nearest project areas in Champaign County. Turbines located in both Champaign and Vermilion Counties will be visible to site users, but this should have little impact on hunting activities, the major recreational use of this site. However, the Sleeter SHA may be a focal point for birds whose migratory passages could pose issues for the project.

Documented Listed Species

Indiana Bat, *Myotis sodalis*.

Summer nursery colonies of this bat, listed by the federal government and Illinois as endangered, have been documented in forested riparian tracts along the Middle Fork of the Vermilion River and the Big Four Ditch in Ford County, north of the project area, and along the Little Vermilion River in the southern half of Vermilion County. It is reasonable to assume that this species traverses or roosts in the intervening segments of the Vermilion River system.

Nursing females may forage above crop-fields a mile or more from the nursery colony. This species winters in caves or mines some distance from summer habitats, but its migratory behavior is poorly understood. No hibernation sites are known from Vermilion County, although critical hibernating habitat is known in LaSalle County. It is surmised that bats using the Middle Fork for summer habitat most likely migrate from hibernation sites in southwestern Indiana and Kentucky, although a banding study in the 1970's indicated that at least some LaSalle County bats move in this direction.

The risk to bats from collisions with moving wind turbine blades appears to be much higher than for birds. To date, no Indiana Bats have been documented as killed by wind turbines. But, until recently, no utility-scale wind farms have been proposed or constructed within the range of Indiana Bats, so the risk to this species from wind turbines remains unquantified.
The project area itself appears to contain no potential summer nursery or roosting habitat for the Indiana Bat, but individuals roosting along the Middle Fork may forage above fields within the project area.

Because the winter hibernation sites of these bats are unknown, the greatest risk may be to Indiana Bats migrating across or through the project area. Efforts to identify and monitor the foraging and migration behavior of this bat population may establish the degree of risk which this facility would pose to this species.

The Department is unable to evaluate the potential for an incidental take of an Indiana Bat at this facility based on existing data; capture studies along creeks in the nearer vicinity of the project may be advisable. More common bat species undoubtedly occupy habitats in the vicinity, and are at risk of mortality, directly through collisions with wind turbines, or indirectly through barotrauma (lung hemorrhages caused by extremely low air pressures in the vortices created by wind turbine vanes).

Vermilion County is known to be particularly rich in bat fauna: a 1996 netting survey on the Little Vermilion River east of Georgetown captured seven of nine species whose ranges contain Vermilion County, including the Eastern Red Bat, Hoary Bat, Northeastern Myotis, Eastern Pipistrelle, Big Brown and Little Brown Bats, in addition to the Indiana Bat. Similar diversity may exist along the Sangamon River in western Champaign County, placing the proposed wind farm between two major bat habitat areas. An acoustic bat survey is recommended, particularly during the fall bat migratory season (August 1 through October 31) when activity would be expected to be the highest, in order to characterize bat activity in the project area. A high level of bat activity may warrant post-construction mortality studies.

Blanding's Turtle, *Emydoidea blandingii*

The State-listed threatened Blanding's Turtle has been recommended by the Illinois Endangered Species Protection Board (IESPB or Board) for up-listing to "endangered." This rulemaking change should be accomplished in 2009.

The Blanding's Turtle, distinguishable by its solid bright yellow lower jaw and throat, has been documented most recently in the Middle Fork SFWA (Horseshoe Bottom Nature Preserve), about two miles from the project area in Vermilion County. The Blanding's Turtle was last recorded in Champaign County in 1953, when an individual was collected in Lea Park in Urbana, from the Saline Branch of the Salt Fork. While existing populations may be small and localized, the entire Vermilion River system is accessible to this species. In Northern Illinois, the species frequently ascends waterways to access open upland areas for nesting.

The Blanding's Turtle reaches sexual maturity only after 15-20 years, and has a documented life-span beyond 70 years, although females beyond age 50 may not be reproductively active. This species is known to move widely across the landscape, following streams and drainage ditches, but also moving overland when necessary. Overland movements typically occur at night. It is believed to demonstrate fidelity to nesting and hatching areas, attempting to return to its own natal site for egg-laying. The species is known to nest farther from the water than any other aquatic turtle in North America, at times nesting up to a mile inland. The species' life cycle appears to be compatible with row-crop agriculture, since egg-laying occurs in late spring or early summer after planting, and hatching usually occurs before harvest. The project area lies near the southern limits of the species' range, so overwintering in the nest by hatchlings should be a rare occurrence, if the species remains present.

The main threats to this species are nest predation by skunks, raccoons, and other mammalian predators, road-kill, and poaching (illegal collection for the pet trade). Wind energy construction activities may result in disturbance of traditional nesting areas, the destruction of nests, the entrapment of individuals in excavations, and road-kill.

Workers on the project should be educated about this species' appearance and behavior; excavations left open overnight should be covered and inspected before filling: and any Blanding's Turtle observed should be documented with photographs and reported to the Department of Natural Resources. A Turtle may not be moved to facilitate the project unless the applicant has obtained an Incidental Take Authorization.

Smooth Softshell Turtle, *Apalone mutica*.

The Board has recommended listing the Smooth Softshell as "endangered;" this designation is pending the completion of rulemaking, which should be accomplished in 2009.

This aquatic turtle inhabits larger streams and rivers, in segments with sandy substrates and sand bars. Regarded as a delicacy by many fishermen, this species has suffered from over-collecting, while pollution, siltation, and sedimentation have degraded many habitats. This species has been documented in Vermilion County, and it is potentially present in all reaches of the Vermilion River system.

Unless transportation of wind turbine components requires the upgrade or reconstruction of bridges, there should be little risk of direct adverse effects to this species. Erosion and siltation pose indirect threats.

River Redhorse, *Moxostoma carinatum*

The state-listed threatened River Redhorse is a member of the sucker family which feeds largely on invertebrates, including young mussels and crustaceans, for which it possesses specialized grinding teeth. It prefers medium-to-high-gradient rivers and streams with clean sand, gravel, and cobble substrates. The River Redhorse has been recorded in the Middle Fork as far north as the Middle Fork SFWA, but is more common in the Salt Fork.

Erosion related to turbine construction and maintenance may degrade stream-bed habitats or suppress populations of prey species. Because the species rarely ascends small tributaries, direct adverse effects are unlikely.

Eastern Sand Darter, *Ammocrypta pellucidum*

This small fish is listed by Illinois as "threatened." Restricted to streams in the Wabash drainage of Illinois, it requires high water quality and bottom substrates of clean sand in fairly swift waters, requirements satisfied by all branches of the Vermilion River. It was last recorded in Champaign County in Buck Creek below Penfield, just above its confluence with the Middle Fork. Buck Creek does not drain the project area, but other tributaries of the Middle Fork do. Soil erosion and sedimentation pose the main threats to this species, followed by chemical pollution.

Bigeye Chub, *Hybopsis amblops*

The State-listed endangered Bigeye Chub is another small fish found only in the Wabash River watersheds of Illinois, but generally in smaller creeks and streams. It is present in the Middle Fork, the Salt Fork, and Stoney Creek. Degradation of water quality and alteration of stream habitats are the main threats to this species.

Mussels

The Salt Fork, Middle Fork, and North Fork of the Vermilion River, and their tributary creeks, provide essential habitat for a large number of freshwater mussels, among the most endangered organisms in North America. High water quality remains the most essential habitat requirement.

Federally-listed species found, or once found, in these streams include the **Clubshell**, *Pleurobema clava*, and the **Riffleshell**, *Epioblasma torulosa*. A cooperative program between the U.S. Fish & Wildlife Service and the IDNR is planned to re-introduce the extirpated Riffleshell, and to augment the existing Clubshell population.

Headwater streams are most likely to support populations of the **Slippershell**, *Alasmidonta viridis,* and the **Little Spectaclecase**, *Villosa lienosa*. Broadly distributed lower down are populations of the **Wavy-Rayed Lampmussel**, *Lampsilis fasciola*; **Rainbow**, *Villosa lienosa*; **Purple Wartyback**, *Cyclonaias tuberculata*; **Kidneyshell**, *Ptychobranchus fasciolaris*; **Rabbitsfoot**, *Quadrula cylindrica*, and **Purple Lilliput**, *Toxolasma lividus*.

The **Salamander Mussel**, *Simpsonaias ambigua*, is the only species in its genus, and is also unique among North American mussels as the only species with a non-fish glochidial host, the **Mudpuppy**, *Necturus maculosus*. The Salamander Mussel has been documented at seven locations in Vermilion County since 1980, in the North Fork, the Middle Fork, and in Stony Creek, a tributary of the Salt Fork. A small mussel (two inches or less), and commonly found beneath rocks and debris, where the Mudpuppy spends much of its time, the Salamander Mussel

is likely under-sampled by the typical non-targeted mussel survey, and may be more locally common than these records indicate.

Mudpuppy, *Necturus maculosus*

This large (up to one foot total length) salamander has been recommended by the Board for listing as "threatened;" this designation is pending the completion of rulemaking, which should be accomplished in 2009. The Mudpuppy is the only known glochidial host of the State-listed endangered **Salamander Mussel**, *Simpsonaias ambigua,* a species which is now being evaluated for federal listing under the Endangered Species Act; the decline of the Mudpuppy may be a major factor in the disappearance of the Salamander Mussel.

The Mudpuppy never develops beyond an aquatic larval stage, and so is never found in terrestrial habitats. It inhabits clear rivers, creeks, streams, lakes, and ponds, but conceals itself under rocks or woody debris during the day, feeding actively at night. It typically goes unseen except by fishermen, who sometimes inadvertently catch it. It can cope with siltation and sedimentation so long as clear gravelly headwater areas remain available for reproduction.

The Vermilion River system is one of the last "strongholds" for this species in the state, and it should be presumed to be present throughout. Stony Creek drains the central portion of the project area, and has the most recent records for the Salamander Mussel, indicating a Mudpuppy population is present in Stoney Creek, a tributary of the Salt Fork.

Cool or cold water is essential for this species, which remains active all winter; water temperatures above 72EF are harmful, and those above 77EF can be fatal. Agricultural tile drainage helps lower stream temperatures, but the removal of riparian trees and shrubs exposes streams to direct solar radiation and heating. In-stream cover provided by rocks and woody debris is essential for concealment and reproduction, since eggs are suspended from the bottoms of rocks and logs. The common belief that removal of woody debris from stream channels improves drainage is a factor in the decline of this--and many other-- species.

Major threats include pollution, siltation and sedimentation, stream channelization, and woody debris removal. The main risks associated with wind energy projects will be direct stream modification through the repair or upgrade of roads, modification of aquatic thermal regimes through the disruption of agricultural tile drainage systems, and siltation and sedimentation associated with construction and permanent features, such as service roads, which suppresses prey populations and renders spawning areas unsuitable. Any planned in-stream work may require an Incidental Take Authorization.

Bald Eagle, *Haliaeetus leucocephalus*

The Bald Eagle, de-listed under the federal Endangered Species Act last year, is currently listed by Illinois as "threatened." The Board has recommended de-listing the Bald Eagle due to its recovery in Illinois, and this decision is now being implemented through the rule-making process, which should be completed prior to the end of 2009. It remains protected under the

Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, each as stringent as the Endangered Species Act.

For several years there has been a Bald Eagle nest on the North Fork just above Lake Vermilion, about seven miles east of the project area. However, Illinois has experienced a significant increase in Bald Eagle nests over the last few years, and many new nests have not been tallied. Nests have been appearing on smaller tributaries of larger rivers in areas where Eagles have not been seen for years, and it may be assumed the Vermilion River Basin reflects this trend. Hence, it is likely that new Eagle nests will appear along the North Fork, Middle Fork, and Salt Fork during the project's life.

In addition, Illinois now has the highest population of wintering Bald Eagles in the Lower 48 States, although they tend to be concentrated around major rivers, cooling lakes, and other waters likely to remain ice-free. However, during migration, Eagles frequently fly overland. Thus, while the wind energy project is unlikely to pose any direct threat to the known Eagle nest and its surrounding hunting territory, there may be a collision risk for migrating Eagles.

Least Bittern, *Ixobrychus exilis*

This small heron nests in the emergent vegetation of marshes. It has been documented from Kennekuk Cove County Park in Vermilion County, and from wetlands near the Middle Fork in northeastern Champaign County.

Known breeding locations are unlikely to be affected by the project, although there may be a collision risk for migrating Bitterns. Generally speaking, waterfowl are rarely the victims of collisions with wind turbines, so this risk may be low.

Henslow's Sparrow, *Ammodramus henslowii*

The Henslow's Sparrow is listed by Illinois as a threatened species, but is scheduled for de-listing in 2009. Breeding populations of this grassland bird have been documented north of the project area, and may occur within the project area where suitable habitat exists. More northern breeding populations may migrate through the project area.

Wind turbines associated with this project have the potential to kill or injure birds through blade-strike, unless breeding populations are also found within the footprint. The species is extremely sensitive to the presence of vertical structures and to any form of break in contiguous habitat, such as roads or trails, so that construction in breeding areas during breeding season is likely to result in unlawful takings.

Northern Harrier, *Circus cyaneus*

The State-listed endangered Northern Harrier is a ground-nesting grassland hawk. It has been documented as recently as 2004 as nesting in Champaign County north of Rantoul, less than ten miles from the project footprint. Also a frequently-observed migrant, the species has a statewide

range. While many sources indicate the species needs large open areas of habitat, Illinois studies have demonstrated this hawk can use relatively small patches of habitat for successful breeding, especially in the vicinity of larger habitats. Breeding is often associated with wetlands such as marshes, sedge meadows, and wet prairies.

While most hunting activities occur at fairly low altitudes, below typical rotor-swept elevations, hunting can expose this bird to collision risk. Like the Upland Sandpiper, this species engages in an aerial courtship display which places it at risk of collision with wind turbines. Wind farm construction and operation may alter concentrations of prey species.

This hawk relies heavily on its acute hearing to locate prey, and--if the noise generated by wind turbines interferes with this function (which is not known to be the case)--turbines might adversely affect their ability to hunt near the turbines, reducing available food resources.

If pre-construction surveys indicate use of the project area by migrant Harriers, post-construction surveys should be performed to determine whether the Harrier continues to hunt territories in proximity to turbines.

Barn Owl, *Tyto alba*

This endangered raptor nests in larger tree cavities and in barns or abandoned buildings, sometimes within city limits. A breeding record exists for Champaign County, about four miles northwest of Rantoul. This owl hunts both open woodlands and grasslands; its preferred prey consists of small rodents such as mice and voles. The main risk posed by wind power facilities to this species is the removal of suitable nesting trees and abandoned buildings to facilitate transportation of wind turbine components or to maximize wind energy conversion. Both trees and buildings should be examined for Barn Owl occupancy prior to removal.

Short-Eared Owl, *Asio flammeus*

The endangered Short-Eared Owl also nests and winters in grasslands and wetlands. Champaign County lies in both breeding and wintering ranges, and breeding Short-Eared Owls were reported from two separate locations in Vermilion County in 1990. Large numbers of wintering owls are observed annually in suitable winter habitat in Iroquois County.

Highly nomadic, the Short-Eared owl depends heavily on vole and mouse populations, and the size of its breeding and hunting territories varies inversely with prey population sizes. When prey populations are high, owls may be ground-roosting every few meters in suitable habitat. The Northern Harrier often harasses this Owl, stealing its food.

This Owl's hunting flights are often less than ten feet off the ground (a circumstance which makes this bird highly vulnerable to collisions with vehicles); during aerial mating rituals, flights occur at typical wind turbine rotor-swept height. This Owl is highly dependent on its acute hearing to locate and seize prey. The degree to which noise from wind turbines may interfere with predation behavior is unknown.

The effects of wind turbines on Short-Eared Owls may be heavily influenced by the proximity of turbines to breeding, roosting, and hunting areas. Once turbines are built, this proximity relationship will be subject to change as land owners alter land management practices. This is likely to be of concern mainly if attractive habitat for Owls and their prey is created within or near the turbine array following construction.

Upland Sandpiper, *Bartramia longicauda*

This State-listed threatened grassland bird prefers habitat of short-grass prairie/pasture. For many years this ground-nesting species was thought to be area sensitive, requiring ten acres or more of grassland habitat for successful breeding. However, many recent breeding efforts are occurring in grassed waterways of row-crop fields, which provide considerably less than ten acres of habitat, and from along roadsides.

Champaign County breeding records are associated with the University of Illinois and the Champaign-Urbana Airport. There has already been at least one instance in 2008 of identification of Upland Sandpipers at the commencement of wind project construction in Stephenson County, a county which had, until then, no prior breeding record for this species.

The Upland Sandpiper engages in an aerial courtship display which passes through the rotor-swept elevations of utility-scale wind turbines, placing it at risk of collision mortality. Whether this species will be sensitive to the proximity of vertical structures, or to shadow "flicker" on potential nesting areas, has not been demonstrated.

The Department recommends mapping all habitat types within the project footprint, and checking even relatively small areas of appropriate habitats for the presence of this species prior to any initiation of construction disturbance during the breeding season.

Potential Listed Species

Franklin's Ground Squirrel, *Spermophilus franklinii*

The State's largest ground squirrel was listed as "threatened" in 2004. Most active above-ground on sunny days in late spring and early summer, this species hibernates for seven to nine months of the year. It prefers taller vegetation than other ground squirrels, and so is seldom seen. Well-drained ground is a requisite, so today this species is most often found along railroads and highways where its requirements for food and shelter are satisfied. There appears to be no suitable habitat within the project footprint, but transport of turbine components often requires rebuilding or repairing roadways some distance from the ultimate destination.

The Franklin's Ground Squirrel has been documented around Champaign-Urbana, and along former rail-beds near St. Joseph. Offspring can disperse up to a mile in their first season. If present, this species can be threatened during construction through the crushing and collapse of

its burrows by heavy equipment. Shadow flicker cast in its territory by operating turbines may also be detrimental.

Ornate Box Turtle, *Terrapene ornata*

The Board has recommended listing the Ornate Box Turtle as "threatened;" this designation is pending the completion of rulemaking, which should be accomplished in 2009.
This terrestrial turtle is usually found in open grassland areas, in contrast to its cousin, the Eastern Box Turtle, which is usually found in woodlands. This turtle hibernates underground from late September through April, so it can not evade disturbance during that period. Its carapace carries elaborate markings, including a yellow bar along the spine, which distinguishes it from the other species. While it appears to be more common in sandy soils, it is not restricted to them. Specimens have been collected from both Iroquois and Champaign County.

As with many turtles, road-kill and over-collecting are major causes of decline. In a recent study of a northwestern Illinois population, a significant number of individuals exhibited carapace scarring from farming equipment (discs and harrows), illustrating that this species may frequently be found in rowcrop fields.

Preferred habitat of this species may not be present in the project area, but too little is known of this species' current distribution to rule out its presence. Project workers should be educated as to its appearance and habits, remain alert for turtles on roads and in fields, and report any suspected Ornate Box Turtles to supervisors. The Department of Natural Resources should be promptly notified if any Ornate Box Turtles are identified. Once listed, it will be unlawful to move or capture an Ornate Box turtle to facilitate the project without first obtaining an Incidental Take Authorization from the Department.

Loggerhead Shrike, *Lanius ludovicianus*

The threatened Loggerhead Shrike is adapted to the savanna conditions of interspersed grasslands, shrubs, and trees. This species has been adversely affected by the decline in animal husbandry and the abandonment of the "shelter-belt" fence-row conservation practice, which has severely reduced both breeding and foraging habitat. The Shrike, also known as the "butcher bird," needs thorny trees and shrubs, even barbed wire, on which to impale its prey, which may be left for several days before being eaten. Areas which support large insects and small rodents, major food items, are also necessary. Due to losses of suitable habitat, Loggerhead Shrikes may attempt reproduction in trees near human habitations and in other areas where they would normally not be expected. The Shrike has been reported as breeding (1990) in southern Champaign County north of Villa Grove.

The primary consideration for wind energy facilities is the potential for further loss of remaining habitat, if fence-rows are cleared to avoid wind turbulence or to improve turbine exposure, or if road-side trees are cleared to create turning radii for turbine carriers or to establish power lines. A pre-construction survey to identify the presence of Shrike nests should be conducted for areas with suitable habitat if work is proposed during the breeding season in order to avoid direct

mortality. “Resident” foraging birds are not thought to be at significant risk from operating wind turbines, but potential risk associated with migrants should be considered.

Black-Billed Cuckoo, *Coccyzus erythropthalmus*

The Black-Billed Cuckoo has been recommended by the Board to be listed as "threatened," and this listing is pending the completion of administrative rulemaking, which should occur in 2009.

This bird nests in interior thickets of forested tracts and feeds heavily on caterpillars. This species was documented as nesting at Jordan Creek of the North Fork Nature Preserve (Vermilion County) in the 1990's, and Vermilion County has thousands of acres of suitable nesting habitat along its streams and rivers. Similar habitat is available in Champaign County along the lower Salt Fork and the Sangamon River. This species is not directly threatened by wind turbine construction or operation, but may be subject to collision risk as a migrant.

Migratory Birds

American Golden Plover, *Pluvialis dominica*

This migratory bird breeds in the Arctic tundra, migrates south along the Atlantic seaboard to South America in the winter, but returns northward through central North America. Areas of Illinois and Indiana provide important spring migration staging areas, which may be occupied by this species for a month or more while birds go through a molt before resuming migration. It has become a species of concern due to its relatively low global population estimate of around 300,000 birds.

Based on 25 years of Spring Bird Count data, it is likely that significant numbers of this species congregate in Counties including northern Champaign and Vermilion Counties, but the locations of large concentrations vary from year to year. Large numbers of this species are routinely observed south of Sibley Grove in Ford County. Pre- and post-construction surveys should be performed to observe this species.

Plovers tend to aggregate in dense concentrations, and are known to fly in large tight groups at or below the approximate rotor-swept elevation, which may expose them to collision mortality risk. Concerns also exist pertaining to habitat fragmentation by service roads, and displacement from habitat due to potential sensitivity to vertical structures and human activity.

A research project has begun in an effort to better understand the behavior and needs of this species, as well as how it may be affected by the presence of wind turbines. Some preliminary results were recently published [O'Neal, *et. al.* (2008)] .

