May 2010

CPV
Renewable Energy Company, LLC

Application for Certificate of Site Compatibility
Ashley Wind Energy Project
McIntosh, North Dakota

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North Dakota Public Service Commission

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Application for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota Case No. PU-09-370



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ACRONYMS AND ABBREVIATIONS

AADT	Average Annual Daily Traffic
Act	North Dakota Energy Conversion and Transmission Facility Siting Act
AM	amplitude modulation
AMP	Adaptive Management Plan
APE	area of potential effect
ARPA	Archeological Resources Protection Act
ASTM	American Society for Testing and Materials
BGEPA	Bald and Golden Eagle Protection Act
bgs	below ground surface
BMPs	best management practices
Certificate or CSC	Certificate of Site Compatibility
CFR	Code of Federal Regulations
CPV	CPV Ashley Renewable Energy Company, LLC
CPVH	Competitive Power Ventures, Holdings, LLC
CPV REC	CPV Renewable Energy Company, LLC
CRP	Conservation Reserve Program
CWA	Clean Water Act
DOE	Department of Energy
EA	Environmental Assessment
easement agreement	Wind Energy Project Easement Agreement
EDR	Environmental Data Resources, Inc.
EMF	electromagnetic fields
EPC	engineering, procurement, and construction
ESA	Environmental Site Assessment or Endangered Species Act
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FERC	Federal Energy Regulatory Commission
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FLP	Farm Loan Program
FM	frequency modulation
FSA	Farm Service Agency
ft	feet/foot
GE	General Electric
GIS	geographic information system
gpm	gallons per minute
Hz	Hertz
ISO	Organization for International Standardization
KEM	KEM Electric Cooperative, Inc.
kV	kilovolt
LMR	Land Mobile Radio
LOI	Letter of Intent
m	meter

ACRONYMS AND ABBREVIATIONS – *Cont'd*

m/s	meters per second
MDU	Montana-Dakota Utilities Co.
met tower	meteorological tower
mi	mile
mi^2	square mile
min	minute
MISO	Midwest Independent Transmission System Operator
MW	megawatt
MWh	megawatt hours
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NDCRS	North Dakota Cultural Resource Survey
NDDOH	North Dakota Department of Health
NDDOT	North Dakota Department of Transportation
NDIC	North Dakota Industrial Commission
NDGFD	North Dakota Game and Fish Department
NDNHI	North Dakota Natural Heritage Inventory
NDPRD	North Dakota Parks and Recreation Department
NDSWC	North Dakota State Water Commission
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NHPA	National Historic Preservation Act
NLCD	National Land Cover Dataset
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise sensitive area
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OEM	original equipment manufacturer
OHWM	Ordinary High Water Mark
O&M	operation and maintenance
Operator	Entity hired to operate the constructed Project
PLOTS	Private Lands Open to Sportsmen
PPA	Power Purchase Agreement
Project	Ashley Wind Energy Project
PSC or the Commission	Public Service Commission
PTC	production tax credit
Q1	First quarter of the fiscal year
Q2	Second quarter of the fiscal year

ACRONYMS AND ABBREVIATIONS – *Cont'd*

Q3	Third quarter of the fiscal year
Q4	Fourth quarter of the fiscal year
REC	recognized environmental condition
REPP	Renewable Energy Policy Project
road agreement	Road Use and Maintenance Agreement
rpm	rotations per minute
RPW	relatively permanent water
RSA	rotor swept area
SCADA	Supervisory Control and Data Acquisition
SHPO	State Historic Preservation Office
Siemens	Siemens Energy, Inc.
SPCC Plan	Spill Prevention Control and Countermeasure Plan
Survey	Class I cultural resources survey
SWPPP	Storm Water Pollution Prevention Plan
Tetra Tech	Tetra Tech EC, Inc.
TNW	traditional navigable water
TVA	Tennessee Valley Authority
UND	University of North Dakota
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WCFZ	Worst Case Fresnel Zone
WMA	Wildlife Management Area
WPA	Waterfowl Production Area
WRP	Wetland Reserve Program
WRRS	Wildlife Response and Reporting System

1. INTRODUCTION

CPV Ashley Renewable Energy Company, LLC (CPV), a direct wholly-owned subsidiary of CPV Renewable Energy Company, LLC (CPV REC), respectfully submits this application to the North Dakota Public Service Commission (PSC or the Commission) for a Certificate of Site Compatibility (Certificate or CSC) for construction of the Ashley Wind Energy Project (the Project). CPV initially submitted a Letter of Intent (LOI) to file this application to the PSC on June 19, 2009. An updated LOI was submitted on November 18, 2009. The proposed Project will be located in McIntosh County, North Dakota, and will provide a total of up to approximately 200.1 megawatts (MW) of renewable wind energy.