One apparent finding is that the species definitely concentrates in a few areas, rather than being generally dispersed across suitable habitat, resulting in temporarily dense population "hot-spots." However, where these may be located may be influenced year-to-year by poorly understood climatic cues. Very few birds appeared in 2008 in the expected concentration areas; instead,

major concentrations were located more than one hundred miles to the south. Anecdotal evidence indicates this is an unusual occurrence.

A number of observers had reported a daytime habitat preference for short grass, soybean stubble, or bare ground with standing water or residual moisture, but O'Neal first reported a night roost preference for standing corn stubble cover, with crepuscular movement between the two. O'Neal reported all observations were located more than 70 meters from adjacent roads, suggesting an intolerance for breaks in habitat. (Effects of traffic were not investigated.) Interestingly, O'Neal also reported several observations of predation of the Golden Plover by the Northern Harrier.

Whooping Crane, *Grus americana*

An experimental population of the federally-listed endangered Whooping Crane has been established with breeding grounds in Wisconsin and wintering areas in Florida. Fall 2009 will see more than 100 birds move to Florida. Whooping Cranes often "stop over" during migration and this may occur virtually anywhere in the State.

Whooping Cranes may "stop over" for extended periods. In November 2006, during their first unescorted Fall Migration, a pair of Cranes rested for four days along the upper East Branch Vermilion River (Wabash Drainage) in Ford County. A Whooping Crane extended its Spring movement by loitering near Danville until the end of June 2008.

During such stop-overs, cranes often forage on waste corn in nearby agricultural fields. Wind turbines and associated power lines pose a collision risk for these large birds, which require some distance to achieve safe altitudes. Most non-predation losses to this flock have been to power line collisions. The visibility of power lines should be maximized with appropriate line markers. The developer may wish to consider other voluntary efforts to promote Crane conservation.

Due to the very high public profile of the Whooping Crane, the Department suggests the developer/operator of this facility coordinate at least annually with the Whooping Crane Eastern Partnership (www.bringbackthecranes.org) to track the passage of Whooping Cranes through the vicinity, and explore additional measures to reduce potential losses of these birds.

Attachment

Invenergy California Ridge Wind Energy Center
Vermilion County

Wildlife Impact Recommendations

Vermilion County may wish to consider permit conditions requiring the applicant to monitor, assess, and report possible fish and wildlife effects of the proposed action in the following ways.

- Evaluate whether and to what degree "flicker" shadows impinge on the Middle Fork SFWA, Kickapoo State Recreation Area, and Kennekuk Cove County Park, including Windfall Prairie Nature Preserve, and implement appropriate measures to avoid this effect. Such measures may include shifting turbine locations, shortening turbine towers or blade length, and curtailing operations during "flicker" periods, or a combination of these.

- Evaluate the visual and audible impacts, if any, of the project to recreational users of the Middle Fork National Scenic River.

- Incorporate best management practices to minimize risk to federally-listed and state-listed species, as outlined in this Attachment. Focus should be on appropriate avoidance and minimization of habitat disturbance, with mitigation measures implemented as applicable.

- Where feasible, permanent engineering solutions to soil erosion and water quality issues should be required and maintained, particularly with reference to service and access roads.

- Perform pre-construction assessments of avian and bat usage within the project area. Such assessments should include inventories of habitat types in and near the project area, including crop rotations or choices, and observations of both migratory and resident bird usage. Consideration of all seasons should be included, although spring migration is anticipated to be of greatest interest. Acoustic bat activity monitoring is also appropriate, particularly during the fall migratory season when activity would be expected to be highest. Specific federally-listed and state-listed species of interest are discussed in the following narrative. Risks to protected species should be evaluated and appropriate regulatory permits sought for potential incidental taking of protected animals.

- Perform at least one year of post-construction monitoring and assessment, noting any changes in wildlife usage patterns and evaluating potential causes of such changes.

- Consideration should be given to periodic repetition of the post-construction wildlife surveys during the life of the project.

Natural resources within, or in the vicinity of, the proposed wind energy facility are listed below, along with a discussion of potential issues.

Coal Resources

According to the Illinois State Geological Survey databases, no known past coal mining locations are associated with the proposed project footprint, despite the presence of significant coal resources. However, the developer may wish to verify the ownership of the mineral rights beneath turbine lease locations to determine if mining conflicts exist, whether past or future, which might pose issues of geologic stability for wind turbines.

State Lands; Nature Preserves; Land & Water Reserves; and INAI Sites

National Scenic River - Middle Fork of the Vermilion River

A portion of the Middle Fork comprises the State's only designated National Scenic River. The reaches of the River closest to the project area (less than two miles) are formally protected as a National Scenic River where title (fee or easement) is held by the Illinois Department of Natural Resources, but this legal protection extends only 500 feet from the River's center-line. However, in this area the River lies in a valley more than 100 feet below the uplands likely to host turbines, and the valley walls are typically forested, circumstances which should considerably reduce the visibility of turbines to recreational users of the River. Nevertheless, it may be that from some points on the River turbines may be visible. Likewise, the intrusion of industrial noise would also diminish the experience of traveling the River, although the potential for perceptible wind turbine noise on the River is likely much lower than the potential for visual impacts.

A visibility analysis is appropriate to determine to what degree the operation of wind turbines in the project area may degrade the recreational experience of persons on the River, and the County may wish to consider the impacts to economic benefits derived from tourism and recreation.

The river's riparian corridor forms an important avenue for the movement of all forms of wildlife, providing food and shelter for both migrant and resident species. By no means is wildlife limited to this area, however. Recent radar-based studies along the Illinois River demonstrate that even waterfowl may arrive and depart cross-country, rather than following the river. Hence, distance from the river provides no assurance that wildlife commonly found there will not also occur within the project area.

Erosion related to wind energy facility construction and operation has the potential to adversely affect the Middle Fork and its tributaries through siltation and sedimentation, while disruption of field tile systems may temporarily or permanently adversely modify the prevailing thermal regime in feeder stream habitats essential to Middle Fork fish, reptiles, amphibians, and mussels, including many State-listed endangered or threatened species, several of which are unique to the Vermilion River system in Illinois.

Measures should be adopted to minimize erosion and siltation related to construction and maintenance of the project, and to facilitate tile repairs. Fortunately, much of the project is located outside of the watershed of that portion of the Middle Fork which is designated as National Scenic River.

Middle Fork of the Vermilion River INAI Site

The Middle Fork of the Vermilion River is a designated Illinois Natural Areas Inventory (INAI) Site, from its confluence with the Salt Fork east of Oakwood, upstream to the northern boundary of Champaign County, well beyond the reaches designated as National Scenic River. The Middle Fork, its tributaries, and its riparian forests support a plethora of federally-listed and State-listed endangered and threatened species, including protected mussels, fish, amphibians, reptiles, bats, raptors and other birds. All drainage from the north side of the project, whether in Vermilion or Champaign Counties, enters the Middle Fork INAI Site.

High water quality is a hallmark of this stream. Erosion related to wind facility construction and operation has the potential to adversely affect tributaries and the Middle Fork through siltation and sedimentation, and to adversely modify feeder stream habitats essential to Middle Fork fish and mussels, several of which are unique to the Vermilion River system in Illinois.

Salt Fork of the Vermilion River INAI Site

The Salt Fork is designated as an INAI Site from a point northwest of Homer downstream to its confluence with the Middle Fork. This reach of the River supports numerous aquatic listed species of fish, mussels, reptiles, and amphibians, including the Mudpuppy Salamander, the Bigeye Chub, Bluebreast Darter, River Redhorse, Blanding's Turtle, Wavy-Rayed Lampmussel, Purple Wartyback, and the Salamander Mussel.

The Salt Fork receives the drainage from the Spoon River INAI Site, and from Stoney Creek and Feather Creek. All three of these streams drain significant portions of the proposed project area.

Spoon River INAI Site

The Spoon River is a tributary of the Salt Fork of the Vermilion River, located entirely within Champaign County south of Gifford. Although it is completely channelized and maintained by the Spoon River Drainage District, it has been designated because it retains unusually high fish diversity, likely due to its constant influx of cool tile drainage. While this resource is not located in Vermilion County, it is less likely the Champaign County portion of the project would go forward on its own without the Vermilion County portion. Consequently, a decision by Vermilion County to proceed has implications for the Spoon River INAI.

The Spoon River INAI could be adversely modified by erosion and siltation related to turbine construction, and by disruption of the numerous agricultural tile drains which feed it and maintain its temperature.

Middle Fork State Fish & Wildlife Area

The 4,120-acre Middle Fork SFWA occupies lands on both sides of the Middle Fork River, the nearest of which abut the project area's eastern boundary. The formally-designated National Scenic River begins at the north boundary of the SFWA and extends southward to Rt. 150. Turbines will be visible--and may be audible at some points--from within the SFWA.

Extensive areas of forest canopy in the SFWA may be swept by "flicker" effects in the evening from turbines sited on the high ground west of the SFWA, which could pose issues to wildlife for which the canopy provides essential breeding, feeding, or migratory staging habitat. The Department has not identified any research specifically directed at the effects "flicker" may have on wildlife behavior, but must presume such a change in conditions will have consequences, but these may be a matter of degree. A model analysis of the extent, seasonality, and duration of any "flicker" sustained by SFWA lands would be helpful.

In addition to a Nature Preserve, a Land & Water Reserve, five INAI Sites, and numerous state-listed endangered or threatened species within its boundaries, the SFWA also constitutes an important staging area for both migratory birds and bats, which may increase the risk of wildlife colliding with turbine blades due to the project's near proximity.

Other indirect, cumulative effects from the project (siltation and erosion) may be incurred via the river corridor.

Kickapoo State Recreation Area

This 2,700-acre State Park, once heavily strip-mined for coal, is one of the State's most popular camping, boating, fishing, and recreation destinations. Outdoor recreation is an important part of Vermilion County's economy. The Park is located mainly north of Interstate 74, on both sides of the Middle Fork. It contains the lower terminus of the National Scenic River designation, and provides essential habitat for a large number of State-listed endangered or threatened species.

The closest portions of the wind energy project area lie less than one mile from the Park's northwestern corner. Wind turbines will be easily visible from the western boundaries of the Park at many locations, though most visitor activities will be concentrated in areas where visibility will not be an issue due to topography and land cover.

There may be the potential for "flicker" impacts in the evening to some Park lands during the late spring and early summer, depending on final turbine placement. Models should be examined to determine the extent, duration, and seasonal timing of "flicker" effects in the Park when final siting is being considered, with the goal of minimizing or avoiding them.

Kennekuk Cove County Park and INAI Site

This INAI Site is located on the southern portions of the 3,000-acre Kennekuk Cove County Park, a property managed by the Vermilion County Conservation District, on the east bank of the Middle Fork. The INAI Site at its nearest is about two miles east of the project area. No part of the Park receives drainage from the project area, except by way of the Middle Fork.

However, because of its position on high ground east of the Middle Fork, wind turbines may be visible from some portions of the County Park. The major biological significance of the Park's proximity is that it provides significant staging and breeding habitat for bats and migratory birds, including the State-listed endangered Northern Harrier.

Kinney's Ford Seep Land & Water Reserve and INAI Site

Kinney's Ford Seep LWR lies within the northern part of the Middle Fork SFWA, two miles northeast of the closest portion of the project area, near the confluence of Collison Branch Creek with the Middle Fork. Despite its proximity to the project, topography makes it unlikely turbines will be visible from within the Reserve, or that "flicker" effects will be present at any time of year (from 1.5 MW turbines--shadows from taller machines might reach this area). The seep community of this Site is sensitive to ground water recharge impacts, but no project activities will be performed within the likely ground water recharge zone of this protected area.

Horseshoe Bottom Nature Preserve and INAI Site

This 100-acre Nature Preserve, as its name implies, is located in the Middle Fork bottoms, less than two miles northeast of the project. However, topography and land cover render it unlikely that turbines will be visible or audible from the Preserve, or that "flicker" will be an issue. Among its other biological values, it provides essential habitat for the State-listed endangered **Blanding's Turtle**.

Middle Fork Seeps INAI Site

These forested seeps are located on the *eastern* valley wall of the Middle Fork, facing the project, about 1.5 miles from the project area. Turbines may be visible to visitors in the winter, following leaf-fall, since the western valley wall at this point has little forest cover. The Department believes it is likely this INAI Site lies beyond potential flicker effects. Since it lies on the east bank, there is no potential for project activities to affect or alter ground water recharge zones for the seeps.

Fairchild Cemetery Prairie/Savanna Nature Preserve and INAI Site

This small (< one acre) Nature Preserve is part of the Kennekuk Cove County Park complex. It is located about 3.5 miles east-northeast of the project area and east of the Middle Fork. Because it lies on relatively high ground near the headwaters of Windfall Creek, project turbines may be visible to Nature Preserve visitors, although they may be screened by the forested bluffs of the Middle Fork SFWA or other intervening land covers.

Windfall Prairie Nature Preserve and INAI Site

This 60-acre Nature Preserve is located on the *east* bank of the Middle Fork, rising from the River to the top of the eastern bluffs, facing the project. In addition to riparian forest, it contains hill prairie and calcareous seep natural communities, and contains at least one State-listed endangered plant (**Wolf's Bluegrass,** *Poa wolfii*).

Because the nearest portions of the project area, only two miles southwest of the Nature Preserve, are of equal or higher elevation to the prairie areas of the Nature Preserve, and turbines will likely reach some 360 feet or more higher than that, it is likely that turbines will be visible to visitors in the Nature Preserve, although such visibility could be seasonal, limited to periods when the Preserve's trees are bare.

In addition, because the intervening forests of the Middle Fork SFWA along Gimlet Branch Creek are at lower elevations than the likely turbine sites, it may be possible for "flicker" effects from project turbines to extend to the lower elevations of the Nature Preserve over the tops of the trees. Modeling will be necessary to determine whether the Nature Preserve will sustain such effects, and, if so, at what time of year and for what duration. Both the Department and the Illinois Nature Preserves Commission seek to minimize or avoid "flicker" effects within Nature Preserves.

Orchid Hill Natural Heritage Landmark INAI Site

This 120-acre Natural Heritage Landmark INAI Site is home to an unusual number of native orchids and other rare plant groupings. Located adjacent to the extreme eastern end of the project area, near the existing coal-fired power plant, this forested area marches down the western bluff of the Middle Fork valley. Turbines will be easily visible--and perhaps audible--from the western margins of the INAI Site. Project areas within a mile to the west are approximately 50 feet higher in elevation than lands within the INAI Site, so there is an increased likelihood that "flicker" effects will occur over the forest canopy. Models of "flicker" effects should be evaluated to determine the time of year, time of day, and duration of "flicker" within the INAI site.

Middle Fork Woods Nature Preserve and INAI Site

This 77-acre Nature Preserve within Kickapoo State Recreation Area provides essential habitat to the very rare endangered **Silvery Salamander**. Located about 2.5 miles south and east of the project area, it lies beyond the reach of "flicker" and turbine noise. Because it is completely surrounded by forest, no turbines will be visible from within the Preserve, nor does it lie in a watershed which may be affected by turbine construction.

Rock Cut Road Botanical Area INAI Site

Located just southwest of Middle Fork Woods, above Glenburn Creek but outside Kickapoo SRA, this INAI Site provides essential habitat for the State-listed threatened **Fibrous-Rooted Sedge,** *Carex communis*. Distance and topography assure this INAI Site and the Fibrous-Rooted Sedge will not be affected by the proposed project.

Larimore's Salt Fork of the Vermilion Land and Water Reserve and INAI Site

This LWR consists of the channel and floodplain of the Salt Fork Vermilion River south of Muncie. In a valley and five miles south of the project area, the LWR will sustain no effects from the proposed wind farm.

Edgewood Farm land and Water Reserve and INAI Site

Located along the Salt Fork southeast of Ogden, and more than seven miles from the project area, the higher elevations of the LWR exceed 660 feet MSL, about the same elevation as the wind farm. Consequently, wind turbines may be visible from the higher elevations within the LWR unless forests on the opposite side of the Salt Fork valley are tall enough to screen them. However, at that distance, visibility is not likely to be intrusive on the senses of site users.

Pelville Cemetery INAI Site

Pelville Cemetery lies 14 miles north of the project area, just west of Rankin and on the opposite side of the Middle Fork's valley. A keen-eyed observer at Pell Cemetery might possibly be able to see California Ridge turbines under conditions of excellent visibility, but they are unlikely to intrude on a visitor's experience. The Cemetery supports breeding pairs of the **Henslow's Sparrow** and other migratory birds, whose migratory passages could pose issues for the project.

Henschel Workman State Habitat Area

The Department's 135-acre Henschel Workman State Habitat Area is located southeast of Rankin in Vermilion County, about 13 miles north of the project footprint. It supports breeding **Henslow's Sparrows** and provides a large expanse of suitable wintering habitat and migratory

staging area attractive to other State-listed bird species, whose migratory passages could pose issues for the project.

Sleeter State Habitat Area

The 103-acre Sleeter SHA is located about 1.5 miles northwest of Gifford in Champaign County. It lies eight miles northwest of project areas within Vermilion County, but only four miles from the nearest project areas in Champaign County. Turbines located in both Champaign and Vermilion Counties will be visible to site users, but this should have little impact on hunting activities, the major recreational use of this site. However, the Sleeter SHA may be a focal point for birds whose migratory passages could pose issues for the project.

Documented Listed Species

Indiana Bat, *Myotis sodalis*

Summer nursery colonies of this bat, listed by the federal government and Illinois as endangered, have been documented in forested riparian tracts along the Middle Fork of the Vermilion River and the Big Four Ditch in Ford County, north of the project area, and along the Little Vermilion River in the southern half of Vermilion County. It is reasonable to assume that this species traverses or roosts in the intervening segments of the Vermilion River system.

Nursing females may forage above crop-fields a mile or more from the nursery colony. This species winters in caves or mines some distance from summer habitats, but its migratory behavior is poorly understood. No hibernation sites are known from Vermilion County, although critical hibernating habitat is known in LaSalle County. It is surmised that bats using the Middle Fork for summer habitat most likely migrate from hibernation sites in southwestern Indiana and Kentucky, although a banding study in the 1970's indicated that at least some LaSalle County bats move in this direction.

The risk to bats from collisions with moving wind turbine blades appears to be much higher than for birds. To date, no Indiana Bats have been documented as killed by wind turbines. But, until recently, no utility-scale wind farms have been proposed or constructed within the range of Indiana Bats, so the risk to this species from wind turbines remains unquantified.

The project area itself appears to contain no potential summer nursery or roosting habitat for the Indiana Bat, but directly abuts riparian forests; individuals roosting along the Middle Fork may forage above fields within the project area.

Because the winter hibernation sites of these bats are unknown, the greatest risk may be to Indiana Bats migrating across or through the project area. Efforts to identify and monitor the foraging and migration behavior of this bat population may establish the degree of risk which this facility would pose to this species.

The Department is unable to evaluate the potential for an incidental take of an Indiana Bat at this facility based on existing data; capture studies along creeks in the nearer vicinity of the project may be advisable. More common bat species undoubtedly occupy habitats in the vicinity, and are at risk of mortality, directly through collisions with wind turbines, or indirectly through barotrauma (lung hemorrhages caused by extremely low air pressures in the vortices created by wind turbine vanes).

Vermilion County is particularly rich in bat fauna: a 1996 netting survey on the Little Vermilion River east of Georgetown captured seven of nine species whose ranges contain Vermilion County, including the Eastern Red Bat, Hoary Bat, Northeastern Myotis, Eastern Pipistrelle, Big Brown and Little Brown Bats, in addition to the Indiana Bat. An acoustic bat survey is recommended, particularly during the fall bat migratory season (August 1 through October 31) when activity would be expected to be the highest, in order to characterize bat activity in the project area. A high level of bat activity may warrant post-construction mortality studies.

Blanding's Turtle, *Emydoidea blandingii*

The State-listed threatened Blanding's Turtle has been recommended by the Illinois Endangered Species Protection Board (IESPB or Board) for up-listing to "endangered." This rulemaking change should be accomplished in 2009.

The Blanding's Turtle, distinguishable by its solid bright yellow lower jaw and throat, has been documented most recently in the Middle Fork SFWA (Horseshoe Bottom Nature Preserve), about two miles from the project area. No estimate of the local population size is available, but observations are rare, suggesting few individuals. While the existing population may be small and localized, the entire Vermilion River system is accessible to this species. In Northern Illinois, the species frequently ascends waterways to access open upland areas for nesting.

The Blanding's Turtle reaches sexual maturity only after 15-20 years, and has a documented life-span beyond 70 years, although females beyond age 50 may not be reproductively active. This species is known to move widely across the landscape, following streams and drainage ditches, but also moving overland when necessary. Overland movements typically occur at night. It is believed to demonstrate fidelity to nesting and hatching areas, attempting to return to its own natal site for egg-laying. The species is known to nest farther from the water than any other aquatic turtle in North America, at times nesting up to a mile inland. The species' life cycle appears to be compatible with row-crop agriculture, since egg-laying occurs in late spring or early summer after planting, and hatching usually occurs before harvest. Vermilion County lies near the southern limits of the species' range, so overwintering in the nest by hatchlings should be a rare occurrence.

The main threats to this species are nest predation by skunks, raccoons, and other mammalian predators, road-kill, and poaching (illegal collection for the pet trade). Wind energy construction

activities may result in disturbance of traditional nesting areas, the destruction of nests, the entrapment of individuals in excavations, and road-kill.

Workers on the project should be educated about this species' appearance and behavior; excavations left open overnight should be covered and inspected before filling: and any Blanding's Turtle observed should be documented with photographs and reported to the Department of Natural Resources. A Turtle may not be moved to facilitate the project unless the applicant has obtained an Incidental Take Authorization.

Smooth Softshell Turtle, *Apalone mutica*

The Board has recommended listing the Smooth Softshell as "endangered;" this designation is pending the completion of rulemaking, which should be accomplished in 2009.