CPV REC is a wholly-owned subsidiary of Competitive Power Ventures Holdings, LLC (CPVH). CPVH is dedicated to increasing America's sustainability, both economically and environmentally, by using domestically available energy sources, like wind and natural gas (Appendix A). CPVH's corporate mission is built around a belief that progressive companies can be powerful agents of change for a better world and a cleaner environment. To this end, CPVH has focused its core activities around developing and operating energy facilities that can make a significant difference in improving the environment and economic well-being of the community that they serve.

The companies are headquartered in Silver Spring, Maryland, with offices in Braintree, Massachusetts, San Francisco, California and Toronto, Canada. CPVH, through its subsidiaries, currently has 4,500 MW of clean, natural gas generation projects in various stages of development across North America, 4,300 MW of natural gas generation under management and is currently expanding its expertise into ethanol plant management. CPV REC is currently developing over 8,000 MW of wind power and photovoltaic projects across North America. A 101.2-MW wind project developed by their subsidiary CPV Keenan Renewable Energy was constructed in 2009 and is now operational in Woodward County, Oklahoma as the OU Spirit Wind Farm. CPV REC has a 151.8-MW wind farm, CPV Keenan II Renewable Energy Company, LLC, that is currently under construction and will be on-line by the end of 2010.

1.1 Compliance with the Energy Conversion and Transmission Facility Siting Act Chapter 49-22

Under the North Dakota Energy Conversion and Transmission Facility Siting Act (the Act) (North Dakota Century Code [NDCC] 49-22), a proposed energy conversion facility requires a Certificate from the PSC in order to be located, constructed, and operated in the State of North Dakota. The Act specifies that the siting of an energy conversion facility is to be made "in an orderly manner compatible with environmental preservation and the efficient use of resources" (NDCC 49-22-02).

CPV has considered exclusion and avoidance areas and selection and policy criteria set forth in Section 69-06-08-01 of the North Dakota Administrative Code (NDAC) in the design of the Project. To the extent applicable, these key factors and criteria are discussed in this application. In addition, to facilitate thorough evaluation of the proposed site, Project design and technical information have also been provided. Table 1-1 outlines the information required to fulfill the requirements for an application for a Certificate from the PSC and where these requirements are addressed in this application.

Table 1-1. Certificate Completion Checklist

State Authority	Description	Section
NDCC 49-22-08	PSC Guidelines: Energy Conversion and Transmission Facility Siting (November 1979)	
Section A	Description	
1.	Type: Describe the type of energy conversion facility proposed and provide a diagram of the major process system or a flow diagram.	1.2, 4.1; Figures 6 and 7
2.	Product: Describe in general terms and technical terms the products to be produced by the proposed facility.	1.2.3, 6.1, 6.3; Figure 5
3.	Size and Design: Provide the following description of the production capacity and design:	1.2.1, 1.2.3, 5.1; Appendix B
a.	Gross design capacity;	1.2.3
b.	Net design capacity;	1.2.3
c.	Estimated thermal efficiency of the energy conversion process and the assumptions upon which the estimate is based;	N/A
d.	The number of acres that the proposed facility will occupy; and	1.2.1, 5.1
e.	One (1) copy of all design data reports separate from the application.	Appendix B
4.	Time Schedule: Provide the anticipated time schedule for the accomplishment of the following:	1.3
a.	Certificate of Site Compatibility;	1.3
b.	Land acquisition complete;	1.3
c.	Construction start date;	1.3
d.	Construction complete;	1.3
e.	Test operations;	1.3
f.	Commercial production date;	1.3
g.	100 percent capacity factor; and	1.3
h.	Any expansion or additions.	1.3
Section B	Studies	
	Provide a copy of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal, regional, state, or local agency	Appendix C
Section C	Need for Facility	
1.	An analysis of the need for the proposed facility based on present and projected demand for the product or products to be produced by the proposed facility, including the most recent system studies supporting the analysis of the need.	2.1
2.	A description of any feasible alternative methods of serving the need.	2.2
3.	A statement justifying any deviations from the most recent Ten-Year Plan which the proposed facility may present.	2.3
Section D	Location	
1.	Select a study area, which includes the proposed facility site, of sufficient size to enable the Commission to evaluate the factors addressed in Section 49-22-09, NDCC.	1.2.1, 5.1, 10; Figures 1-3
2.	Discuss the utility's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives.	Appendix A
3.	Identify and map the criteria that led to the proposed facility location within the study area.	1.2, 3; Figures 4 and 10