This aquatic turtle inhabits larger streams and rivers, in segments with sandy substrates and sand bars. Regarded as a delicacy by many fishermen, this species has suffered from over-collecting, while pollution, siltation, and sedimentation have degraded many habitats. This species has been documented in Vermilion County, and it is potentially present in all reaches of the Vermilion River system.

Unless transportation of wind turbine components requires the upgrade or reconstruction of bridges, there should be little risk of direct adverse effects to this species. Erosion and siltation pose indirect threats.

River Redhorse, *Moxostoma carinatum*

The state-listed threatened River Redhorse is a member of the sucker family which feeds largely on invertebrates, including young mussels and crustaceans, for which it possesses specialized grinding teeth. It prefers medium-to-high-gradient rivers and streams with clean sand, gravel, and cobble substrates. The River Redhorse has been recorded in the Middle Fork as far north as the Middle Fork SFWA, but is more common in the Salt Fork.

Erosion related to turbine construction and maintenance may degrade stream-bed habitats or suppress populations of prey species. Because the River Redhorse rarely ascends small tributaries, direct adverse effects are unlikely.

Eastern Sand Darter, *Ammocrypta pellucidum*

This small fish is listed by Illinois as "threatened." Restricted to streams in the Wabash drainage of Illinois, it requires high water quality and bottom substrates of clean sand in fairly swift waters, requirements satisfied by all branches of the Vermilion River. Soil erosion and sedimentation pose the main threats to this species, followed by chemical pollution.

Bigeye Chub, *Hybopsis amblops*

The State-listed endangered Bigeye Chub is another small fish found only in the Wabash River watersheds of Illinois, but generally in smaller creeks and streams. It is present in the Middle Fork, the Salt Fork, and Stoney Creek. Degradation of water quality and alteration of stream habitats are the main threats to this species.

Mussels

The Salt Fork, Middle Fork, and North Fork of the Vermilion River, and their tributary creeks, provide essential habitat for a large number of freshwater mussels, among the most endangered organisms in North America. High water quality remains the most essential habitat requirement.

Federally-listed species found, or once found, in these streams include the **Clubshell**, *Pleurobema clava*, and the **Riffleshell**, *Epioblasma torulosa*. A cooperative program between the U.S. Fish & Wildlife Service and the IDNR is planned to re-introduce the extirpated Riffleshell, and to augment the existing Clubshell population.

Headwater streams are most likely to support populations of the **Slippershell**, *Alasmidonta viridis,* and the **Little Spectaclecase**, *Villosa lienosa*. Broadly distributed lower down are populations of the **Wavy-Rayed Lampmussel**, *Lampsilis fasciola*; **Rainbow**, *Villosa lienosa*; **Purple Wartyback**, *Cyclonaias tuberculata*; **Kidneyshell**, *Ptychobranchus fasciolaris*; **Rabbitsfoot**, *Quadrula cylindrica*, and **Purple Lilliput**, *Toxolasma lividus*.

The **Salamander Mussel**, *Simpsonaias ambigua*, is the only species in its genus, and is also unique among North American mussels as the only species with a non-fish glochidial host, the **Mudpuppy**, *Necturus maculosus*. The Salamander Mussel has been documented at seven locations in Vermilion County since 1980, in the North Fork, the Middle Fork, and in Stony Creek, a tributary of the Salt Fork. A small mussel (two inches or less), and commonly found beneath rocks and debris, where the Mudpuppy spends much of its time, the Salamander Mussel is likely under-sampled by the typical non-targeted mussel survey, and may be more locally common than these records indicate.

Four-Toed Salamander, *Hemidactylium scutatum*

This four-inch-long amphibian is present in the riparian forests along Collison Branch Creek in the Middle Fork SFWA. While woodland vernal pools used for breeding may be the most essential habitat component for this species, this salamander may be found more than a thousand feet from the nearest wetlands, beneath forest floor litter and detritus where sufficient moisture is available. This species will not be found in grasslands or row-crop fields.

It is unlikely this species occurs within the project footprint. However, good water quality remains important; Collison Branch rises in Section 9 and 10 within the project area. Sound

erosion controls in these areas will be important in maintaining good habitat conditions downstream.

Silvery Salamander, *Ambystoma platineum*

This six-inch-long salamander is unusual because its population is entirely female; egg production is stimulated by exposure to the sperm of the much more common **Small-Mouthed Salamander**, *Ambystoma texanum*, which commonly shares its habitats, but there is no genetic interplay. (But this also means the presence of *A. texanum* is a crucial factor for the successful reproduction of *A. platineum.*) The Silvery Salamander may also occur with the endangered **Jefferson Salamander**, *Ambystoma jeffersonianum*, from which it cannot be distinguished except through analysis of its DNA chromosome count or the size of its red blood cells. However, the populations in question here have been established by these tests to be Silvery Salamanders.

A population within the Kickapoo SRA is beyond the range of effect from the proposed project. A second population, however, in Middle Fork Woods SFWA, five miles to the north, has a breeding pond less than a mile from portions of the project area draining to Gimlet Branch Creek. While the existing breeding pond should not be at risk from effects stemming from the project, a species recovery effort is now underway to create or enhance potential new breeding areas extending as far south as Cox Hollow, which drains the easternmost portions of the project area.

Salamanders can disperse surprising distances where suitable cover exists, and may potentially occur in any local woodlands, upland or lowland, which are connected to the more-or-less continuous riparian forest along the Middle Fork. Developers should avoid any direct impact to woodlands along streams feeding the Middle Fork, to assure any takings of listed salamanders are avoided.

Mudpuppy, *Necturus maculosus*

This large (up to one foot total length) salamander has been recommended by the Board for listing as "threatened;" this designation is pending the completion of rulemaking, which should be accomplished in 2009. The Mudpuppy is the only known glochidial host of the State-listed endangered **Salamander Mussel**, *Simpsonaias ambigua,* a species which is now being evaluated for federal listing under the Endangered Species Act; the decline of the Mudpuppy may be a major factor in the disappearance of the Salamander Mussel.

The Mudpuppy never develops beyond an aquatic larval stage, and so is never found in terrestrial habitats. It inhabits clear rivers, creeks, streams, lakes, and ponds, but conceals itself under rocks or woody debris during the day, feeding actively at night. It typically goes unseen except by fishermen, who sometimes inadvertently catch it. It can cope with some siltation and sedimentation so long as clear gravelly headwater areas remain available for reproduction.

The Vermilion River system is one of the last "strongholds" for this species in the state, and it should be presumed to be present throughout. Stony Creek drains the central portion of the project area, and has the most recent records for the Salamander Mussel, indicating a Mudpuppy population is present in Stoney Creek. The species has also been reported from the Middle Fork SFWA.

Cool or cold water is essential for this species, which remains active all winter; water temperatures above 72EF are harmful, and those above 77EF can be fatal. Agricultural tile drainage helps lower and maintain stream temperatures, but the removal of riparian trees and shrubs exposes streams to direct solar radiation and heating. In-stream cover provided by rocks and woody debris is essential for concealment and reproduction, since eggs are suspended from the bottoms of rocks and logs. The common belief that removal of woody debris from stream channels improves drainage is a factor in the decline of this--and many other-- species.

Major threats include pollution, siltation and sedimentation, stream channelization, and woody debris removal. The main risks associated with wind energy projects will be direct stream modification through the repair or upgrade of roads, modification of aquatic thermal regimes through the disruption of agricultural tile drainage systems, and siltation and sedimentation associated with construction and permanent features, such as service roads, which suppresses prey populations and renders spawning areas unsuitable. Any planned in-stream work may require an Incidental Take Authorization.

Bald Eagle, *Haliaeetus leucocephalus*

The Bald Eagle, de-listed under the federal Endangered Species Act last year, is currently listed by Illinois as "threatened." The Board has recommended de-listing the Bald Eagle due to its recovery in Illinois, and this decision is now being implemented through the rule-making process, which should be completed prior to the end of 2009. It remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, each as stringent as the Endangered Species Act.

For several years there has been a Bald Eagle nest on the North Fork just above Lake Vermilion, about seven miles east of the project area. However, Illinois has experienced a significant increase in Bald Eagle nests over the last few years, and many new nests have not been tallied. Nests have been appearing on smaller tributaries of larger rivers in areas where Eagles have not been seen for years, and it may be assumed the Vermilion River Basin reflects this trend. Hence, it is likely that new Eagle nests will appear along the North Fork, Middle Fork, and Salt Fork during the project's life.

In addition, Illinois now has the highest population of wintering Bald Eagles in the Lower 48 States, although they tend to be concentrated around major rivers, cooling lakes, and other waters likely to remain ice-free. However, during migration, Eagles frequently fly overland. Thus,

while the wind energy project is unlikely to pose any direct threat to the known Eagle nest and its surrounding hunting territory, there may be a collision risk for migrating Eagles.

Least Bittern, *Ixobrychus exilis*

This small heron nests in the emergent vegetation of marshes. It has been documented from Kennekuk Cove County Park in Vermilion County, and from wetlands near the Middle Fork in northeastern Champaign County.

Known breeding locations are unlikely to be affected by the project, although there may be a collision risk for migrating Bitterns. Generally speaking, waterfowl are rarely the victims of collisions with wind turbines, so this risk may be low.

Henslow's Sparrow, *Ammodramus henslowii*

The Henslow's Sparrow is listed by Illinois as a threatened species, but is scheduled for de-listing in 2009. Breeding populations of this grassland bird have been documented north of the project area, and may occur within the project area where suitable habitat exists. More northern breeding populations may migrate through the project area.

Wind turbines associated with this project have the potential to kill or injure birds through blade-strike, unless breeding populations are also found within the footprint. The species is extremely sensitive to the presence of vertical structures and to any form of break in contiguous habitat, such as roads or trails, so that construction in breeding areas during breeding season is likely to result in unlawful takings.

Northern Harrier, *Circus cyaneus*

The State-listed endangered Northern Harrier is a ground-nesting grassland hawk. It has been recently documented as nesting in Vermilion County, both within--and within a few miles of--the project footprint. Also a frequently-observed migrant, the species has a statewide range. While many sources indicate the species needs large open areas of habitat, Illinois studies have demonstrated this hawk can use relatively small patches of habitat for successful breeding, especially in the vicinity of larger habitats. Breeding is often associated with wetlands such as marshes, sedge meadows, and wet prairies.

While most hunting activities occur at fairly low altitudes, below typical rotor-swept elevations, hunting can expose this bird to collision risk. Like the Upland Sandpiper, this species engages in an aerial courtship display which places it at risk of collision with wind turbines. Wind farm construction and operation may alter concentrations of prey species.

This hawk relies heavily on its acute hearing to locate prey, and--if the noise generated by wind turbines interferes with this function (which is not known to be the case)--turbines might adversely affect their ability to hunt near the turbines, reducing available food resources.

If pre-construction surveys indicate use of the project area by migrant Harriers, post-construction surveys should be performed to determine whether the Harrier continues to hunt territories in proximity to turbines.

Barn Owl, *Tyto alba*

This endangered raptor nests in larger tree cavities and in barns or abandoned buildings, sometimes within city limits. A breeding record exists for Champaign County, about four miles northwest of Rantoul; none have been recorded from Vermilion County since the species was listed. This owl hunts both open woodlands and grasslands; its preferred prey consists of small rodents such as mice and voles. The main risk posed by wind power facilities to this species is the removal of suitable nesting trees and abandoned buildings to facilitate transportation of wind turbine components or to maximize wind energy conversion. Both trees and buildings should be examined for Barn Owl occupancy prior to removal.

Short-Eared Owl, *Asio flammeus*

The endangered Short-Eared Owl nests and winters in grasslands and wetlands. Vermilion County lies in both breeding and wintering ranges, and breeding Short-Eared Owls were reported from two separate locations in Vermilion County in 1990. Large numbers of wintering owls are observed annually in suitable winter habitat in Iroquois County.

Highly nomadic, the Short-Eared owl depends heavily on vole and mouse populations, and the size of its breeding and hunting territories varies inversely with prey population sizes. When prey populations are high, owls may be ground-roosting every few meters in suitable habitat. The Northern Harrier often harasses this Owl, stealing its food.

This Owl's hunting flights are often less than ten feet off the ground (a circumstance which makes this bird highly vulnerable to collisions with vehicles); during aerial mating rituals, flights occur at typical wind turbine rotor-swept height. This Owl is highly dependent on its acute hearing to locate and seize prey. The degree to which noise from wind turbines may interfere with predation behavior is unknown.

The effects of wind turbines on Short-Eared Owls may be heavily influenced by the proximity of turbines to breeding, roosting, and hunting areas. Once turbines are built, this proximity relationship will be subject to change as land owners alter land management practices. This is likely to be of concern mainly if attractive habitat for Owls and their prey is created within or near the turbine array following construction.

Upland Sandpiper, *Bartramia longicauda*

This State-listed threatened grassland bird prefers habitat of short-grass prairie/pasture. For many years this ground-nesting species was thought to be area sensitive, requiring ten acres or more of grassland habitat for successful breeding. However, many recent breeding efforts are occurring in grassed waterways of row-crop fields, which provide considerably less than ten acres of habitat, and from along roadsides.

A breeding record exists for Vermilion County, near the Danville airport. Additional breeding records are associated with the University of Illinois and the Champaign-Urbana Airport. There has already been at least one instance in 2008 of identification of Upland Sandpipers at the commencement of wind project construction in Stephenson County, a county which had, until then, no prior breeding record for this species.

The Upland Sandpiper engages in an aerial courtship display which passes through the rotor-swept elevations of utility-scale wind turbines, placing it at risk of collision mortality. Whether this species will be sensitive to the proximity of vertical structures, or to shadow "flicker" on potential nesting areas, has not been demonstrated.

The Department recommends mapping all habitat types within the project footprint, and checking even relatively small areas of appropriate habitats for the presence of this species prior to any initiation of construction disturbance during the breeding season.

Potential Listed Species

Franklin's Ground Squirrel, *Spermophilus franklinii*

The State's largest ground squirrel was listed as "threatened" in 2004. Most active above-ground on sunny days in late spring and early summer, this species hibernates for seven to nine months of the year. It prefers taller vegetation than other ground squirrels, and so is seldom seen. Well-drained ground is a requisite, so today this species is most often found along railroads and highways where its requirements for food and shelter are satisfied. There appears to be no suitable habitat within the project footprint, but transport of turbine components often requires rebuilding or repairing roadways some distance from the destination.

The Franklin's Ground Squirrel has been documented along railroads near Hoopeston, and along former rail-beds near St. Joseph in Champaign County. Offspring can disperse up to a mile in their first season. If present, this species can be threatened during construction through the crushing and collapse of its burrows by heavy equipment. Shadow flicker cast in its territory by operating turbines may also be detrimental.

Ornate Box Turtle, *Terrapene ornata*

The Board has recommended listing the Ornate Box Turtle as "threatened;" this designation is pending the completion of rulemaking, which should be accomplished in 2009.

This terrestrial turtle is usually found in open grassland areas, in contrast to its cousin, the Eastern Box Turtle, which is usually found in woodlands. This turtle hibernates underground from late September through April, so it can not evade disturbance during that period. Its carapace carries elaborate markings, including a yellow bar along the spine, which distinguishes it from the other species. While it appears to be more common in sandy soils, it is not restricted to them. Specimens have been collected from both Iroquois and Champaign County.

As with many turtles, road-kill and over-collecting are major causes of decline. In a recent study of a northwestern Illinois population, a significant number of individuals exhibited carapace scarring from farming equipment (discs and harrows), illustrating that this species may frequently be found in rowcrop fields.

Preferred habitat of this species may not be present in the project area, but too little is known of this species' current distribution to rule out its presence. Project workers should be educated as to its appearance and habits, remain alert for turtles on roads and in fields, and report any suspected Ornate Box Turtles to supervisors. The Department of Natural Resources should be promptly notified if any Ornate Box Turtles are identified. Once listed, it will be unlawful to move or capture an Ornate Box turtle to facilitate the project without first obtaining an Incidental Take Authorization from the Department.

Loggerhead Shrike, *Lanius ludovicianus*

The threatened Loggerhead Shrike is adapted to the savanna conditions of interspersed grasslands, shrubs, and trees. This species has been adversely affected by the decline in animal husbandry and the abandonment of the "shelter-belt" fence-row conservation practice, which has severely reduced both breeding and foraging habitat. The Shrike, also known as the "butcher bird," needs thorny trees and shrubs, even barbed wire, on which to impale its prey, which may be left for several days before being eaten. Areas which support large insects and small rodents, major food items, are also necessary. Due to losses of suitable habitat, Loggerhead Shrikes may attempt reproduction in trees near human habitations and in other areas where they would normally not be expected. The Shrike has not been reported as breeding in Vermilion County since its listing, but has been reported from Champaign County.

The primary consideration for wind energy facilities is the potential for further loss of remaining habitat, if fence-rows are cleared to avoid wind turbulence or to improve turbine exposure, or if road-side trees are cleared to create turning radii for turbine carriers or to establish power lines. A pre-construction survey to identify the presence of Shrike nests should be conducted for areas with suitable habitat if work is proposed during the breeding season in order to avoid direct

mortality. “Resident” foraging birds are not thought to be at significant risk from operating wind turbines, but potential risk associated with migrants should be considered.

Black-Billed Cuckoo, *Coccyzus erythropthalmus*

The Black-Billed Cuckoo has been recommended by the Board to be listed as "threatened," and this listing is pending the completion of administrative rulemaking, which should occur in 2009.

This bird nests in interior thickets of forested tracts and feeds heavily on caterpillars. This species was documented as nesting at Jordan Creek of the North Fork Nature Preserve in the 1990's, and Vermilion County has thousands of acres of suitable nesting habitat along its streams and rivers. This species is not directly threatened by wind turbine construction or operation, but may be subject to collision risk as a migrant.

Migratory Birds

American Golden Plover, *Pluvialis dominica*

This migratory bird breeds in the Arctic tundra, migrates south along the Atlantic seaboard to South America in the winter, but returns northward through central North America. Areas of Illinois and Indiana provide important spring migration staging areas, which may be occupied by this species for a month or more while birds go through a molt before resuming migration. It has become a species of concern due to its relatively low global population estimate of around 300,000 birds.

Based on 25 years of Spring Bird Count data, it is likely that significant numbers of this species congregate in Counties including northern Champaign and Vermilion Counties, but the locations of large concentrations vary from year to year. Large numbers of this species are routinely observed south of Sibley Grove in Ford County. Pre- and post-construction surveys should be performed to observe this species.

Plovers tend to aggregate in dense concentrations, and are known to fly in large tight groups at or below the approximate rotor-swept elevation, which may expose them to collision mortality risk. Concerns also exist pertaining to habitat fragmentation by service roads, and displacement from habitat due to potential sensitivity to vertical structures and human activity.

A research project has begun in an effort to better understand the behavior and needs of this species, as well as how it may be affected by the presence of wind turbines. Some preliminary results were recently published [O'Neal, *et. al.* (2008)] .

One apparent finding is that the species definitely concentrates in a few areas, rather than being generally dispersed across suitable habitat, resulting in temporarily dense population "hot-spots." However, where these may be located may be influenced year-to-year by poorly understood

climatic cues. Very few birds appeared in 2008 in the expected concentration areas; instead, major concentrations were located more than one hundred miles to the south. Anecdotal evidence indicates this is an unusual occurrence.

A number of observers had reported a daytime habitat preference for short grass, soybean stubble, or bare ground with standing water or residual moisture, but O'Neal first reported a night roost preference for standing corn stubble cover, with crepuscular movement between the two. O'Neal reported all observations were located more than 70 meters from adjacent roads, suggesting an intolerance for breaks in habitat. (Effects of traffic were not investigated.) Interestingly, O'Neal also reported several observations of predation of the Golden Plover by the Northern Harrier.

Whooping Crane, *Grus americana*

An experimental population of the federally-listed endangered Whooping Crane has been established with breeding grounds in Wisconsin and wintering areas in Florida. Fall 2009 will see more than 100 birds move to Florida. Whooping Cranes often "stop over" during migration and this may occur virtually anywhere in the State.

Whooping Cranes may "stop over" for extended periods. In November 2006, during their first unescorted Fall Migration, a pair of Cranes rested for four days along the upper East Branch Vermilion River (Wabash Drainage) in Ford County. A Whooping Crane extended its Spring movement by loitering near Danville until the end of June 2008.

During such stop-overs, cranes often forage on waste corn in nearby agricultural fields. Wind turbines and associated power lines pose a collision risk for these large birds, which require some distance to achieve safe altitudes. Most non-predation losses to this flock have been to power line collisions. The visibility of power lines should be maximized with appropriate line markers. The developer may wish to consider other voluntary efforts to promote Crane conservation.

Due to the very high public profile of the Whooping Crane, the Department suggests the developer/operator of this facility coordinate at least annually with the Whooping Crane Eastern Partnership (www.bringbackthecranes.org) to track the passage of Whooping Cranes through the vicinity, and explore additional measures to reduce potential losses of these birds.

Illinois Historic
Preservation Agency

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RECEIVED
MAR 9 2009
HDR Engineering, Inc.

Vermilion and Champaign Counties
Royal
Wind Farm/California Ridge Wind

PLEASE REFER TO: IHPA LOG #009030209

March 4, 2009

Ms. Jacque Hamilton
HDR Engineering, Inc.
Environmental Project Manager
701 Xenia Avenue South
Minneapolis, Minnesota 55416-3636

Dear Madam:

Thank you for requesting comments from our office concerning the possible effects of the project referenced above on cultural resources. Our comments are required by Section 106 of the National Historic Preservation Act of 1966 (16 USC 470), as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties".

The project area has not been surveyed and may contain prehistoric/historic archaeological resources. Accordingly, a Phase I archaeological reconnaissance survey to locate, identify, and record all archaeological resources within the project area will be required. This decision is based upon our understanding that there has not been any large scale disturbance of the ground surface (excluding agricultural activities) such as major construction activity within the project area which would have destroyed existing cultural resources prior to your project. If the area has been heavily disturbed prior to your project, please contact our office with the appropriate written and/or photographic evidence.

The area(s) that need(s) to be surveyed include(s) all area(s) that will be developed as a result of the issuance of the federal agency permit(s) or the granting of the federal grants, funds, or loan guarantees that have prompted this review.

Enclosed you will find an attachment briefly describing Phase I surveys and a list of archaeological contracting services. THE IHPA LOG NUMBER OR A COPY OF THIS LETTER SHOULD BE PROVIDED TO THE SELECTED PROFESSIONAL ARCHAEOLOGICAL CONTRACTOR TO ENSURE THAT THE SURVEY RESULTS ARE CONNECTED TO YOUR PROJECT PAPERWORK.

If you have further questions, please contact Joseph S. Phillippe, Chief Archaeologist at 217/785-1279.

Sincerely,

Anne E. Haaker

Anne E. Haaker
Deputy State Historic
Preservation Officer

AEH

Enclosure

Illinois Historic Preservation Agency

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PROTECTING ILLINOIS' CULTURAL RESOURCES

An Introduction to Archaeological Surveys

Prepared by
ILLINOIS STATE HISTORIC PRESERVATION OFFICE

When you read the accompanying letter, you were notified that your Federal or State permitted, funded, or licensed project will require an archaeological survey. We also review projects that use public land. The purpose of this survey will be to determine if prehistoric or historic resources are present within the project area. If you are the average applicant you have had little or no experience with such surveys – this short introduction is designed to help you fulfill the Federal/State requirements and complete the process.

WHY PROTECT HISTORIC RESOURCES? Historic preservation legislation grew out of the public concern for the rapid loss of our prehistoric and historic heritage in the wake of increasingly large-scale Federal/State and private development. The legislation is an attempt to protect our heritage while at the same time allowing economic development to go forward.

WHAT IS THE LEGAL BASIS? The basis for all subsequent historic preservation legislation lies within the national Historic Preservation Act of 1966 (NHPA). Section 106 of NHPA requires all Federal Agencies "undertakings" to "take into account" their effect on historic properties. As of January 1, 1990, the State Agency Historic Resources Preservation Act (Public Act 86-707) requires the same for all private or public undertakings involving state agencies. An "undertaking" is defined to cover a wide range of Federal or State permitting, funding, and licensing activities. It is the responsibility of Federal/State Agencies to ensure the protection of historic resources and the State Historic Preservation Office (SHPO) regulates this effort. In Illinois the SHPO is part of the Illinois Historic Preservation Agency (IHPA).

WHAT IS AN ARCHAEOLOGICAL SURVEY? An archaeological survey includes both (1) an examination of the written records, such as county plat books, published and unpublished archaeological reports, state site files, and (2) a field investigation of the project area to determine if prehistoric or historic resources are present. This process of resource identification is called a Phase I survey.

WHAT DOES A PHASE I SURVEY REQUIRE? Archaeological evidence is normally buried beneath the surface of the ground. To determine if an archaeological site is present it is necessary to get below this surface. The most efficient way is by plowing. If the project area is or can be plowed then the artifactual evidence will be brought to the surface and systematic pedestrian surveys (walkovers) will determine if a site is present. These walkovers are best done when the vegetation is low in the fall or spring. If the project area is covered with vegetation then small shovel probes (1' sq.) are excavated on a systematic grid pattern (usually 50' intervals) to sample the subsurface deposits. Where deeply buried sites may be present, such as in floodplains, deep coring or machine trenching may be required.

WHO DOES ARCHAEOLOGICAL SURVEYS? Professional archaeologists who meet the Federal standards set forth in the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-9) may conduct Federal surveys, while those meeting the State standards set forth in the Archaeological and Paleontological Resources Protection Act (20 ILCS 3435) may conduct surveys on public land in the State (see the other side of this sheet for information on obtaining the services of a contract archaeologist). The applicant is responsible for obtaining and paying for such services.

AFTER THE SURVEY – WHAT NEXT? When the field investigations are completed the archaeologist will submit a report of their findings and recommendations to the applicant. **IT IS THE RESPONSIBILITY OF THE APPLICANT TO FORWARD TWO (2) PAPER COPIES AND ONE (1) CD WITH THE REPORT IN PDF FORMAT TO THE SHPO FOR EVALUATION AND FINDINGS.** If no sites were found or the sites found are not eligible for the National Register the project may proceed. Occasionally, a significant archaeological site may be encountered. In such a case the SHPO and the Federal or State Agency will work with the applicant to protect both the cultural resources and to facilitate the completion of your project.

NEED FURTHER ASSISTANCE? The IHPA is here to assist you and the Federal/State agencies in complying with the mandates of the historic preservation legislation. If you have questions or need assistance with archaeological resources protection or Federal/State compliance, please contact the Archaeology Section, Preservation Services Division, Illinois Historic Preservation Agency, One Old State Capitol Plaza, Springfield, Illinois 62701 (217-782-4836).

OVER

A teletypewriter for the speech/hearing impaired is available at 217-524-7128. It is not a voice or fax line.

Illinois Historic
Preservation Agency

1 Old State Capitol Plaza • Springfield, Illinois 62701-1512 • www.illinois-history.gov

Illinois Historic Preservation Agency – Archaeology Section
Information for Developers and Agencies about general procedures for Phase 2 archaeology projects

Anyone notified of an archaeological site subject to Phase 2 testing in their project area, has several options:

1 Preserve the site by planning your project to avoid or greenspace the site, a deed covenant maybe necessary depending on the land ownership and the law the project is being reviewed under.
2. Hire an archaeological firm to conduct a Phase 2 project on the site.
3. Choose a different location for the project (generally means starting review process over from scratch, but there will be rare occasions when this is actually the fastest and cheapest option). This is something you may wish to consider if there are burials in the project area, or an extremely large or dense site in the project area.

Phase 2 archaeological projects consist of fieldwork, analysis, and report by the archaeological firm, and then review of the report by the IHPA and sometimes also by the funding or permitting agency, with additional work required part of time depending on the significance of the site(s). However, if a project has no significant sites after a Phase 2 project has been completed and reviewed, then the archaeology is completed as soon as IHPA accepts the report. If a project area has more than 1 site, each one is reviewed independently, in other words, one could be determined not significant and while another one is determined significant or potentially significant.

Phase 2 field work generally consists of obtaining good artifact type and location data from the site surface by methods such as grid collections, piece plotting, etc., this is followed by a small scale excavation. In some cases the fieldwork (commonly called test units) can be done with assistance of machines like backhoes or occasionally even large equipment like belly scrapers (plowed or partially disturbed sites), but sometimes it is necessary to dig by hand (mounds, unplowed sites, or inaccessible locations). The test units are excavated to the base of the plowzone or topsoil, and then the base of the unit is checked for presence of archaeological features (foundations, pits, hearths, burials, middens, etc.) If features are present, a small number (generally not more than 5-10) of them are excavated to provide information about the site's age, function, integrity, etc. Samples of soil from each feature for botanical and zoological analysis are usually taken. Also on floodplains of large rivers, several additional "deep" trenches are usually necessary to check for buried sites. The amount of time required for fieldwork is highly dependent on the size of a site, on whether machines can be used, and on the density of features, as well as the weather.

Analysis at Phase 2 consists of identifying and inventorying all of the artifacts recovered and preparing data recorded in the field for a report. The length of time needed is again highly variable based on the factors listed above. The report describes the field and lab information, provides a preliminary interpretation of the site, and makes recommendations concerning the significance of the site.

The archaeology staff at the State Historic Preservation Office (IHPA in Illinois) and sometimes the archaeologists at the lead funding or permitting agency review the report. Based on the report and their knowledge of regional archaeological, they determine (following criteria outlined in the appropriate law and regulations for each project) if the work done was acceptable, and whether the site(s) are not significant and need no further investigation or are significant. If a site is significant (meets the eligibility criteria for the National Register of Historic Places), the choices are mitigation (generally by complete excavation) or preservation.

Joseph S. Phillippe, Chief Archaeologist (1-1-2005)

A teletypewriter for the speech/hearing impaired is available at 217-524-7128. It is not a voice or fax line.

ILLINOIS-BASED CONSULTING SERVICES WITH PROFESSIONAL ARCHAEOLOGISTS (by zip code order, 1/01/2009 update)
In order to assist agencies, engineering firms, and others who require professional archaeological services the Illinois Historic Preservation Agency (IHPA) has listed below Illinois-based firms with professional archaeologists currently performing contract archaeological compliance work. Based on documentation supplied by them these individuals appear to meet current Federal qualifications. This list is provided for your assistance, however, you may use any archaeologist who meets the minimum qualifications as set forth in Secretary of the Interior's Professional Qualifications Standards (36 CFR 61). Federal and state regulations require a completed graduate degree with an emphasis in archaeology and 16 months of professional archaeological experience (**BOLD names** below). If you have any questions please contact IHPA at 217-785-4512. THE INCLUSION OF INDIVIDUALS OR ORGANIZATIONS ON THIS LIST DOES NOT CONSTITUTE ANY RECOMMENDATION OR ENDORSEMENT OF THEIR PROFESSIONAL EXPERTISE OR PERFORMANCE RECORD BY THE IHPA.

CHICAGO METRO REGION

Dr. Kevin P. McGowan
Public Service Archaeology Prgm
Chicagoland Office (UI-UC)
Post Office Box 7085
Grayslake, Illinois 60030
847-548-7961 (fax same)

Dr. Leslie B. Kirchler, RPA
Environmental Resources Management
1701 Golf Road, Suite 1-1000
Rolling Meadows, Illinois 60008-4242
847-258-8921 / 8901 (fax)
leslie.kirchler@erm.com
www.erm.com

Mr. Steve Parrish
Archaeological Research, Inc.
1005 Greta Avenue
Woodstock, Illinois 60098
815-334-8077 / 0530 (fax)
Arch-res.com

Dr. Mark W. Mehrer
Northern Illinois University
Contract Archaeology Program
Department of Anthropology
102 Stevens Building
DeKalb, Illinois 60115
815-753-7544 / 7027 (fax)
mmehrer@niu.edu

Dr. Thomas E. Berres
OurHeritage Archaeological Srvs, Inc.
983 Quail Run
DeKalb, Illinois 60115-6117
815-754-9611 / 758-5692 (fax)
Bearus1@verizon.net

Dr. Rochelle Lurie
Dr. M. Catherine Bird
Midwestern Archaeological
Research Services, Inc.
505 North State Street
Marengo, Illinois 60152
815-568-0680 / 0681 (fax)

CHICAGO METRO REGION CON'T

Dr. Cynthia L. Balek
Archaeology & Geomorphology Services
2220 Mayfair Avenue
Westchester, Illinois 60154
708-531-1445 / 562-7314 (fax)
cbalek@msn.com

Mr. Douglas Kullen
Allied Archeology
239 South Calumet Avenue
Aurora, Illinois 60506
630-896-9375 / 897-9682 (fax)
archon2001@hotmail.com

Mr. Jeff Schuh
Patrick Engineering, Inc.
4970 Varsity Drive
Lisle, Illinois 60532
630-795-7200 / 434-8400 (fax)

Ms. Lynn M. Gierek
ENSR International
27755 Diehl Road
Warrenville, Illinois 60555-3998
630-839-5332 / 836-1711 (fax)
lgierek@ensr.com

Dr. Thomas J. Loebel
CAGIS Archaeological Consulting Srvs.
University of Illinois at Chicago
Department of Anthropology
1007 West Harrison (m/c 027)
Chicago, Illinois 60607
312-413-8247 / 3573 (fax)
tloebel@uic.edu

Dr. David Keene
Archaeological Research, Inc.
4147 North Ravenswood Ave., Suite 301
Chicago, Illinois 60613-1830
773-975-1753 / 8286 (fax)
arch-res.com

Ms. K. Shane Vanderford
ITARP Northern Illinois Survey Division
6810 Forest Hills Road
Loves Park, Illinois 61111
815-282-0762 / 0754 (fax)

CENTRAL REGION

Mr. Keith L. Barr
Archaeological & Architectural Surveys
Old Inn Farm
Rural Route 1
Fairview, Illinois 61432
309-778-2536

Mr. Lawrence A. Conrad
Western Illinois University
Archaeology Lab
201 Tillman Hall
Macomb, Illinois 61455
309-298-1188

Dr. Michael D. Wiant
Dickson Mounds Museum
10956 North Dickson Mounds Road
Lewistown, Illinois 61542
309-547-3721

Dr. Charles L. Rohrbaugh
Archaeological Consultants
302 Kelly Drive
Normal, Illinois 61761
309-454-6590

Dr. Brian Adams
University of Illinois
Anthropology Department
Public Service Archaeology Program
109 Davenport Hall
607 South Matthews Avenue
Urbana, Illinois 61801
217-333-1636 / 217-244-1911 (fax)

Mr. Dale McElrath
University of Illinois Champaign-Urbana
UIUC-ITARP Statewide Office
23 East Stadium Drive
209 Nuclear Physics Lab (MC 571)
Champaign, Illinois 61820
217-333-0667 / 244-7458 (fax)

More Central Listings – Over

CENTRAL REGION CON'T

Mr. Mark C. Branstner
Great Lakes Research, Inc.
Post Office Box 2341
Champaign, Illinois 61825-2341
517-927-4556
mark.branstner@branstner.com

Dr. Fred A. Finney
Upper Midwest Archaeology
Post Office Box 106
St. Joseph, Illinois 61873-0106
217-469-0106 (voice/fax same)
cell 217-778-0348
FAFinney@aol.com

Center for American Archeology
(Kampsville Archeological Center)
Post Office Box 22
Kampsville, Illinois 62053
618-653-4316 / 4232 (fax)
gail@caa-archeology.org

Mr. David J. Nolan
ITARP Western Illinois Survey Division
604 East Vandalia
Jacksonville, Illinois 62650
217-243-9491 / 7991 (fax)
Macomb Lab
309-833-3097
Springfield Lab
217-522-4295 / 4395 (fax)

Dr. Terry Martin
Illinois State Museum Society
1011 East Ash Street
Springfield, Illinois 62703
217-785-0037 / 2857 (fax)

Mr. Floyd Mansberger
Fever River Research
Post Office Box 5234
Springfield, Illinois 62705
217-525-9002 / 6093 (fax)

Mr. Joseph Craig
Prairie Archaeology & Research
Environmental Compliance Consultants
Post Office Box 5603
Springfield, Illinois 62705-5603
217-544-4881 / 4988 (fax)
jcraig@prairiearchaeology.com
jcraig@eccinc.org

METRO EAST REGION

Mr. Don Booth
2610 Sidney Street
Alton, Illinois 62002
618-447-2031 / 618-465-9548 (fax)
dnbooth@charter.net

Dr. Charles W. Markman
Markman & Associates, LLC
4618 North Illinois, Suite 178
Fairview Heights, Illinois 62208
314-705-0706 / 208-460-0011 (fax)
cwmarkman@markmaninc.com (EMAIL)
markmanarchaeology.com (web)

Dr. Steve Dasovich
SCI Engineering, Inc.
15 Executive Drive
Fairview Heights, Illinois 62208
636-949-8200 / 8269 (fax)

Mr. Brad Koldehoff
UIUC – ITARP
American Bottom Survey Division
6608 West Main Street
Belleville, Illinois 62223
618-397-5096 / 5097 (fax)

Dr. John Kelly
Central Mississippi Valley
Archaeological Research Institute
Post Office Box 413
Columbia, Illinois 62236
618-540-8109

SOUTHERN REGION

Mr. Steve Titus
American Resources Group, Ltd.
127 North Washington Street
Carbondale, Illinois 62901
618-529-2741 / 457-5070 (fax)

Dr. Brian M. Butler
Southern Illinois University
Center for Archaeological Investigations
Mail Code 4527
Carbondale, Illinois 62901
618-453-5031 / 8467 (fax)

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Preservation Agency

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FAX (217) 782-8161

RECEIVED
MAR 17 2009
HDR Engineering, Inc.

Vermilion County
Royal
New Construction, California Ridge Wind Farm
Champaign County
IHPA Log #009030209

March 11, 2010

Jacque Hamilton
HDR Engineering, Inc.
701 Xenia Avenue South
Minneapolis, MN 55416-3636

Dear Ms. Hamilton:

Thank you for requesting comments from our office concerning the possible effects of your project on cultural resources. Our comments are required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties".

Our staff has reviewed the specifications of the referenced project as submitted by your office. We cannot adequately review this proposed project until the following additional documentation has been submitted to our Agency:

Architectural survey of project area documenting structures within the viewshed of any proposed turbine, clearly labeled and keyed to a site map.

In your reply, please refer to IHPA Log #009030209. If you have any further questions, please contact me at 217/785-5027.

Sincerely,

Anne E. Haaker

Anne E. Haaker
Deputy State Historic
Preservation Officer

Desmond, Meg

From: Brown, Robert J LRL [Robert.J.Brown@usace.army.mil]
Sent: Monday, March 30, 2009 10:10 AM
To: Hamilton, Jacqueline D.
Subject: California Ridge

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Purple Category, Invenergy-CaliforniaRidge

Jacqueline,

I am the project manager for a 404 permit associated with the California ridge wind farm.

This is in regard to your request for our review of the propsed wind farm located in Vermilion and Champain Co, IL.

The Corps of Engineers exercises regulatory jurisdiction under Section 404 (33 USC 1344) of the Clean Water Act (CWA). The performance of work on 'waters of the United States' is unlawful unless the work has been authorized by the Secretary of the Army prior to the start of such work. The authorization for the placement of dredged or fill material is administered under Section 404. Normally, the authorization under Section 404 is in the form of a Department of the Army (DA) permit.

Based on our review of the submitted data, it has been determined that additional information will be required before we can make a determination for the need for a Department of the Army (DA) permit under SSection 404 of the Clean Water Act.

If your project would impact any "waters of the United States," including jurisdictional wetlands, then you should submit a Department of the Army (DA) permit application for review by this office. Copies of DA permit application forms are available on Louisville District's Internet site at http://www.lrl.usace.army.mil under "Obtain a Permit".

Basically, I need all location information for roads, pads or utilities.
Call or contact me via e-mail for coordination for this project.

Robert J. Brown
Geographer / Regulatory Specialist
U.S. Army Corps of Engineers
Louisville District, West Section
phone: (812) 853-7632
fax: (812) 858-2678
robert.j.brown@usace.army.mil
Mailing Address:
P.O. Box 489
Newburgh, IN 47629-0489

NRCS
Natural Resources Conservation Service
2118 West Park Court
Champaign, IL 61821
(217)353-6600
www.il.nrcs.usda.gov

RECEIVED
APR 23 2009
HDR Engineering, Inc.

April 20, 2009

Jacquie Hamilton, Environmental Project Manager
HDR Engineering, Inc.
701 Xenia Avenue South
Minneapolis, MN 55416-3636

Re: California Ridge Wind Project, Vermilion and Champaign Counties, Illinois

Dear Ms. Hamilton:

I have had my staff review the information provided by you regarding the California Ridge Wind Project proposal for Vermilion and Champaign Counties. While there are anticipated long term natural resource impacts associated with this project primarily through the land use change, it is also anticipated that most of the impacts will be short term, and can be mitigated with best management practices before, during, and after construction activities.

Regarding long term natural resource impacts, the vast majority of the project area is comprised of soil types that have been characterized as prime or important farmland, with approximately 1% of the project area not meeting prime or important farmland criteria. Accordingly, an efficient, compact layout of the wind turbines and the associated infrastructure is recommended. This will reduce the acreage of conversion and the impact this conversion may have on natural resources as a result of the conversion.

Regarding short term impacts, the following comments are arranged according to pre-construction phase, construction phase, and post-construction phase of the project. However, it should be noted that the comments are general in nature based on the project boundaries. As specific wind turbines sites are determined, the project developer is encouraged to consult with the Soil and Water Conservation Districts of both Champaign and Vermilion Counties for site specific resource inventories and best management practices. This will reduce the natural resource impact at the individual wind turbine sites, their access roads as well as the construction and equipment staging areas.

Pre-Construction Phase

- Existing permanent vegetative buffers should be maintained.

- Temporary sediment control measures should be employed on all disturbed areas prior to construction in order to reduce detachment and transport of sediment from the construction sites to adjacent waterways.

- Existing subsurface tile should be identified and avoided to the extent possible and if compromised, repaired to a level meeting or exceeding pre-construction condition. Landowners should be consulted 18 months following completion of construction activity to determine if damage to known and/or
  unknown subsurface tile lines has been revealed through the appearance of new seeps or other symptoms of damaged tile resulting from construction activities.

- All construction activities in areas identified as wetlands on the US Fish and Wildlife Service National Wetland Inventory should be avoided.

- As wind turbines and associated infrastructure are sited, a consulting soil scientist should be conferred with so as to not impact other potential wetland areas not identified on the National Wetland Inventory.

- The Illinois Department of Natural Resources should be consulted as to potential long term and short term impacts to wildlife associated with the project.

Construction Phase

- Where access roads, both permanent and/or temporary, cross grassed waterways or other water conveyance channels, the original shape of the waterway or channel should be maintained allowing for the normal passage of runoff water within the channel. The channel should suitably protected according to NRCS Conservation Practice Standards 560-Access Road and 578-Stream Crossing as applicable. Our website contains these standards, along with standard drawings, for reference.

- If culverts are used as part of the crossing, the culverts should be sufficiently large enough to convey the runoff flow with out an appreciable altering of the waterway flow characteristics. Crossings shall be protected so that out-of-bank flows safely bypass without eroding adjacent cropland or the crossing fill material. Culvert sizing should follow our standard for Access Road, NRCS Conservation Practice Standard 560.

- Access roads should be constructed with road ditches as identified in Conservation Practice Standard 560 to convey increased runoff flow to a suitable stable outlet.

- Existing soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged through project activities should be restored to at least pre-construction condition.

- Any open trenching as part of the project should have the top 12" of the soil profile stripped, stockpiled, and replaced.

- Although not specifically a potential resource concern, a locator wire should be run with the underground electrical connections to assist in the locating and avoidance of the utility during possible future land improvement construction activities.

Post-Construction Phase

- Following construction activities, the soil in the areas that have been compacted due to heavy equipment use and that will not remain as permanent access roads or work areas shall be ripped at least 18 inches deep (more shallow if required to miss tile lines) and then tandem disked.