State Authority	Description	Section
4.	Discuss in detail the relative value of each criteria and how the proposed facility location was selected giving consideration to all criteria.	3
5.	The criteria to be evaluated shall include at a minimum all of the following which are within the study area:	3
a.	Exclusion areas;	3.1; Figure 4
b.	Avoidance areas;	3.2; Figure 4
c.	Selection criteria;	3.3
d.	Policy criteria;	3.4
e.	Design and construction limitations; and	3.5
f.	Economic considerations.	3.6
6.	Discuss the mitigative measures that will be taken to minimize adverse impacts which result from the location, construction, and operation of the proposed facility.	7.2.3, 7.3.3, 7.4.3, 7.5.3, 7.6.3, 7.7.3, 7.8.3, 7.9.3, 7.10.3, 7.11.3, 7.12.3, 7.13.3, 7.14.3, 7.15.3, 7.16.3, 7.17.3
7.	List the qualifications of the people in the various disciplines that contributed to the facility site location study.	11
8.	Maps	Figures
a.	Map the criteria within the study area showing the proposed facility location. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be ½ inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Figures 1-4, 7-10, 12-15
b.	Furnish one Mylar map, separate from the application, of the same scale as the criteria maps and showing the same basic features as the criteria maps, including the study area, but not the proposed facility location.	Not included. PSC supports not providing a Mylar map, requirement is outdated.
NDCC 49-22-09	Factors to be considered in evaluating applications and designation of sites, corridors, and routes.	
1.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	10.1
2.	The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	10.2
3.	The potential for beneficial uses of waste energy from a proposed energy conversion facility.	10.3
4.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	10.4
5.	Alternatives to the proposed site, corridor or route which are developed during the hearing process and which minimize adverse effects.	10.5
6.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	10.6
7.	The direct and indirect economic impacts of the proposed facility.	10.7
8.	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	10.8
9.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	10.9
10.	The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	10.10
11.	Problems raised by federal agencies, other state agencies, and local entities.	10.11

1.2 Project Summary

The proposed Project will be located in McIntosh County, North Dakota, approximately 6 miles (mi) north of the City of Ashley (Figure 1) and will consist of up to approximately 200.1 MW of renewable wind energy capacity. The Project Area is defined as approximately 17,400 acres of private land subject to a Wind Energy Project Easement Agreement (easement agreement) between landowners and CPV for the construction and operation of the Project (Figures 2 and 3). Of the 17,400 acres, only approximately 0.4 percent is expected to be permanently affected by the Project. Project facilities will likely include:

- wind turbines, described in detail in Section 6.2;
- new gravel access roads and improvements to existing roads;
- underground electrical collection lines;
- an operation and maintenance (O&M) building;
- interconnection substation facility;
- up to four 80 to 90 m tall permanent meteorological towers (met towers); and
- a temporary batch plant area and staging/laydown area for the construction phase of the Project.

The Project will interconnect to the Midwest Independent Transmission System Operator (MISO) electric grid via a 230-kilovolt (kV) Montana-Dakota Utilities Co. (MDU) transmission line that passes through the Project Area.

CPV selected the general Project vicinity as a potential site for development of a wind energy conversion facility on the basis of its energetic wind resources and accessibility to the existing electrical grid. CPV subsequently began interacting with the Project community in order to gauge the receptiveness of local landowners and authorities to wind energy development. CPV has been actively engaged in the community since December 2007, including interactions with private landowners and local agencies and authorities. Overall reception by the local community has been positive, and CPV has obtained easement agreements with over 70 landowners totaling over 37,000 acres of private land under control in McIntosh County. The scope of this application is limited to the up to approximately 200.1 MW of generation and associated 17,400-acre Project Area. The proposed Project and supporting facilities will be sited, constructed, and operated entirely within the 17,400-acre Project Area. In selecting the proposed Project Area, CPV considered the exclusion and avoidance criteria outlined in NDAC 69-06-08-01 (Figure 4).

1.2.1 Proposed Area

The Project Area comprises numerous parcels of private land subject to easement agreements between CPV and landowners. The Project Area was selected to include all areas necessary to optimize the wind resource while avoiding and minimizing impact on environmental resources. Table 1-2 presents the townships, sections, and ranges within McIntosh County containing the Project Area.

Table 1-2. Project Area Location

Township	Range	Sections
T131N	R69W	5-11, 14-23, 26-30
T131N	R70W	1, 2, 11-14, 23, 24
T132N	R69W	31, 32
T132N	R70W	35, 36

The Project Area boundary line includes approximately 17,400 acres (27 square miles [mi^2]) of land. As shown in Figures 1 through 3, there are a few parcels of land within the larger Project Area boundary line that are not subject to easement agreements; however, no Project facilities will be constructed on these excluded parcels. Turbines and ancillary facilities will be placed throughout the leased portion of the Project Area; however, the total permanent footprint of the Project will only occupy approximately 0.4 percent of the total Project Area.