- All ripping should be done at a time when the soil is dry enough for normal tillage operations to occur on undisturbed farmland adjacent to the areas to be ripped.

- All rutted land should be restored to the original condition.

- Disturbed areas should be seeded with a vegetative seeding using the NRCS critical area seeding standard. Construction areas that will be restored for use as cropland following construction should have a temporary vegetative cover established, while other disturbed areas should have a permanent vegetative cover established.

Thank you for the opportunity to review and comment on this proposal. If you have any questions regarding the information provided and need any clarification, please contact my State Conservation Engineer, Ruth Book, at 217/353-6626.

Sincerely,

WILLIAM J. GRADLE
State Conservationist

cc:
Ruth Book, State Conservation Engineer, NRCS, Champaign, IL

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Rock Island Field Office
1511 47th Avenue
Moline, Illinois 61265
Phone: (309) 757-5800 Fax: (309) 757-5807

IN REPLY REFER TO:
FWS/RIFO

RECEIVED
MAY 18 2009
HDR Engineering, Inc.

May 14, 2009

Ms. Jacqueline Hamilton
Environmental Project Manager
HDR Engineering, Inc.
701 Xenia Avenue South
Minneapolis, Minnesota 55416-3636

Dear Ms. Hamilton:

This letter is in regard to plans for the California Ridge Wind Project proposed for Champaign and Vermilion Counties, Illinois. We have the following comments concerning threatened and endangered species, as well as non-listed migratory species and natural resources.

Threatened and Endangered Species

In order to determine if your project "may affect" species, we invite you to use a new tool the U.S. Fish and Wildlife Service (Service) has designed to help with the consultation process – the new Section 7(a)(2) Technical Assistance webpage (http://www.fws.gov/midwest/endangered/section7/s7process/index.htm). By following the instructions, you can determine what your action area is, whether listed species may be found within the action area, and if the project may affect listed species.

Habitat Descriptions for Federal Threatened and Endangered Species in Champaign and Vermilion Counties, Illinois

Indiana bat - The endangered Indiana bat (*Myotis sodalis*) is known to occur in several Illinois counties including Champaign and Vermilion. Potential habitat for this species occurs statewide. Therefore, Indiana bats are considered to potentially occur in any area with forested habitat in any county in Illinois.

Indiana bats migrate seasonally between winter hibernacula and summer roosting habitats. Winter hibernacula include caves and abandoned mines. Females form nursery colonies under the loose bark of trees (dead or alive) and/or cavities, where each female gives birth to a single young in June or early July. A single colony may utilize a number of roost trees during the summer, typically a primary roost tree and several alternates. The species or size of tree does

not appear to influence whether Indiana bats utilize a tree for roosting provided the appropriate bark structure is present.

During the summer, the Indiana bat frequents the corridors of small streams with riparian woods as well as mature upland forests. It forages for insects along stream corridors, within the canopy of floodplain and upland forests, over clearings with early successional vegetation (old fields), along the borders of croplands, along wooded fencerows, over farm ponds, and in pastures.

Suitable summer habitat in Illinois is considered to have the following characteristics within a ½ mile radius of a project site:

1) forest cover of 15% or greater;
2) permanent water;
3) potential roost trees with 10% or more peeling or loose bark

If the project site contains any habitat that fits the above description, it may be necessary to conduct a survey to determine whether the bat is present. In addition, a search for this species should be made prior to any cave-impacting activities. If habitat is present or Indiana bats are known to be present, they must not be harmed, harassed or disturbed when present, and this field office should be contacted for further assistance.

Prairie bush clover - The prairie bush clover *(Lespedeza leptostachya)* is listed as threatened in Champaign County, Illinois. It occupies dry to mesic prairies with gravelly soil. There is no critical habitat designated for this species. Federal regulations prohibit any commercial activity involving this species or the destruction, malicious damage, or removal of this species from Federal land or any other lands in knowing violation of state law or regulation, including state criminal trespass law. This species should be searched for whenever prairie remnants are encountered.

Eastern prairie fringed orchid - The eastern prairie fringed orchid (*Platanthera leucophaea*) is listed as threatened for Champaign and Vermilion Counties, Illinois. It occupies wet grassland habitats. There is no critical habitat designated for this species. Federal regulations prohibit any commercial activity involving this species or the destruction, malicious damage or removal of this species from Federal land or any other lands in knowing violation of state law or regulation, including state criminal trespass law. This species should be searched for whenever wet prairie remnants are encountered.

The **clubshell mussel** (*Pluerobema plenum*) is listed as endangered and occurs in the North Fork Vermilion River in Vermilion County, Illinois. This species may potentially occur anywhere in the North Fork Vermilion River. The clubshell inhabits gravel or mixed sand and gravel substrates in medium to large rivers. Instream activities in the North Fork Vermilion River will typically require a mussel survey to determine if the clubshell is present.

The **rayed bean** *(Villosa fabalis)* is generally known from smaller, headwater creeks, but records exist in larger rivers. Substrates typically include gravel and sand. It is oftentimes associated

with vegetation in and adjacent to riffles and shoals. Specimens are typically buried among the roots of the vegetation. These mussels in streams occur chiefly in flow refuges, or relatively stable areas that display little movement of particles during flood events. Historical habitat for the rayed bean is found in Champaign and Vermilion Counties, Illinois.

As of August 9, 2007, the bald eagle is no longer included on the list of threatened and endangered species. It remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. For more information go to http://www.fws.gov/midwest/eagle/guidelines/index.html.

Wetlands

Because wetlands are vital as flood water retention areas and for groundwater retention and filtration, and also because they provide habitat for many plants and animals, priority consideration should be given to avoid impacts to these wetland areas. Any future activities in the study area that would alter wetlands may require a Section 404 permit. Unavoidable impacts will require a mitigation plan to compensate for any losses of wetland functions and values. The U.S. Army Corps of Engineers, Clock Tower Building, P.O. Box 2004, Rock Island, Illinois 61201, should be contacted for information about the permit process.

Migratory Birds

In addition to trying to ensure that proposed wind power turbines do not adversely affect threatened and endangered species, the Service is also interested in minimizing potential impacts to other wildlife resources, particularly migratory birds. The siting of new turbines creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating neotropical songbirds. The problem is especially acute at tall, lighted, guyed turbines, particularly in inclement night weather conditions during spring and fall songbird migrations. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) and the Code of Federal Regulations at Part 50 designed to implement the MBTA. It is possible that species protected under the Endangered Species Act and Bald and Golden Eagle Act may also be affected.

The American Golden Plover (*Pluvialis dominica*) and the Smith's Longspur (*Calcarius pictus*) are both species that pass through Illinois primarily during the spring migration (mid-March to late April) with the greatest numbers reported in the east central portion of Illinois. These species also may overwinter or stage migrations in Illinois.

In addition, the introduced and experimental population of whooping cranes migrates through north central and northeastern Illinois. Crane species are thought to be particularly vulnerable to wind turbine strikes. Whooping Crane locations have been recorded by the Whooping Crane Eastern Partnership as recent as 2008 in both of these counties. Inclement weather or high winds could push migrating birds further into the counties proposed for wind development.

The Migratory Bird Treaty Act (16 U.S.C. 703-712) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the Act has no provision for allowing unauthorized take, it must be recognized that some birds may be killed at structures such as wind farm turbines, even if all reasonable measures to avoid it are implemented. The Service's Division of Law Enforcement carries out its mission to protect migratory birds not only through investigations and enforcement, but also through fostering relationships with individuals and industries that proactively seek to eliminate their impacts on migratory birds.

Research into the actual causes of bird collisions with towers is limited. A Wind Energy Working Group composed of government agencies, industry, academic researchers, and non-government organizations has been formed to develop a research protocol to determine the best ways to construct turbines to minimize bird strikes. To assist field staff in the review of wind farm proposals until the results of that research are available, the Service is working to develop standard recommendations based on a review of currently available information. We refer you to the Service Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines at our website: http://www.fws.gov/habitatconservation/wind.htm.

Site Development Recommendations

We recommend that turbines not be sited on major bird migration corridors or in areas where birds are highly concentrated. Examples of high concentration areas for birds are wetlands, state or Federal refuges, staging areas, rookeries, and landfills. Avoid known migratory or daily movement flyways and areas with a high incidence of fog, mist, low cloud ceilings, and low visibility.

Turbines should be sited to avoid areas or features of the landscape known to attract raptors (hawks, falcons, eagles, owls). For example, golden eagles, hawks, and falcons use cliff/rim edges extensively; setbacks from these edges may reduce mortality. Other examples include avoiding siting turbines in a dip or pass in a ridge.

Avoid placing turbines near bat hibernation and breeding colonies, in migration corridors, and in flight paths between colonies and feeding areas. Where the height of the rotor-swept area produces a high risk for wildlife, adjust tower height where feasible to reduce the risk of strikes.

The Service recommends that all sites be monitored for impacts on wildlife after construction is completed. Post-construction monitoring is important to the Service, industry, and public because of the limited information available on impacts of wind turbines and wind resource areas on wildlife. Therefore, post-construction monitoring should be designed to detect major impacts. The intended timeframe for post-construction monitoring is not expected to exceed three years, however.

These comments provide technical assistance only and do not constitute the report of the Secretary of the Interior on the project within the meaning of Section 2(b) of the Fish and Wildlife Coordination Act, do not fulfill the requirements under Section 7 of the Endangered

Species Act, nor do they represent the review comments of the U.S. Department of the Interior on any forthcoming environmental statement.

If you have questions, please contact Heidi Woeber of my staff at (309) 757-5800, extension 209.

Sincerely,

Richard C. Nelson
Field Supervisor

S:\Office Users\Heidi\windnewletterchampaignvermilion.doc

Literature Cited

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (CEC-500-2006-022). Edison Electric Institute/Raptor Research Foundation, Washington, D.C., 128 pp.

Avian Power Line Interaction Committee (APLIC). 1994. Mitigating Bird Collisions with Power Lines: the State of the Art in 1994. Edison Electric Institute, Washington, D.C. 78 pp.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
NEWBURGH REGULATORY OFFICE
P.O. Box 489
NEWBURGH, INDIANA 47629-0489
FAX: (812) 858-2678
http://www.lrl.usace.army.mil

24 August 2009

RECEIVED
AUG 27 2009
HDR Engineering, Inc.

Operations Division
Regulatory Branch (West)
ID No. LRL-2009-310

HDR Engineering, Inc.
Jacque Hamilton
701 Xenia Avenue South
Minneapolis, MN 55416-3636

Dear Ms. Hamilton:

This is in regard to your letter dated 6 March 2009 proposing to construct an up to 200-Megawatt wind farm in Vermilion and Champaign Counties in Illinois.

Based on our review of the submitted data, it has been determined that additional information will be required before we can make a determination for a permit. Please submit a detailed plan on the project specifics and a Department of the Army (DA) permit application. You are reminded that all drawings must be submitted on 8½ x 11-inch paper and be of reproducible quality. I have enclosed an Application for Department of the Army Permit, Eng 4345 for your convenience.

Your proposed project has been assigned ID No. LRL-2009-310. Please reference this number on all correspondence pertaining to this project. If you have any questions regarding the requested information, please contact this office by writing to the above address, ATTN: CELRL-OP-FW or by calling me at 812-853-7632.

Sincerely,

Robert J. Brown
Regulatory Specialist
Newburgh Regulatory

Barron/OP-FW

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 Expires December 31, 2004

The Public burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection , Research and Sanctuaries Act, Section 103, 33 USC 1413. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED
LRL-2009-310			

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE *(an agent is not required)*
6. APPLICANT'S ADDRESS	9. AGENT'S ADDRESS
7. APPLICANT'S PHONE NOS. W/AREA CODE a. Residence b. Business	10. AGENT'S PHONE NOS. W/AREA CODE a. Residence b. Business

11. **STATEMENT OF AUTHORIZATION**

I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____

APPLICANT'S SIGNATURE DATE

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE *(see instructions)*

13. NAME OF WATERBODY, IF KNOWN *(if applicable)*	14. PROJECT STREET ADDRESS *(if applicable)*
15. LOCATION OF PROJECT COUNTY _____ STATE _____	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN, *(see instructions)*

17. DIRECTIONS TO THE SITE

18. Nature of Activity (*Description of project, include all features)*

19. Project Purpose *(Describe the reason or purpose of the project, see instructions)*

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled *(see instructions)*

23. Is Any Portion of the Work Already Complete? Yes ____ No ____ IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

25. List of Other Certifications or Approvals/Denials Received from other Federal, State or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

*Would include but is not restricted to zoning, building and flood plain permits

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Instructions for Preparing a
Department of the Army Permit Application

Blocks 1 through 4. To be completed by Corps of Engineers.

Block 5. Applicant's Name. Enter the name of the responsible party or parties. If the responsible party is an agency, company, corporation or other organization, indicate the responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked **Block 5.**

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he/she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by applicant if an agent is to be employed.

Block 12. Proposed Project Name or Title. Please provide name identifying the proposed project (i.e., Landmark Plaza, Burned Hills Subdivision or Edsall Commercial Center).

Block 13. Name of Waterbody. Please provide the name of any stream, lake, marsh or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Project Street Address. If the proposed project is located at a site having a street address (not a box number), please enter here.

Block 15. Location of Proposed Project. Enter the county and state where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

Block 16. Other Location Descriptions. If available, provide the Section, Township and Range of the site and/or the latitude and longitude. You may also provide description of the proposed project location, such as lot numbers, tract numbers or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile down from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site.

Block 18. Nature of Activity. Describe the overall activity or project. Give appropriate dimensions of structures such as wingwalls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles or float supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked **Block 18.**

Block 19. Proposed Project Purpose. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20. Reason(s) for Discharge. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Block 21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22. Surface Areas of Wetlands or Other Waters Filled. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked **Block 22**.

Block 23. Is Any Portion of the Work Already Complete? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identify the authorization if possible.

Block 24. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

Information regarding adjacent landowners is usually available through the office of the tax assessor in the county of counties where the project is to be developed.

Block 25. Information about Approvals or Denials by Other Agencies. You may need the approval of other Federal, state or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 26. Signature of Applicant or Agent. The application must be signed by the owner or other authorized party (agent) . This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a **Vicinity Map**, a **Plan View** or a **Typical Cross-Section Map**. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8 l/2x11 inch plain white paper (tracing paper or film may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view or cross-section) . **While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate and contain all necessary information.**

United States Department of the Interior

National Park Service

Midwest Region
601 Riverfront Drive
Omaha Nebraska 68102-4226

L6015(MWR-PCL/PC)

3 SEP 2009

Ms. Jacqueline Hamilton
Environmental Project Manager
701 Xenia Avenue South
Minneapolis, Minnesota 55416-3636

Dear Ms. Hamilton:

Thank you for your April 29 letter requesting comments from the National Park Service (NPS) regarding the proposed California Ridge Wind Project, Vermillion and Champaign Counties, Illinois, in the vicinity of the Middle Fork of the Vermillion National Scenic River (River). The River is a component of the Wild and Scenic Rivers System (System) pursuant to Section 2(a)(ii) of the Wild and Scenic Rivers Act (Act). Each component of the System is to be preserved in its free-flowing condition and managed to protect and enhance the water quality and outstanding remarkable values (ORV), while providing for public recreation and resource uses which do not adversely impact or degrade those values. The River ORV include scenic, geologic, fish and wildlife, ecological, recreational, and historic resources. The River's unique mussel resources (including listed and nonlisted species) are specifically mentioned in documents related to the rivers designation, and are protected by the Act.

The State of Illinois is the river administering agency, and the NPS, on behalf of the Secretary of the Interior (SOI), retains Section 7(a) responsibilities under the Act. Components of the System are protected by Section 7(a) of the Act, which states, in part:

> ... no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration.

Water resources projects include, but are not limited to, dams, water diversion projects, fisheries habitat and watershed restoration/enhancement projects, bridge construction or demolition, bank stabilization projects, boat ramps, and other activities that require a Section 404 or Section 10 permit from the U.S. Army Corps of Engineers. Water resource projects located within a designated reach or upstream/downstream or on tributaries to the designated reach are subject to section 7(a) review. A Section 7(a) determination is used to determine whether a proposed water resources project impacts would have a direct and adverse effect on the values for which the

TAKE PRIDE IN AMERICA

river was established, namely its free-flowing condition, water quality, and designated ORV. Federal water resources projects that are determined to have a direct and adverse effect on the values for which designated rivers were added to the System are prohibited.

The proposed wind farm does not meet the definition of a water resources project and is not subject to the requirements of Section 7(a) of the Act. Nonetheless, the river administering agency, project proponents, and all related Federal actions are charged by the Act to protect and enhance the values for which the river was designated.

Section 10(a) of the Act (16 U.S.C. 1281(a)) is considered the nondegradation and enhancement policy. Section 10(a) of the Act states the following:

> Each component of the National Wild and Scenic Rivers System shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values.

At its easternmost border, the proposed project as described is located near the designated 1,000-foot-wide River corridor boundary. It is not clear to what extent the remainder of the project location will encumber the aesthetic qualities of the River. Consequently, the project has the elevated potential to have an adverse effect on the scenic value of the River by providing a visual intrusion as viewed from the River. The NPS requests that project proponents conduct a viewshed sensitivity analysis in order to evaluate the effect of the turbine array on the scenic view from the River. The analysis should take into account the maximum height of the turbine blades, their density and locations, and the expected view from the River. Additionally, an assessment of the potential noise production and how it may affect the corridor should also be conducted. The desired condition is that no wind turbine should be visible from the River at any point and there should be no detectable noise associated with the turbine operation within the corridor boundary.

These comments have been provided in early coordination on behalf of the SOI. The NPS has an interest in ensuring the values for which the River was designated are protected. The scenic ORV can be irretrievably harmed by the introduction of unnatural structural elements into the viewshed of the river. Every effort should be made to avoid a visual intrusion to the River. Should you have any questions or concerns, please call Regional Rivers Coordinator Hector Santiago of my staff at 402-661-1848.

Sincerely,

David N. Given
Acting Regional Director

cc:
Mr. Sam Flood, Acting Director
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, Illinois 62702

Mr. Louis Yockey
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, Illinois 62702-1271

Ms. Joyce Collins
U.S. Fish and Wildlife Service
Ecological Services Office
8588 Route 148
Marion, Illinois 62959-4565

United States Department of the Interior

National Park Service

Midwest Region
601 Riverfront Drive
Omaha Nebraska 68102-4226

RECEIVED
SEP 17 2009
HDR Engineering, Inc.

L6015(MWR-PCL/PC)

3 SEP 2009

Ms. Jacqueline Hamilton
Environmental Project Manager
701 Xenia Avenue South
Minneapolis, Minnesota 55416-3636

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The State of Illinois is the river administering agency, and the NPS, on behalf of the Secretary of the Interior (SOI), retains Section 7(a) responsibilities under the Act. Components of the System are protected by Section 7(a) of the Act, which states, in part:

> … no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration.

Water resources projects include, but are not limited to, dams, water diversion projects, fisheries habitat and watershed restoration/enhancement projects, bridge construction or demolition, bank stabilization projects, boat ramps, and other activities that require a Section 404 or Section 10 permit from the U.S. Army Corps of Engineers. Water resource projects located within a designated reach or upstream/downstream or on tributaries to the designated reach are subject to section 7(a) review. A Section 7(a) determination is used to determine whether a proposed water resources project impacts would have a direct and adverse effect on the values for which the

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cc:
Mr. Sam Flood, Acting Director
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, Illinois 62702

Mr. Louis Yockey
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, Illinois 62702-1271

Ms. Joyce Collins
U.S. Fish and Wildlife Service
Ecological Services Office
8588 Route 148
Marion, Illinois 62959-4565

From: Rolfes, Christina
Sent: Thursday, September 10, 2009 3:39 PM
To: Hamilton, Jacqueline D.
Subject: FW: WEST protocol review

Jacque,

Please see Keith's comments regarding the WEST protocol below.

Christina Rolfes
Environmental Scientist

HDR ONE COMPANY | *Many Solutions*
701 Xenia Avenue South | Suite 600 | Minneapolis, MN | 55416
Phone: 763.278.5994 | Fax 763.591.5413 | Email: christina.rolfes@hdrinc.com

From: Shank, Keith [mailto:Keith.Shank@Illinois.gov]
Sent: Thursday, September 10, 2009 3:33 PM
To: Rolfes, Christina
Subject: RE: WEST protocol review

Hi, Christina

The methods and proposals outlined are acceptable, as far as they go, but probably are not adequate to comprehensively address all risks to or posed by listed species. We have the following comments.

The Illinois List of Endangered or Threatened Species is being revised, and this change will likely be final near the end of September 2009. Three birds of interest are being de-listed: Bald Eagle, Henslow's Sparrow, and Sandhill Crane. One bird is being added: the Black-Billed Cuckoo, which has bred in Vermilion County in the past.

Observations of the American Golden Plover will continue to be of interest. However, in this part of the State, we do not expect to see Smith's Longspurs, and experience with prior efforts indicates it is almost always impossible to distinguish Longspurs to the species level in these types of studies, so no special effort for the Smith's Longspur is necessary.

Because the study will be done only during daylight hours, it has the inherent weakness that no night-migrating species will be observed unless they stop-over in the study area. Hence, it may not be possible to draw conclusions about potential effects on night-migrating birds via these methods.

This protocol depends on acoustic bat detection to assess bat activity. It is very likely that the forests along the Middle Fork contain Indiana Bat roost trees for summer maternity colonies, since these are known from areas both upstream and downstream. Acoustic monitoring alone may not be adequate to assess the risk of an incidental taking of Indiana Bats through baro-trauma or blade-collision. In this case, it may be worth considering a mist-netting survey of forests and streams in close proximity to the project area in an effort to confirm the presence of the Indiana Bat in the vicinity.

The emphasis of this protocol is on birds and bats; observations of terrestrial species will be recorded only as a result of incidental encounters. This is not an adequate basis to judge the risks of impacts to terrestrial and aquatic listed species which may be present. The Ornate Box Turtle has been collected previously from Champaign County. The Department recommends a specific effort designed to detect the presence of this terrestrial species, in particular.

If roads or cabling will directly impact any drainage ditch or stream with permanent water, a survey of stream fauna is recommended. Tributaries of the Salt Fork and Middle Fork may contain the following listed species: the Mudpuppy Salamander, Smooth Soft-Shell Turtle, Eastern Sand Darter, and Bigeye Chub, as well as the Slippershell and Little Spectaclecase Mussels. Some portions of channelized streams, such as the upper reaches of the Spoon River Drainage District, do not have appropriate substrate or habitat conditions for mussels, but may provide important spawning habitat for fish or the Mudpuppy.

The Eastern Massasauga Rattlesnake has extant populations along the Sangamon River in Champaign and Piatt Counties; Vermilion County is within their historic range. the Department believes the chances of encountering this species in the project area are extremely low.

Although the Department has no documented records of the Timber Rattlesnake in Vermilion County, local residents often claim to know someone who has killed one in recent years; some local hunters swear to have seen mountain lions near the Middle Fork. The Department does not put much stock in such claims, but this area is well-within the historic ranges of both species, and essential habitat elements exist. Staff should be advised to always be alert in forested areas.

From: Rolfes, Christina [mailto:Christina.Rolfes@hdrinc.com]
Sent: Thursday, September 10, 2009 2:27 PM
To: Shank, Keith
Subject: WEST protocol review

Keith,

Per our phone conversation, here is a copy of the WEST Wildlife Baseline Study Plan protocol. If you could please review this protocol and provide a response indicating if these protocols are acceptable? A email response will be adequate.

Thanks Keith!

Christina Rolfes
Environmental Scientist

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C. Pius Weibel
Chair
email: cweibel@co.champaign.il.us

Thomas Betz
Vice-Chair

Office of
County Board
Champaign County, Illinois

Brookens Administrative Center
1776 East Washington Street
Urbana, Illinois 61802
Phone (217) 384-3772
Fax (217) 384-3896

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SEP 17 2009
HDR Engineering, Inc.

September 15, 2009

Jacqueline D. Hamilton
Environmental Project Manager
HDR One Company
701 Xenia Avenue S.
Minneapolis MN 55416

Re: Anticipated special use permit application for the California Ridge Wind Farm

Dear Ms. Hamilton:

I understand that you are preparing the special use permit application for the anticipated California Ridge Wind Farm on behalf of Invenergy. Champaign County awaits that application and our staff is available to answer your questions at any time. Because this is such an important project, I would like to clarify some rules regarding communications between County Board members and you or your client.

I have received copies of e-mail correspondence between you and County Board member Al Kurtz concerning your pending Special Use Permit with Champaign County. In reviewing the correspondence and discussing this matter with County legal staff, I would ask that in the future, you address such communications to John Hall, our Director of Planning and Zoning. Not only is this procedure more practical for you than trying to address the concerns of twenty-seven individual County Board members, it is also more in compliance with the requirements of our Zoning Ordinance in the Special Use Permit Procedure.

I have been assured that you received a copy of our Planning and Zoning Department handout entitled "Special Use Permit Procedure" and that you were told by our Planning and Zoning Director to feel free to address any concerns or questions you have about your Special Use Permit to him at any time. That is important to you because, as you know, the department is the staff for the Zoning Board of Appeals, the body which is authorized to determine whether your Special Use Permit should be granted, and also serves as staff to the County Board on all zoning matters.

County Board members are not authorized by our ordinance to negotiate or determine any issues related to your permit, and in fact it would be a conflict for any of our Board members to take any such action. Moreover, it is clear from the Illinois Supreme Court case, informally called the *Klaeren* decision, that proceedings related to a Special Use Permit are to be conducted in an adjudicatory manner, meaning that the decision-makers at any level cannot be contacted by the petitioner or any representative on the petitioner's behalf outside of the public hearing setting, and that there will be greater judicial scrutiny of the special use permit process if the decision is appealed to the Court.

I appreciate how important this process is to you and that you are undoubtedly going to have questions and concerns as you go through this process and I encourage you to contact our staff anytime you have a question. I also invite you to contact me at anytime that you have a concern or issue that you would like to share, about the process.

I hope that this letter has clarified how best to ensure that your questions and concerns are answered in a timely and correct manner so as to minimize the potential for any decision made by our Boards on this important project to end up in litigation.

Sincerely,

C. Pius Weibel

C. Pius Weibel
Champaign County Board Chair

XC: Jeff Veazie, Project Engineer, Invenergy, One South Wacker Drive, Suite 1900, Chicago IL 60696
John Hall, Director, Champaign County Planning & Zoning Department
Susan McGrath, Champaign County State's Attorney Office
Barbara Wysocki, Environment & Land Use Committee Chair

Illinois Department of
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One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

Pat Quinn, Governor
Marc Miller, Director

September 21, 2009

Mr. John Hall, Director
Champaign County Dept. of Zoning and Planning
Brookens Administrative Center
1776 E. Washington Street
Urbana, IL 61802

RE: Invenergy Wind LLC California Ridge Energy Center
Endangered Species Consultation Program
Natural Heritage Database Review #0906735

Dear Mr. Hall:

The Department has received information from Invenergy Wind LLC and HDR Engineering, Inc., pertaining to a proposed action in Champaign County, for the purpose of initiating consultation between the Department and Champaign County pursuant to the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075.

After reviewing this information, the Department has determined the proposed action is in the vicinity of eighty-five (85) natural resource locations protected under these statutes, including eight INAI Sites registered as Illinois Land & Water Reserves or dedicated as Illinois Nature Preserves. Those believed relevant to a decision by Champaign County are listed on the accompanying EcoCAT Report.

It is the Department's opinion some INAI Sites and listed species are likely to be directly or indirectly adversely affected by the proposed action unless preventive measures are taken; but in some cases adverse effects may result in prohibited takings of listed species which require additional authorizations from the Department.

The Attachment discusses the effects expected at each IDNR-managed property, Illinois Natural Areas Inventory Site, Nature Preserve, Land & Water Reserve, and to each State-listed endangered or threatened species in sufficient detail for County officials to evaluate the project.

Of particular significance is the proximity of the Middle Fork of the Vermilion National Scenic River. At no point will the project physically encroach upon lands and waters which are

formally protected by law. However, the Middle Fork Vermilion River, itself, provides essential habitat along and within its waters for no fewer than sixteen State-listed endangered or threatened species. High water quality, including consistently cool waters, is the key characteristic supporting these species. All areas within the proposed project footprint in Vermilion County drain to the Middle Fork. Consequently, the Department recommends the County consider imposing measures on the applicant to assure that siltation, sedimentation, and thermal pollution are minimized or avoided during construction and operation of the project.

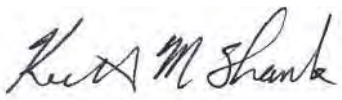
Eight species of State-listed endangered or threatened birds are known to breed in the vicinity of the proposed project, while numerous migratory species pass through the area. In addition, the federally-listed Indiana Bat is a likely summer resident of the riparian woodlands of the Middle Fork and Salt Fork. The Department recommends the County require pre-and post-construction studies of avian use and bat activity of the project area, including acoustic monitoring of bat calls, with mortality studies following construction, to be filed with the County when completed. Any taking of endangered or threatened species should be promptly reported.

The Department's consultation process for this proposal is terminated, unless the County desires additional information or advice related to this proposal. However, consistent with Part 1075, the County must notify the Department of its disposition of recommendations pertaining to species or sites subject to the consultation process.

Termination does not imply the Department's approval or endorsement of this proposal. Consultation is valid only for a two-year period; if the proposed action is not implemented in that time, a new consultation will be necessary. The Natural Heritage Database is unable to state that no listed species exist within the project footprint, nor can it exclude the possibility that listed species other than those mentioned exist in the vicinity.

Should you need additional information regarding the consultation process, or should you have any questions, please do not hesitate to contact me.

Sincerely,



Keith M. Shank
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cc:

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One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

Pat Quinn, Governor
Marc Miller, Director

September 21, 2009

Mr. Bill Donahue
County Board Office
3rd Floor
6 North Vermilion
Danville, IL 61832

RE: Invenergy Wind LLC California Ridge Energy Center
Endangered Species Consultation Program
Natural Heritage Database Review #0906735

Dear Mr. Donahue:

The Department has received information from Invenergy Wind LLC and HDR Engineering, Inc., pertaining to a proposed action in Vermilion County, for the purpose of initiating consultation between the Department and Vermilion County pursuant to the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075.

After reviewing this information, the Department has determined the proposed action is in the vicinity of eighty-five (85) natural resource locations protected under these statutes, including eight INAI Sites registered as Illinois Land & Water Reserves or dedicated as Illinois Nature Preserves. These are listed on the accompanying EcoCAT Report.

It is the Department's opinion many of these INAI Sites and listed species are unlikely to be directly or indirectly adversely affected by the proposed action, but in other cases adverse effects may result in prohibited takings of listed species or adverse modifications of Reserves or Preserves which may require additional authorizations from the Department and/or the Illinois Nature Preserves Commission.

The Attachment discusses the effects expected at each IDNR-managed property, Illinois Natural Areas Inventory Site, Nature Preserve, Land & Water Reserve, and to each State-listed endangered or threatened species in sufficient detail for County officials to evaluate the project.

Of particular significance is the proximity of the Middle Fork of the Vermilion National Scenic River. At no point will the project physically encroach upon lands and waters which are

formally protected by law. Nevertheless, there is some potential for visual impacts to persons using the National Scenic River corridor. In view of the economic importance of the National Scenic River to the County, and its unique status within Illinois, the Department recommends the County request a visibility analysis from the project applicants which identifies the location and character of visual impacts, or which demonstrates that none will exist. If such impacts are identified, the County should consider whether action is appropriate to abate or to prevent such impacts.

The Middle Fork Vermilion River, itself, provides essential habitat along and within its waters for no fewer than sixteen State-listed endangered or threatened species. High water quality, including consistently cool waters, is the key characteristic supporting these species. All areas within the proposed project footprint in Vermilion County drain to the Middle Fork. Consequently, the Department recommends the County consider imposing measures on the applicant to assure that siltation, sedimentation, and thermal pollution are minimized or avoided during construction and operation of the project.

The Department has identified several natural resources which may be affected by the moving shadows cast by wind turbine blades, often referred to as "flicker." This represents a modification of existing environmental conditions which may affect essential habitats in ways that are not currently understood.

In view of the scale of investment this project represents, and the rare, even unique, nature of the natural resources involved, the Department recommends this effect be minimized on Department-managed lands, and be completely avoided on registered Land & Water Reserves and dedicated Nature Preserves. Local governments are mandated by statute to avoid planning any action which will adversely affect lands which are registered or dedicated.

A number of physical factors dictate the location, seasonality, time of day, and duration of flicker at any given point. The significant topographical relief associated with the Middle Fork and the presence of its riparian woodlands render a determination more difficult. The Department lacks sufficient information at this time to address this issue with certainty. Fortunately, modeling software is available to the wind energy industry which is capable of integrating topography and land cover to precisely define the location, seasonality, time of day, and duration of flicker for any proposed individual turbine location.

The Department recommends the County require a modeled flicker analysis for all wind turbines proposed to be sited within 1.5 miles of Department-managed lands or any registered Land & Water Reserve or dedicated Illinois Nature Preserve. Where such effects are indicated, the Department recommends the County impose measures to minimize or avoid them.

Eight species of State-listed endangered or threatened birds are known to breed in the vicinity of the proposed project, while numerous migratory species pass through the area. In addition, the federally-listed Indiana Bat is a likely summer resident of the riparian woodlands of the Middle Fork and Salt Fork. The Department recommends the County require pre-and post-construction studies of avian use and bat activity of the project area, including acoustic monitoring of bat

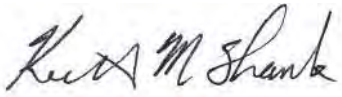
calls, with mortality studies following construction, to be filed with the County when completed. Any taking of endangered or threatened species should be promptly reported.

The Department's consultation process for this proposal is terminated, unless the County desires additional information or advice related to this proposal. However, consistent with Part 1075, the County must notify the Department of its disposition of recommendations pertaining to species or sites subject to the consultation process.

Termination does not imply the Department's approval or endorsement of this proposal. Consultation is valid only for a two-year period; if the proposed action is not implemented in that time, a new consultation will be necessary. The Natural Heritage Database is unable to state that no listed species exist within the project footprint, nor can it exclude the possibility that listed species other than those mentioned exist in the vicinity.

Should you need additional information regarding the consultation process, or should you have any questions, please do not hesitate to contact me.

Sincerely,



Keith M. Shank
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cc:

Illinois Department of
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One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

Pat Quinn, Governor
Marc Miller, Director

December 4, 2009

Mr. Bill Donahue
County Board Office
3rd Floor
6 North Vermilion
Danville, IL 61832

RE: Invenergy Wind LLC California Ridge Energy Center
Endangered Species Consultation Program
Natural Heritage Database Review #0906735

Dear Mr. Donahue:

The Department has received information from Invenergy Wind LLC and HDR Engineering, Inc., pertaining to a proposed action in Vermilion County, for the purpose of initiating consultation between the Department and Vermilion County pursuant to the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075.

After reviewing this information, the Department has determined the proposed action is in the vicinity of eighty-five (85) natural resource locations protected under these statutes, including eight INAI Sites registered as Illinois Land & Water Reserves or dedicated as Illinois Nature Preserves. These are listed on the accompanying EcoCAT Report.

It is the Department's opinion most of these INAI Sites and listed species are unlikely to be directly or indirectly adversely affected by the proposed action, but in other cases adverse effects may result in prohibited takings of listed species which may require additional authorizations from the Department.

The Attachment discusses the effects expected at each IDNR-managed property, Illinois Natural Areas Inventory Site, Nature Preserve, Land & Water Reserve, and to each State-listed endangered or threatened species in sufficient detail for County officials to evaluate the project.

Of particular significance is the proximity of the Middle Fork of the Vermilion National Scenic River. At no point will the project physically encroach upon lands and waters which are formally protected by law. Nevertheless, there may be some potential for visual impacts to persons using the National Scenic River corridor. In view of the economic importance of the

National Scenic River to the County, and its unique status within Illinois, the Department recommends the County conduct or request a visibility analysis which identifies the location and character of visual impacts, or which demonstrates that none will exist.

The Middle Fork Vermilion River, itself, provides essential habitat along and within its waters for no fewer than sixteen State-listed endangered or threatened species. High water quality, including consistently cool water temperatures, is the key characteristic supporting these species. All areas within the proposed project footprint in Vermilion County drain to the Middle Fork. Consequently, the Department recommends the County require measures to assure that siltation, sedimentation, and thermal pollution are minimized or avoided during construction and operation of the project.

Five species of State-listed endangered or threatened birds are known to breed in the vicinity of the proposed project, while numerous migratory species pass through the area. In addition, the federally-listed Indiana Bat is a likely summer resident of the riparian woodlands of the Middle Fork and Salt Fork. The Department recommends the County require pre-and post-construction studies of avian use and bat activity of the project area, including acoustic monitoring of bat calls, with mortality studies following construction, to be filed with the County when completed. Any taking of endangered or threatened species should be promptly reported to both the County and to the Department.

The Department's consultation process for this proposal is terminated, unless the County desires additional information or advice related to this proposal. However, consistent with Part 1075, the County must notify the Department of its disposition of recommendations pertaining to species or sites subject to the consultation process.

Termination does not imply the Department's approval or endorsement of this proposal. Consultation is valid only for a two-year period; if the proposed action is not implemented in that time, a new consultation will be necessary. The Natural Heritage Database is unable to state that no listed species exist within the project footprint, nor can it exclude the possibility that listed species other than those mentioned exist in the vicinity.

Should you need additional information regarding the consultation process, or should you have any questions, please do not hesitate to contact me.

Sincerely,

Keith M. Shank

Keith M. Shank
Impact Assessment Section
Division of Ecosystems and Environment
Ph. (217) 785-5500
Fax (217) 524-4177

cc: Jeff Veazie, Invenergy LLC, Inc.
Jacqueline Hamilton, HDR, Inc.

Attachment

Invenergy California Ridge Wind Energy Center
Vermilion County

Wildlife Impact Recommendations

Vermilion County may wish to consider permit conditions requiring the applicant to monitor, assess, and report possible fish and wildlife effects of the proposed action in the following ways.

- $ Evaluate the visual impacts, if any, of the project to recreational users of the Middle Fork National Scenic River.

- $ Incorporate best management practices to minimize risk to federally-listed and state-listed species, as outlined in this Attachment. Focus should be on appropriate avoidance and minimization of habitat disturbance, with mitigation measures implemented as applicable.

- $ Where feasible, permanent engineering solutions to soil erosion and water quality issues should be required and maintained, particularly with reference to service and access roads.

- $ Perform pre-construction assessments of avian and bat usage within the project area. Such assessments should include inventories of habitat types in and near the project area, including crop rotations or choices, and observations of both migratory and resident bird usage. Consideration of all seasons should be included, although spring migration is anticipated to be of greatest interest. Acoustic bat activity monitoring is also appropriate, particularly during the fall migratory season when activity would be expected to be highest. Specific federally-listed and state-listed species of interest are discussed in the following narrative. Risks to protected species should be evaluated and appropriate regulatory permits sought for potential incidental taking of protected animals.

- $ Perform at least one year of post-construction monitoring and assessment, noting any changes in wildlife usage patterns and evaluating potential causes of such changes.

- $ Consideration should be given to periodic repetition of the post-construction wildlife surveys during the life of the project.

Natural resources within, or in the vicinity of, the proposed wind energy facility are listed below, along with a discussion of potential issues.

Coal Resources

According to the Illinois State Geological Survey databases, no known past coal mining locations are associated with the proposed project footprint, despite the presence of significant coal resources. However, the developer may wish to verify the ownership of the mineral rights beneath turbine lease locations to determine if mining conflicts exist, whether past or future, which might pose issues of geologic stability for wind turbines.

State Lands; Nature Preserves; Land & Water Reserves; and INAI Sites

National Scenic River - Middle Fork of the Vermilion River

A portion of the Middle Fork comprises the State's only designated National Scenic River. The reaches of the River closest to the project area (less than two miles) are formally protected as a National Scenic River where title (fee or easement) is held by the Illinois Department of Natural Resources, but this legal protection extends only 500 feet from the River's center-line. However, in this area the River lies in a valley more than 100 feet below the uplands likely to host turbines, and the valley walls are typically forested, circumstances which should considerably reduce the visibility of turbines to recreational users of the River. Nevertheless, it may be that from some points on the River turbines may be visible.

A visibility analysis is appropriate to determine to what degree the operation of wind turbines in the project area may degrade the recreational experience of persons on the River, and the County may wish to consider the impacts to economic benefits derived from tourism and recreation.

The river's riparian corridor forms an important avenue for the movement of all forms of wildlife, providing food and shelter for both migrant and resident species. By no means is wildlife limited to this area, however. Recent radar-based studies along the Illinois River demonstrate that even waterfowl may arrive and depart cross-country, rather than following the river. Hence, distance from the river provides no assurance that wildlife commonly found there will not also occur within the project area.

Erosion related to wind energy facility construction and operation has the potential to adversely affect the Middle Fork and its tributaries through siltation and sedimentation, while disruption of field tile systems may temporarily or permanently adversely modify the prevailing thermal regime in feeder stream habitats essential to Middle Fork fish, reptiles, amphibians, and mussels, including many State-listed endangered or threatened species, several of which are unique to the Vermilion River system in Illinois.

Measures should be adopted to minimize erosion and siltation related to construction and maintenance of the project, and to facilitate tile repairs. Fortunately, much of the project is located outside of the watershed of that portion of the Middle Fork which is designated as National Scenic River.

Middle Fork of the Vermilion River INAI Site

The Middle Fork of the Vermilion River is a designated Illinois Natural Areas Inventory (INAI) Site, from its confluence with the Salt Fork east of Oakwood, upstream to the northern boundary of Champaign County, well beyond the reaches designated as National Scenic River. The Middle Fork, its tributaries, and its riparian forests support a plethora of federally-listed and State-listed endangered and threatened species, including protected mussels, fish, amphibians, reptiles, bats, raptors and other birds. All drainage from the north side of the project, whether in Vermilion or Champaign Counties, enters the Middle Fork INAI Site.

High water quality is a hallmark of this stream. Erosion related to wind facility construction and operation has the potential to adversely affect tributaries and the Middle Fork through siltation and sedimentation, and to adversely modify feeder stream habitats essential to Middle Fork fish and mussels, several of which are unique to the Vermilion River system in Illinois.

Salt Fork of the Vermilion River INAI Site

The Salt Fork is designated as an INAI Site from a point northwest of Homer downstream to its confluence with the Middle Fork. This reach of the River supports numerous aquatic listed species of fish, mussels, reptiles, and amphibians, including the **Mudpuppy Salamander**, the **Bigeye Chub**, **Bluebreast Darter**, **River Redhorse**, **Blanding's Turtle**, **Wavy-Rayed Lampmussel**, **Purple Wartyback**, and the **Salamander Mussel**.

The Salt Fork receives the drainage from the **Spoon River INAI Site**, and from Stoney Creek and Feather Creek. All three of these streams drain significant portions of the proposed project area.

Spoon River INAI Site

The Spoon River is a tributary of the Salt Fork of the Vermilion River, located entirely within Champaign County south of Gifford. Although it is completely channelized and maintained by the Spoon River Drainage District, it has been designated because it retains unusually high fish diversity, likely due to its constant influx of cool tile drainage. While this resource is not located in Vermilion County, a decision by Vermilion County to proceed has implications for the Spoon River INAI.

The Spoon River INAI could be adversely modified by erosion and siltation related to turbine construction, and by disruption of the numerous agricultural tile-drains which feed it and maintain its temperature.

Middle Fork State Fish & Wildlife Area

The 4,120-acre Middle Fork SFWA occupies lands on both sides of the Middle Fork River, the nearest of which abut the project area's eastern boundary. The formally-designated National Scenic River begins at the north boundary of the SFWA and extends southward to Rt. 150. Turbines will be visible from within the SFWA, from along its western margins, and perhaps from high ground east of the Middle Fork of the Vermilion River.

The Department believes that only a small area at the southwest corner of the SFWA may be potentially swept by "flicker" effects, but it also believes that screening vegetation and topography will prevent flicker shadows from impinging on IDNR property.

In addition to a Nature Preserve, a Land & Water Reserve, five INAI Sites, and numerous state-listed endangered or threatened species within its boundaries, the SFWA also constitutes an important staging area for both migratory birds and bats, which may increase the risk of wildlife colliding with turbine blades due to the project's near proximity.

Other indirect, cumulative effects from the project (siltation and erosion) may be incurred via the river corridor.

Kickapoo State Recreation Area

This 2,700-acre State Park, once heavily strip-mined for coal, is one of the State's most popular camping, boating, fishing, and recreation destinations. Outdoor recreation is an important factor in Vermilion County's economy. The Park is located mainly north of Interstate 74, on both sides of the Middle Fork. It contains the lower terminus of the National Scenic River designation, and provides essential habitat for a large number of State-listed endangered or threatened species.

The closest portions of the wind energy project area lie less than one mile from the Park's northwestern corner. Wind turbines will be easily visible from the western boundaries of the Park at many locations, though most visitor activities will be concentrated in areas where visibility will not be an issue due to topography and land cover.

Kennekuk Cove County Park and INAI Site

This INAI Site is located on the southern portions of the 3,000-acre Kennekuk Cove County Park, a property managed by the Vermilion County Conservation District, on the east bank of the Middle Fork. The INAI Site at its nearest is about two miles east of the project area. No part of the Park receives drainage from the project area, except by way of the Middle Fork.

However, because of its position on high ground east of the Middle Fork, wind turbines may be visible from some portions of the County Park.

The major biological significance of the Park's proximity is that it provides significant staging and breeding habitat for bats and migratory birds, including the State-listed endangered Northern Harrier.

Kinney's Ford Seep Land & Water Reserve and INAI Site

Kinney's Ford Seep LWR lies within the northern part of the Middle Fork SFWA, two miles northeast of the closest portion of the project area, near the confluence of Collison Branch Creek with the Middle Fork. Despite its proximity to the project, topography makes it unlikely turbines will be visible from within the Reserve, or that "flicker" effects will be present at any time of year. The seep community of this Site is sensitive to ground water recharge impacts, but no project activities will be performed within the likely ground water recharge zone of this protected area.

Horseshoe Bottom Nature Preserve and INAI Site

This 100-acre Nature Preserve, as its name implies, is located in the Middle Fork bottoms, less than two miles northeast of the project. However, topography and land cover render it unlikely that turbines will be visible from the Preserve. Among its other biological values, it provides essential habitat for the State-listed endangered **Blanding's Turtle**.

Middle Fork Seeps INAI Site

These forested seeps are located on the *eastern* valley wall of the Middle Fork, facing the project, about 1.5 miles from the project area. Turbines may be visible to visitors in the winter, following leaf-fall, since the western valley wall at this point has little forest cover. Since it lies on the east bank, there is no potential for project activities to affect or alter ground water recharge zones for the seeps.

Fairchild Cemetery Prairie/Savanna Nature Preserve and INAI Site

This small (< one acre) Nature Preserve is part of the Kennekuk Cove County Park complex. It is located about 3.5 miles east-northeast of the project area and east of the Middle Fork. Because it lies on relatively high ground near the headwaters of Windfall Creek, project turbines may be visible to Nature Preserve visitors, although they may be screened by the forested bluffs of the Middle Fork SFWA or other intervening land covers.

Windfall Prairie Nature Preserve and INAI Site

This 60-acre Nature Preserve is located on the *east* bank of the Middle Fork, rising from the River to the top of the eastern bluffs, facing the project. In addition to riparian forest, it contains hill prairie and calcareous seep natural communities, and contains at least one State-listed endangered plant (**Wolf's Bluegrass,** *Poa wolfii*).

Because the nearest portions of the project area, only two miles southwest of the Nature Preserve, are of equal or higher elevation to the prairie areas of the Nature Preserve, and turbines will likely reach nearly 400 feet higher than that, it is likely that turbines will be visible to visitors in the Nature Preserve, although such visibility could be seasonal, limited to periods when the Preserve's deciduous trees are bare.

Orchid Hill Natural Heritage Landmark INAI Site

This 120-acre Natural Heritage Landmark INAI Site is home to an unusual number of native orchids and other rare plant groupings. Located adjacent to the extreme eastern end of the project area, near the existing coal-fired power plant, this forested area marches down the western bluff of the Middle Fork valley. Turbines are unlikely to be visible from the western margins of the INAI Site, due to screening vegetation, which will also serve to prevent flicker shadows from affecting the Site.

Middle Fork Woods Nature Preserve and INAI Site

This 77-acre Nature Preserve within Kickapoo State Recreation Area provides essential habitat to the very rare endangered **Silvery Salamander**. The Preserve is located about 2.5 miles south and east of the project area. Because it is completely surrounded by forest, no turbines will be visible from within the Preserve, nor does it lie in a watershed which may be affected by turbine construction.

Rock Cut Road Botanical Area INAI Site

Located just southwest of Middle Fork Woods, above Glenburn Creek but outside Kickapoo SRA, this INAI Site provides essential habitat for the State-listed threatened **Fibrous-Rooted Sedge,** *Carex communis*. Distance and topography assure this INAI Site and its population of the Fibrous-Rooted Sedge will not be affected by the proposed project.

Larimore's Salt Fork of the Vermilion Land and Water Reserve and INAI Site

This LWR consists of the channel and floodplain of the Salt Fork Vermilion River south of Muncie. In a valley and five miles south of the project area, the LWR will sustain no effects from the proposed wind farm.

Edgewood Farm land and Water Reserve and INAI Site

Located along the Salt Fork southeast of Ogden, and more than seven miles from the project area, the higher elevations of the LWR exceed 660 feet MSL, about the same elevation as the wind farm. Consequently, wind turbines may be visible from the higher elevations within the LWR unless forests on the opposite side of the Salt Fork valley are tall enough to screen them. However, at that distance, visibility is not likely to be obtrusive to site users.

Pellville Cemetery INAI Site

Pellville Cemetery lies 14 miles north of the project area, just west of Rankin and on the opposite side of the Middle Fork's valley. A keen-eyed observer at Pell Cemetery might possibly be able to see California Ridge turbines under conditions of excellent visibility, but they are unlikely to intrude on a visitor's experience. The Cemetery supports breeding pairs of the Henslow's Sparrow and other migratory birds, whose migratory passages could pose issues for the project.

Henschel Workman State Habitat Area

The Department's 135-acre Henschel Workman State Habitat Area is located southeast of Rankin in Vermilion County, about 13 miles north of the project footprint. It supports breeding Henslow's Sparrows and provides a large expanse of suitable wintering habitat and migratory staging area attractive to other migratory and State-listed bird species, whose migratory passages could pose issues for the project.

Sleeter State Habitat Area

The 103-acre Sleeter SHA is located about 1.5 miles northwest of Gifford in Champaign County. It lies eight miles northwest of project areas within Vermilion County, but only four miles from the nearest project areas in Champaign County. Turbines located in both Champaign and Vermilion Counties will be visible to site users, but this should have little impact on hunting activities, the major recreational use of this site. However, the Sleeter SHA may be a focal point for birds whose migratory passages could pose issues for the project.

Documented Listed Species In The Vicinity

Indiana Bat, *Myotis sodalis*

Summer nursery colonies of this bat, listed by the federal government and Illinois as endangered, have been documented in forested riparian tracts along the Middle Fork of the Vermilion River and the Big Four Ditch in Ford County, north of the project area, and along the Little Vermilion River in the southern half of Vermilion County. It is reasonable to assume that this species traverses or roosts in the intervening segments of the Vermilion River system.

Nursing females may forage above crop-fields a mile or more from the nursery colony. This species winters in caves or mines some distance from summer habitats, but its migratory behavior is poorly understood. No hibernation sites are known from Vermilion County, although critical hibernating habitat is known in LaSalle County. It is surmised that bats using the Middle Fork for summer habitat most likely migrate from hibernation sites in southwestern Indiana and Kentucky, although a banding study in the 1970's indicated that at least some LaSalle County bats move in this direction.

The risk to bats from collisions with moving wind turbine blades appears to be much higher than for birds. To date, no Indiana Bats have been documented as killed by wind turbines. But, until recently, no utility-scale wind farms have been proposed or constructed within the range of Indiana Bats, so the risk to this species from wind turbines remains unquantified.

The project area itself appears to contain no potential summer nursery or roosting habitat for the Indiana Bat, but directly abuts riparian forests; individuals roosting along the Middle Fork may forage above fields within the project area.

Because the winter hibernation sites of these bats are unknown, the greatest risk may be to Indiana Bats migrating across or through the project area. Efforts to identify and monitor the foraging and migration behavior of this bat population may establish the degree of risk which this facility would pose to this species.

The Department is unable to evaluate the potential for an incidental take of an Indiana Bat at this facility based on existing data; capture studies along creeks in the nearer vicinity of the project may be advisable. More common bat species undoubtedly occupy habitats in the vicinity, and are at risk of mortality, directly through collisions with wind turbines, or indirectly through barotrauma (lung hemorrhages caused by extremely low air pressures in the vortices created by wind turbine vanes).

Vermilion County is particularly rich in bat fauna: a 1996 netting survey on the Little Vermilion River east of Georgetown captured seven of nine species whose ranges include Vermilion County: the Eastern Red Bat, Hoary Bat, Northeastern Myotis, Eastern Pipistrelle, Big Brown and Little Brown Bats, in addition to the Indiana Bat. An acoustic bat survey is recommended, particularly during the fall bat migratory season (August 1 through October 31) when activity would be expected to be the highest, in order to characterize bat activity in the project area. A high level of bat activity may warrant post-construction mortality studies.

Blanding's Turtle, *Emydoidea blandingii*

Effective October 30, 2009, the Blanding's Turtle was listed by Illinois as "endangered

The Blanding's Turtle, distinguishable by its solid bright yellow lower jaw and throat, has been documented most recently in the Middle Fork SFWA (Horseshoe Bottom Nature Preserve), about two miles from the project area. No estimate of the local population size is available, but observations are rare, suggesting few individuals. While the existing population may be small and localized, the entire Vermilion River system is accessible to this species. In Northern Illinois, the species frequently ascends waterways to access open upland areas for nesting.

The Blanding's Turtle reaches sexual maturity only after 15-20 years, and has a documented life-span beyond 70 years, although females beyond age 50 may not be reproductively active. This species is known to move widely across the landscape, following streams and drainage ditches, but also moving overland when necessary. Overland movements typically occur at night. It is believed to demonstrate fidelity to nesting and hatching areas, attempting to return to its own natal site for egg-laying. The species is known to nest farther from the water than any other aquatic turtle in North America, at times nesting up to a mile inland. The species' life cycle appears to be compatible with row-crop agriculture, since egg-laying occurs in late spring or early summer after planting, and hatching usually occurs before harvest. Vermilion County lies near the southern limits of the species' range, so overwintering in the nest by hatchlings should be a rare occurrence.

The main threats to this species are nest predation by skunks, raccoons, and other mammalian predators, road-kill, and poaching (illegal collection for the pet trade). Wind energy construction

activities may result in disturbance of traditional nesting areas, the destruction of nests, the entrapment of individuals in excavations, and road-kill.

Workers on the project should be educated about this species' appearance and behavior; excavations left open overnight should be covered and inspected before filling: and any Blanding's Turtle observed should be documented with photographs and reported to the Department of Natural Resources. A Turtle may not be moved to facilitate the project unless the applicant has obtained an Incidental Take Authorization.

Smooth Softshell Turtle, *Apalone mutica*

Effective October 30, 2009, the Smooth Softshell was listed by Illinois as "endangered

This aquatic turtle inhabits larger streams and rivers, in segments with sandy substrates and sand bars. Regarded as a delicacy by many fishermen, this species has suffered from over-collecting, while pollution, siltation, and sedimentation have degraded many habitats. This species has been documented in Vermilion County, and it is potentially present in all reaches of the Vermilion River system.

Unless transportation of wind turbine components requires the upgrade or reconstruction of bridges, there should be little risk of direct adverse effects to this species. Erosion and siltation pose indirect threats.

River Redhorse, *Moxostoma carinatum*

The State-listed threatened River Redhorse is a member of the sucker family which feeds largely on invertebrates, including young mussels and crustaceans, for which it possesses specialized grinding teeth. It prefers medium-to-high-gradient rivers and streams with clean sand, gravel, and cobble substrates. The River Redhorse has been recorded in the Middle Fork as far north as the Middle Fork SFWA, but is more common in the Salt Fork.

Erosion related to turbine construction and maintenance may degrade stream-bed habitats or suppress populations of prey species. Because the River Redhorse rarely ascends small tributaries, direct adverse effects are unlikely.

Eastern Sand Darter, *Ammocrypta pellucidum*

This small fish is listed by Illinois as "threatened." Restricted to streams in the Wabash drainage of Illinois, it requires high water quality and bottom substrates of clean sand in fairly swift waters, requirements satisfied by all branches of the Vermilion River. Soil erosion and sedimentation pose the main threats to this species, followed by chemical pollution.

Bigeye Chub, *Hybopsis amblops*

The State-listed endangered Bigeye Chub is another small fish found only in the Wabash River watersheds of Illinois, but generally in smaller creeks and streams. It is present in the Middle

Fork, the Salt Fork, and Stoney Creek. Degradation of water quality and alteration of stream habitats are the main threats to this species.

Mussels

The Salt Fork, Middle Fork, and North Fork of the Vermilion River, and their tributary creeks, provide essential habitat for a large number of freshwater mussels, among the most endangered organisms in North America. High water quality remains the most essential habitat requirement.

Federally-listed species found, or once found, in these streams include the **Clubshell**, *Pleurobema clava*, and the **Riffleshell**, *Epioblasma torulosa*. A cooperative program between the U.S. Fish & Wildlife Service and the IDNR is planned to re-introduce the extirpated Riffleshell, and to augment the existing Clubshell population.

Headwater streams are most likely to support populations of the **Slippershell**, *Alasmidonta viridis*, and the **Little Spectaclecase**, *Villosa lienosa*. Broadly distributed lower down are populations of the **Wavy-Rayed Lampmussel**, *Lampsilis fasciola*; **Rainbow**, *Villosa lienosa*; **Purple Wartyback**, *Cyclonaias tuberculata*; **Kidneyshell**, *Ptychobranchus fasciolaris*; **Rabbitsfoot**, *Quadrula cylindrica*, and **Purple Lilliput**, *Toxolasma lividus*.

The **Salamander Mussel**, *Simpsonaias ambigua*, is the only species in its genus, and is also unique among North American mussels as the only species with a non-fish glochidial host, the **Mudpuppy**, *Necturus maculosus*. The Salamander Mussel has been documented at seven locations in Vermilion County since 1980, in the North Fork, the Middle Fork, and in Stony Creek, a tributary of the Salt Fork. A small mussel (two inches or less), and commonly found beneath rocks and debris, where the Mudpuppy spends much of its time, the Salamander Mussel is likely under-sampled by the typical non-targeted mussel survey, and may be more locally common than these records indicate.

Four-Toed Salamander, *Hemidactylium scutatum*

This four-inch-long amphibian is present in the riparian forests along Collison Branch Creek in the Middle Fork SFWA. While woodland vernal pools used for breeding may be the most essential habitat component for this species, this salamander may be found more than a thousand feet from the nearest wetlands, beneath forest floor litter and detritus where sufficient moisture is available. This species will not be found in grasslands or row-crop fields.

It is unlikely this species occurs within the project footprint. However, good water quality remains important; Collison Branch rises in Section 9 and 10 within the project area. Sound erosion controls in these areas will be important in maintaining good habitat conditions downstream.

Silvery Salamander, *Ambystoma platineum*

This six-inch-long salamander is unusual because its population is entirely female; egg production is stimulated by exposure to the sperm of the much more common **Small-Mouthed**

Salamander, *Ambystoma texanum*, which commonly shares its habitats, but there is no genetic interplay. (But this also means the presence of *A. texanum* is a crucial factor for the successful reproduction of *A. platineum.*) The Silvery Salamander may also occur with the endangered **Jefferson Salamander**, *Ambystoma jeffersonianum*, from which it cannot be distinguished except through analysis of its DNA chromosome count or the size of its red blood cells. (The populations in question here have been established by these tests to be Silvery Salamanders.)

A population within the Kickapoo SRA is beyond the range of effect from the proposed project. A second population, however, in Middle Fork Woods SFWA, five miles to the north, has a breeding pond less than a mile from portions of the project area draining to Gimlet Branch Creek. While the existing breeding pond should not be at risk from effects stemming from the project, a species recovery effort is now underway to create or enhance potential new breeding areas extending as far south as Cox Hollow, which drains the easternmost portions of the project area.

Salamanders can disperse surprising distances where suitable cover exists, and may potentially occur in any local woodlands, upland or lowland, which are connected to the more-or-less continuous riparian forest along the Middle Fork. Developers should avoid any direct impact to woodlands along streams feeding the Middle Fork, to assure any takings of listed salamanders are avoided.

Mudpuppy, *Necturus maculosus*

Effective October 30, 2009, the Mudpuppy was listed by Illinois as "threatened."

The Mudpuppy is the only known glochidial host of the State-listed endangered **Salamander Mussel**, *Simpsonaias ambigua,* a species which is now being evaluated for federal listing under the Endangered Species Act; the decline of the Mudpuppy may be a major factor in the disappearance of the Salamander Mussel.

The Mudpuppy never develops beyond an aquatic larval stage, and so is never found in terrestrial habitats. It inhabits clear rivers, creeks, streams, lakes, and ponds, but conceals itself under rocks or woody debris during the day, feeding actively at night. It typically goes unseen except by fishermen, who sometimes catch it inadvertently. It can cope with some siltation and sedimentation so long as clear gravelly headwater areas remain available for reproduction.

The Vermilion River system is one of the last "strongholds" for this species in the state, and it should be presumed to be present throughout. Stony Creek drains the central portion of the project area, and has the most recent records for the Salamander Mussel, indicating a Mudpuppy population is present in Stoney Creek. The species has also been reported from the Middle Fork SFWA.

Cool or cold water is essential for this species, which remains active all winter; water temperatures above 72°F are harmful, and those above 77°F can be fatal. Agricultural tile drainage helps lower and maintain stream temperatures, but the removal of riparian trees and shrubs exposes streams to direct solar radiation and heating. In-stream cover provided by rocks

and woody debris is essential for concealment and reproduction, since eggs are suspended from the bottoms of rocks and logs. The common belief that removal of woody debris from stream channels improves drainage is a factor in the decline of this species.

Major threats include pollution, siltation and sedimentation, stream channelization, and woody debris removal. The main risks associated with wind energy projects will be direct stream modification through the repair or upgrade of roads, modification of aquatic thermal regimes through the disruption of agricultural tile drainage systems, and siltation and sedimentation associated with construction and permanent features, such as service roads, which suppress prey populations and render spawning areas unsuitable. Any planned in-stream work may require an Incidental Take Authorization.

Least Bittern, *Ixobrychus exilis*

This small heron nests in the emergent vegetation of marshes. It has been documented from Kennekuk Cove County Park in Vermilion County, and from wetlands near the Middle Fork in northeastern Champaign County.

Known breeding locations are unlikely to be affected by the project, although there may be a collision risk for migrating Bitterns. Generally speaking, waterfowl are rarely the victims of collisions with wind turbines, so this risk may be low.

Northern Harrier, *Circus cyaneus*

The State-listed endangered Northern Harrier is a ground-nesting grassland hawk. It has been recently documented as nesting in Vermilion County, both within--and within a few miles of--the project footprint. Also a frequently-observed migrant, the species has a statewide range. While many sources indicate the species needs large open areas of habitat, Illinois studies have demonstrated this hawk can use relatively small patches of habitat for successful breeding, especially in the vicinity of larger habitats. Breeding is often associated with wetlands such as marshes, sedge meadows, and wet prairies.

While most hunting activities occur at fairly low altitudes, below typical rotor-swept elevations, hunting can expose this bird to collision risk. Like the Upland Sandpiper, this species engages in an aerial courtship display which places it at risk of collision with wind turbines. Wind farm construction and operation may alter concentrations of prey species.

This hawk relies heavily on its acute hearing to locate prey, and--if the noise generated by wind turbines interferes with this function (which is not known to be the case)--turbines might adversely affect their ability to hunt near the turbines, reducing available food resources.

If pre-construction surveys indicate use of the project area by migrant Harriers, post-construction surveys should be performed to determine whether the Harrier continues to hunt territories in proximity to turbines.

Barn Owl, *Tyto alba*

This endangered raptor nests in larger tree cavities and in barns or abandoned buildings, sometimes within city limits. A breeding record exists for Champaign County, about four miles northwest of Rantoul; none have been recorded from Vermilion County since the species was listed. This owl hunts both open woodlands and grasslands; its preferred prey consists of small rodents such as mice and voles. The main risk posed by wind power facilities to this species is the removal of suitable nesting trees and abandoned buildings to facilitate transportation of wind turbine components or to maximize wind energy conversion. Both trees and buildings should be examined for Barn Owl occupancy prior to removal.

Short-Eared Owl, *Asio flammeus*

The endangered Short-Eared Owl nests and winters in grasslands and wetlands. Vermilion County lies in both breeding and wintering ranges, and breeding Short-Eared Owls were reported from two separate locations in Vermilion County in 1990. Large numbers of wintering owls are observed annually in suitable winter habitat in Iroquois County.

Highly nomadic, the Short-Eared owl depends heavily on vole and mouse populations, and the size of its breeding and hunting territories varies inversely with prey population sizes. When prey populations are high, owls may be ground-roosting every few meters in suitable habitat. The Northern Harrier often harasses this Owl, stealing its food.

This Owl's hunting flights are often less than ten feet off the ground (a circumstance which makes this bird highly vulnerable to collisions with vehicles); during aerial mating rituals, flights occur at typical wind turbine rotor-swept height. This Owl is highly dependent on its acute hearing to locate and seize prey. The degree to which noise from wind turbines may interfere with predation behavior is unknown.

The effects of wind turbines on Short-Eared Owls may be heavily influenced by the proximity of turbines to breeding, roosting, and hunting areas. Once turbines are built, this proximity relationship will be subject to change as land owners alter land management practices. This is likely to be of concern mainly if attractive habitat for Owls and their prey is created within or near the turbine array following construction.

Upland Sandpiper, *Bartramia longicauda*

This State-listed threatened grassland bird prefers habitat of short-grass prairie/pasture. For many years this ground-nesting species was thought to be area sensitive, requiring ten acres or more of grassland habitat for successful breeding. However, many recent breeding efforts are occurring in grassed waterways of row-crop fields, which provide considerably less than ten acres of habitat, and from along roadsides.

A breeding record exists for Vermilion County, near the Danville airport. Additional breeding records are associated with the University of Illinois and the Champaign-Urbana Airport.

The Upland Sandpiper engages in an aerial courtship display which passes through the rotor-swept elevations of utility-scale wind turbines, placing it at risk of collision mortality. Whether this species will be sensitive to the proximity of vertical structures, or to shadow "flicker" on potential nesting areas, has not been demonstrated.

The Department recommends mapping all habitat types within the project footprint, and checking even relatively small areas of appropriate habitats for the presence of this species prior to any initiation of construction disturbance during the breeding season.

Potential Listed Species

Franklin's Ground Squirrel, *Spermophilus franklinii*

The State's largest ground squirrel was listed as "threatened" in 2004. Most active above-ground on sunny days in late spring and early summer, this species hibernates for seven to nine months of the year. It prefers taller vegetation than other ground squirrels, and so is seldom seen. Well-drained ground is a requisite, so today this species is most often found along railroads and highways where its requirements for food and shelter are satisfied. There appears to be no suitable habitat within the project footprint, but transport of turbine components often requires rebuilding or repairing roadways some distance from the destination.

The Franklin's Ground Squirrel has been documented along railroads near Hoopeston, and along former rail-beds near St. Joseph in Champaign County. Offspring can disperse up to a mile in their first season. If present, this species can be threatened during construction through the crushing and collapse of its burrows by heavy equipment. Shadow flicker cast in its territory by operating turbines may also be detrimental.

Ornate Box Turtle, *Terrapene ornata*

Effective October 30, 2009, the Ornate Box Turtle was listed by Illinois as "threatened."

This terrestrial turtle is usually found in open grasslands and fields, in contrast to its cousin, the Eastern Box Turtle, which is usually found in woodlands. This turtle hibernates underground from late September through April, so it cannot evade disturbance during that period. Its carapace carries elaborate markings, including a yellow bar along the spine, which distinguishes it from the other species. While it appears to be more common in sandy soils, it is not restricted to them. Specimens have been collected from both Iroquois and Champaign County.

As with many turtles, road-kill and over-collecting are major causes of decline. In a recent study of a northwestern Illinois population, a significant number of individuals exhibited carapace scarring from farming equipment (discs and harrows), illustrating that this species may frequently be found in rowcrop fields.

Preferred habitat of this species may not be present in the project area, but too little is known of this species' current distribution to rule out its presence. Project workers should be educated as

to its appearance and habits, remain alert for turtles on roads and in fields, and report any suspected Ornate Box Turtles to supervisors. The Department of Natural Resources should be promptly notified if any Ornate Box Turtles are identified. Once listed, it will be unlawful to move or capture an Ornate Box turtle to facilitate the project without first obtaining an Incidental Take Authorization from the Department.

Loggerhead Shrike, *Lanius ludovicianus*

The threatened Loggerhead Shrike is adapted to the savanna conditions of interspersed grasslands, shrubs, and trees. This species has been adversely affected by the decline in animal husbandry and the abandonment of the "shelter-belt" fence-row conservation practice, which has severely reduced both breeding and foraging habitat. The Shrike, also known as the "butcher bird," needs thorny trees and shrubs, even barbed wire, on which to impale its prey, which may be left for several days before being eaten. Areas which support large insects and small rodents, major food items, are also necessary. Due to losses of suitable habitat, Loggerhead Shrikes may attempt reproduction in trees near human habitations and in other areas where they would normally not be expected. The Shrike has not been reported as breeding in Vermilion County since its listing, but has been reported from Champaign County.

The primary consideration for wind energy facilities is the potential for further loss of remaining habitat, if fence-rows are cleared to avoid wind turbulence or to improve turbine exposure, or if road-side trees are cleared to create turning radii for turbine carriers or to establish power lines. A pre-construction survey to identify the presence of Shrike nests should be conducted for areas with suitable habitat if work is proposed during the breeding season in order to avoid direct mortality. "Resident" foraging birds are not thought to be at significant risk from operating wind turbines, but potential risk associated with migrants should be considered.

Black-Billed Cuckoo, *Coccyzus erythropthalmus*

Effective October 30, 2009, the Black-Billed Cuckoo was listed by Illinois as "threatened."

This bird nests in interior thickets of forested tracts and feeds heavily on caterpillars. This species was documented as nesting at Jordan Creek of the North Fork Nature Preserve in the 1990's, and Vermilion County has thousands of acres of suitable nesting habitat along its streams and rivers. This species is not directly threatened by wind turbine construction or operation, but may be subject to collision risk as a migrant.

Migratory Birds

Bald Eagle, *Haliaeetus leucocephalus*

The Bald Eagle, de-listed under the federal Endangered Species Act last year, was recently de-listed by Illinois, effective October 30, 2009. It remains protected under the *Bald and Golden Eagle Protection Act* and the *Migratory Bird Treaty Act*, each as stringent as the better-known *Endangered Species Act.*

For several years there has been a Bald Eagle nest on the North Fork just above Lake Vermilion, about seven miles east of the project area. However, Illinois has experienced a significant increase in Bald Eagle nests over the last few years, and many new nests have not been tallied. Nests have been appearing on smaller tributaries of larger rivers in areas where Eagles have not been seen for years, and it may be assumed the Vermilion River Basin reflects this trend. Hence, it is likely that new Eagle nests will appear along the North Fork, Middle Fork, and Salt Fork during the project's life.

In addition, Illinois now has the highest population of wintering Bald Eagles in the Lower 48 States, although they tend to be concentrated around major rivers, cooling lakes, and other waters likely to remain ice-free. However, during migration, Eagles frequently fly overland. Thus, while the wind energy project is unlikely to pose any direct threat to the known Eagle nest and its surrounding hunting territory, there may be a collision risk for migrating Eagles.

Henslow's Sparrow, *Ammodramus henslowii*

The Henslow's Sparrow was de-listed by Illinois as a threatened species, effective October 30, 2009. Breeding populations of this grassland bird have been documented north of the project area, and may occur within the project area where suitable habitat exists. More northern breeding populations may migrate through the project area.

Wind turbines associated with this project have the potential to kill or injure birds through blade-strike, unless breeding populations are also found within the footprint. The species is extremely sensitive to the presence of vertical structures and to any form of break in contiguous habitat, such as roads or trails.

American Golden Plover, *Pluvialis dominica*

This migratory bird breeds in the Arctic tundra, migrates south along the Atlantic seaboard to South America in the winter, but returns northward through central North America. Areas of Illinois and Indiana provide important spring migration staging areas, which may be occupied by this species for a month or more while birds go through a molt before resuming migration. It has become a species of concern due to its relatively low global population estimate of around 300,000 birds.

Based on 25 years of Spring Bird Count data, it is likely that significant numbers of this species congregate in Counties including northern Champaign and Vermilion Counties, but the locations of large concentrations vary from year to year. Large numbers of this species are routinely observed south of Sibley Grove in Ford County. Pre- and post-construction surveys should be performed to observe this species.

Plovers tend to aggregate in dense concentrations, and are known to fly in large tight groups at or below the approximate rotor-swept elevation, which may expose them to collision mortality risk. Concerns also exist pertaining to habitat fragmentation by service roads, and displacement from habitat due to potential sensitivity to vertical structures and human activity.

A research project has begun in an effort to better understand the behavior and needs of this species, as well as how it may be affected by the presence of wind turbines. Some preliminary results were recently published [O'Neal, *et. al.* (2008)] .

One apparent finding is that the species definitely concentrates in a few areas, rather than being generally dispersed across suitable habitat, resulting in temporarily dense population "hot-spots." However, where these may be located may be influenced year-to-year by poorly understood climatic cues. Very few birds appeared in 2008 in the expected concentration areas; instead, major concentrations were located more than one hundred miles to the south. Anecdotal evidence indicates this is an unusual occurrence.

A number of observers had reported a daytime habitat preference for short grass, soybean stubble, or bare ground with standing water or residual moisture, but O'Neal first reported a night roost preference for standing corn stubble cover, with crepuscular movement between the two. O'Neal reported all observations were located more than 70 meters from adjacent roads, suggesting an intolerance for breaks in habitat. (Effects of traffic were not investigated.) Interestingly, O'Neal also reported several observations of predation of the Golden Plover by the Northern Harrier.

Whooping Crane, *Grus americana*

An experimental population of the federally-listed endangered Whooping Crane has been established with breeding grounds in Wisconsin and wintering areas in Florida. Fall 2009 will see more than 100 birds move to Florida. Whooping Cranes often "stop over" during migration and this may occur virtually anywhere in the State.

Whooping Cranes may "stop over" for extended periods. In November 2006, during their first unescorted Fall Migration, a pair of Cranes rested for four days along the upper East Branch Vermilion River (Wabash Drainage) in Ford County. A Whooping Crane extended its Spring movement by loitering near Danville until the end of June 2008.

During such stop-overs, cranes often forage on waste corn in nearby agricultural fields. Wind turbines and associated power lines pose a collision risk for these large birds, which require some distance to achieve safe altitudes. Most non-predation losses to this flock have been to power line collisions. The visibility of power lines should be maximized with appropriate line markers. The developer may wish to consider other voluntary efforts to promote Crane conservation.

Due to the very high public profile of the Whooping Crane, the Department suggests the developer/operator of this facility coordinate at least annually with the Whooping Crane Eastern Partnership (www.bringbackthecranes.org) to track the passage of Whooping Cranes through the vicinity, and explore additional measures to reduce potential losses of these birds.

EcoCAT
Ecological Compliance Assessment Tool

Applicant:	HDR Engineering,Inc. - MN	*IDNR Project #:*	0906735
Contact:	Jacqueline Hamilton	Date:	03/11/2009
Address:	701 Xenia Ave., Suite 600 Minneapolis, MN 55416		

Project: Invenergy California Ridge Wind Energy Center
Address: Rural Royal, Royal

Description: 200-MW 102-turbine utlity scale wind energy project.

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)
The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Edgewood Farm INAI Site
Fairchild Cemetery Savanna INAI Site
Horseshoe Bottom INAI Site
Kennekuk Cove County Park INAI Site
Kinney'S Ford Seep INAI Site
Middle Fork Of The Vermilion River INAI Site
Middle Fork Seeps INAI Site
Middlefork Woods INAI Site
Orchid Hill INAI Site
Pellville Cemetery INAI Site
Rock Cut Road Botanical Area INAI Site
Salt Fork Vermilion River INAI Site
Spoon River INAI Site
Windfall Prairie INAI Site
Edgewood Farm Land And Water Reserve
Fairchild Cemetery Prairie/Savanna Nature Preserve
Horseshoe Bottom Nature Preserve
Kinney'S Ford Seep Land And Water Reserve
Larimore'S Salt Fk Of Vermilion River Land And Water Reserve
Middle Fork Woods Nature Preserve
Orchid Hill Natural Heritage Landmark
Windfall Prairie Nature Preserve
Bald Eagle *(Haliaeetus leucocephalus)*
Barn Owl *(Tyto alba)*
Bigeye Chub *(Hybopsis amblops)*
Bigeye Chub *(Hybopsis amblops)*
Bigeye Chub *(Hybopsis amblops)*

Bigeye Chub *(Hybopsis amblops)*
Bigeye Chub *(Hybopsis amblops)*
Bigeye Chub *(Hybopsis amblops)*
Bigeye Chub *(Hybopsis amblops)*
Blanding'S Turtle *(Emydoidea blandingii)*
Bluebreast Darter *(Etheostoma camurum)*
Bluebreast Darter *(Etheostoma camurum)*
Bluebreast Darter *(Etheostoma camurum)*
Bluebreast Darter *(Etheostoma camurum)*
Bluebreast Darter *(Etheostoma camurum)*
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Bluebreast Darter *(Etheostoma camurum)*
Bluebreast Darter *(Etheostoma camurum)*
Bluebreast Darter *(Etheostoma camurum)*
Bluebreast Darter *(Etheostoma camurum)*
Eastern Sand Darter *(Ammocrypta pellucidum)*
Eastern Sand Darter *(Ammocrypta pellucidum)*
Four-Toed Salamander *(Hemidactylium scutatum)*
Franklin'S Ground Squirrel *(Spermophilus franklinii)*
Franklin'S Ground Squirrel *(Spermophilus franklinii)*
Franklin'S Ground Squirrel *(Spermophilus franklinii)*
Franklin'S Ground Squirrel *(Spermophilus franklinii)*
Henslow'S Sparrow *(Ammodramus henslowii)*
Henslow'S Sparrow *(Ammodramus henslowii)*
Henslow'S Sparrow *(Ammodramus henslowii)*
Henslow'S Sparrow *(Ammodramus henslowii)*
Henslow'S Sparrow *(Ammodramus henslowii)*
Henslow'S Sparrow *(Ammodramus henslowii)*
Indiana Bat *(Myotis sodalis)*
Indiana Bat *(Myotis sodalis)*
Least Bittern *(Ixobrychus exilis)*
Least Bittern *(Ixobrychus exilis)*
Little Spectaclecase *(Villosa lienosa)*
Northern Harrier *(Circus cyaneus)*
Northern Harrier *(Circus cyaneus)*
Northern Harrier *(Circus cyaneus)*
Northern Harrier *(Circus cyaneus)*
Purple Wartyback *(Cyclonaias tuberculata)*
Purple Wartyback *(Cyclonaias tuberculata)*
Purple Wartyback *(Cyclonaias tuberculata)*
Purple Wartyback *(Cyclonaias tuberculata)*
Purple Wartyback *(Cyclonaias tuberculata)*
Rainbow *(Villosa iris)*
River Redhorse *(Moxostoma carinatum)*

River Redhorse *(Moxostoma carinatum)*
River Redhorse *(Moxostoma carinatum)*
River Redhorse *(Moxostoma carinatum)*
River Redhorse *(Moxostoma carinatum)*
Rookery *(Rookery)*
Rookery *(Rookery)*
Salamander Mussel *(Simpsonaias ambigua)*
Salamander Mussel *(Simpsonaias ambigua)*
Salamander Mussel *(Simpsonaias ambigua)*
Short-Eared Owl *(Asio flammeus)*
Short-Eared Owl *(Asio flammeus)*
Silvery Salamander *(Ambystoma platineum)*
Slippershell *(Alasmidonta viridis)*
Upland Sandpiper *(Bartramia longicauda)*
Upland Sandpiper *(Bartramia longicauda)*
Wavy-Rayed Lampmussel *(Lampsilis fasciola)*
Wavy-Rayed Lampmussel *(Lampsilis fasciola)*
Wavy-Rayed Lampmussel *(Lampsilis fasciola)*
Wavy-Rayed Lampmussel *(Lampsilis fasciola)*
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Wavy-Rayed Lampmussel *(Lampsilis fasciola)*

An IDNR staff member will evaluate this information and contact you within 30 days to request additional information or to terminate consultation if adverse effects are unlikely.

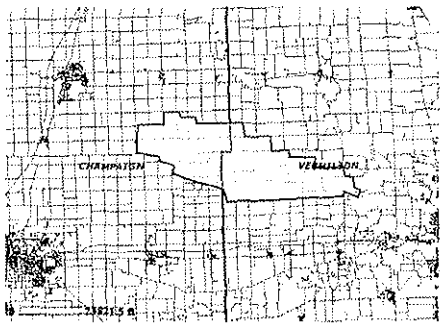
Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Champaign

Township, Range, Section:

20N, 10E, 1	20N, 10E, 2
20N, 10E, 3	20N, 10E, 12
20N, 11E, 6	20N, 11E, 7
20N, 11E, 18	20N, 14W, 4
20N, 14W, 5	20N, 14W, 6
20N, 14W, 7	20N, 14W, 8
20N, 14W, 9	20N, 14W, 16
20N, 14W, 17	20N, 14W, 18
21N, 10E, 22	21N, 10E, 23
21N, 10E, 24	21N, 10E, 25
21N, 10E, 26	21N, 10E, 27
21N, 10E, 33	21N, 10E, 34
21N, 10E, 35	21N, 10E, 36



21N, 11E, 19	21N, 11E, 30
21N, 11E, 31	21N, 14W, 19
21N, 14W, 20	21N, 14W, 21
21N, 14W, 28	21N, 14W, 29
21N, 14W, 30	21N, 14W, 31
21N, 14W, 32	21N, 14W, 33

County: Vermilion

Township, Range, Section:

20N, 12W, 7	20N, 12W, 17
20N, 12W, 18	20N, 12W, 19
20N, 12W, 20	20N, 12W, 29
20N, 13W, 3	20N, 13W, 4
20N, 13W, 5	20N, 13W, 6
20N, 13W, 7	20N, 13W, 8
20N, 13W, 9	20N, 13W, 10
20N, 13W, 11	20N, 13W, 12
20N, 13W, 13	20N, 13W, 14
20N, 13W, 15	20N, 13W, 16
20N, 13W, 17	20N, 13W, 18
20N, 13W, 19	20N, 13W, 20
20N, 13W, 21	20N, 13W, 22
20N, 13W, 23	20N, 13W, 24
20N, 14W, 1	20N, 14W, 2
20N, 14W, 3	20N, 14W, 10
20N, 14W, 11	20N, 14W, 12
20N, 14W, 13	20N, 14W, 14
20N, 14W, 15	20N, 14W, 22
20N, 14W, 23	20N, 14W, 24
21N, 13W, 30	21N, 13W, 31
21N, 14W, 22	21N, 14W, 23
21N, 14W, 25	21N, 14W, 26
21N, 14W, 27	21N, 14W, 34
21N, 14W, 35	21N, 14W, 36

IL Department of Natural Resources Contact
Keith Shank
217-785-5500
Division of Ecosystems & Environment

Local or State Government Jurisdiction
Vermilion County
Kolby J. Riggle
200 S. College St.
Danville, Illinois 61832

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

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Meeting Notes

Subject: SWCD Coordination		
Client: Invenergy	Project No:	Mpls 98073
Project: California Ridge	Meeting Location:	State NRCS Office, Champain, IL
Meeting Date: April 29, 2009	Notes by:	Jacqueline Hamilton

ATTENDEES:

Bruce Stickkers – Champaign County SWCD, Resource Conservationist, bruce.stickkers@il.nacdnet.net, 217-352-3536 x3

Cindy Johnston – Vermilion County SWCD, Resource Conservationist, cindy.johnston@il.nacdnet.net, 217-442-8511 x3

Joe Bartletti – HDR, Environmental Scientist, joseph.bartletti@hdrinc.com, 217-585-8300

Ryan Keith – HDR, Environmental Scientist, ryan.keith@hdrinc.com, 217-585-8300

Jacqueline Hamilton – HDR Project Manager (Conference call), jacqueline.hamiton@hdrinc.com , 763-591-5432

John Doster – Invenergy, Development Manager, jdoster@invenergyllc.com, o 312-582-1473, c 847-471-9393

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Kevin Donoho – NRCS, District Conservationist Champaign County, kevin.donoho@il.usda.gov, 217-352-3536 x3

Elliot Lagacy – Illinois Department of Agriculture, elliot.lagacy@illinois.gov, 217-353-6603

TOPICS DISCUSSED

Data Availability
Data Acquisition
Natural Resource Report
Cultural Resources

ACTION/NOTES

Data Availability: The NRCS has Farmed Wetland data is available for distribution given permission from individual landowner permission. Aerial photos, including some infrared aerials are available for viewing. All NRCS data is supposed to be the same nation wide. Maps are different per region but the data should be the same.

Data Acquisition: HDR will conduct initial parcel wetland delineation in a couple of weeks. With that field data and additional data generated from desk-top farmed wetland determinations, HDR will identify potential locations where Farmed Wetlands could be. The potential locations will be given to the SWCD's. The SWCD's will review the historical NRCS farm wetland maps to confirm locations. Where historical farmed wetlands are present, SWCD will send out letters to those specified landowners requesting permission to disclose those locations in which they have NRCS mapped Farmed Wetlands. HDR and/or Invenergy will assist SWCD with the language for the landowner authorization letter. Once the NRCS and SWCD's have permission to disclose the Farmed Wetland locations, they will give that information to HDR/Invenergy for micro-siting purposes.

HDR has Common Land Unit (CLU) shapefile information for Vermillion County. New NRCS policy prohibits disclosing this CLU information, in turn HDR will attempt to obtain the CLU shapefile information for Champaign County from an on-line source.

Natural Resource Inventory Report(s): Vermilion and Champaign counties Special Use Permit applications will each include a Natural Resource Inventory Report. The report(s) is/are created by the SWCD's. Invenergy will submit the final layout of the wind farm facilities to the SWCD's. They will also submit an application fee of $150/county and a $200/turbine fee to the respective county. In return, the SWCD's will generate a Natural Resource Inventory Report to their respective County as well as to Invenergy/HDR. The report will identify any areas of concern or locations pertaining to natural resources, which should be avoided. The report will take approximately 60 days to create once the final layout has been submitted. Both SWCD's will coordinate with Invenergy/HDR during the micro-siting process in order to avoid potential areas of concern prior to final site layout and submittal of the Natural Resource Report.

Cultural Resources: There was a brief discussion on the cultural resources within the Project Area. HDR informed everyone that they are in the process of working with Invenergy to identify cultural resources within the High Probability Areas of the project area as well as identifying the architectural resources. HDR asked the SWCD's that if any of these locations were known to them that they disclose those locations so that they can be avoided.

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