1.2.2 Project Layout

For this application, CPV has developed a Project layout within the Project Area. An updated Project layout map will be provided to the PSC for review prior to the CSC hearing. Within the permitted Project Area, CPV will configure Project turbines in a design that optimizes electrical generation and efficiency based on the existing wind resource. CPV will arrange the Project turbines and ancillary facilities within the approved Project Area subject to required and voluntary setbacks from environmentally sensitive areas, roads, occupied residences, or other restricted areas defined in the easement agreements, Certificate conditions, and other applicable local, state, or federal permit conditions.

Once the PSC issues the Certificate, CPV will complete any additional studies required by the Certificate, CPV's internal siting process, and any additional studies required by all other permits and regulatory agencies related to the Project. CPV will also further evaluate the Project Area based on engineering considerations, efficient construction of the Project, and additional input from landowners on micrositing of wind turbines and associated facilities on their property. Following completion of these additional studies and communications, microsited locations of Project components will be re-evaluated to confirm their conformance with the Certificate conditions and other constraints and setback requirements. Prior to construction, a final site plan for the Project will be submitted to the PSC and a pre-construction meeting will be held with PSC staff to ensure that the site plan conforms to the Certificate requirements. Following completion of construction, as-built site plans will be furnished for PSC's Project files.

1.2.3 Projected Output

The Project will have a nameplate (gross) capacity of up to approximately 200.1 MW, with projected average annual output up to 840,000 megawatt hours (MWh) per year (assuming net capacity factors of between 40 and 48 percent). As with all wind projects, the actual Project output will be determined by wind resource, final design, site-specific features, and equipment.

1.3 Project Schedule

The commercial operation date of the Project is planned for the fourth quarter of the fiscal year (Q4) 2012. This date is dependent upon permitting, equipment deliveries, and other Project activities. Project construction may start as early as Q2 2011 or as late as Q2 2012. A major milestone schedule for the Project is presented below:

1. Land Control: Complete
2. Environmental Studies: Complete
    a. Critical issues analysis
    b. Constraints mapping
    c. Native prairie survey
    d. Whooping crane likelihood of occurrence analysis
    e. Bat likelihood of occurrence analysis
    f. Fall 2009 avian point count survey
    g. Class I cultural resources investigation
    h. Microwave beam path interference study
    i. Aviation feasibility evaluation
3. Environmental Studies: Currently on-going/scheduled to be complete mid-2010
    a. Spring avian point count survey
    b. Wetland delineations
    c. Acoustic modeling
    d. Shadow flicker analysis
    e. Class III archeological investigation
4. Certificate of Site Compatibility: Late 2010
5. Permits: End of 2010
6. Interconnection Agreement: First half of 2011
7. Equipment Procurement, Manufacture and Delivery: 2011-2012
8. Construction: As early as early 2011
9. Test and Operations: Late 2012
10. Commercial Operation: Late 2012

1.4 Project Ownership

CPV plans to own and operate the Project as well as manage the construction of all equipment and associated facilities related to the Project. CPV will procure the turbine and tower package directly from an original equipment manufacturer, while a third-party contractor will perform all other activities associated with engineering, procurement, and construction (EPC) of the Project.

2. NEED FOR FACILITY

2.1 Need Analysis

The proposed Project is intended to satisfy the needs of both the State of North Dakota, which has committed to becoming a leading supplier of renewable energy to the nation, and the Tennessee Valley Authority (TVA), which is purchasing up to 200 MW of the Project's new wind energy generation output.

The Project is consistent with North Dakota's commitment to increasing the renewable energy portfolio of both the state and the nation. North Dakota has the greatest potential wind energy capacity of any state in the nation, and is theoretically capable of powering over a fourth of all United States (U.S.) electricity demand from this resource (AWEA 2009). The leaders of North Dakota have recognized the significance and value of the potential of the state's wind and other renewable resources, and have demonstrated a commitment towards fulfilling it. In his 2007 State of the State Address, North Dakota Governor John Hoeven stated:

> "…we have only begun to tap the true potential for our state's varied energy and energy-related agricultural industries. To realize our full potential, we must look beyond the borders of our state. Our real future in energy is not about what we consume in North Dakota – it's about what we can supply to the nation, a nation that needs more energy and more energy independence…By leveraging our enormous potential for both renewable and traditional energy resources, we can truly make North Dakota a powerhouse for America." (Hoeven 2007)

North Dakota's emphasis on renewable energy began internally, with the enactment of the State Renewable and Recycled Energy Objective (NDCC 49-02-28), which established a goal of producing 10 percent of all of its electricity through renewable and recycled energy by 2015. As North Dakota has progressed towards this statewide objective, it has expanded its policies to also focus on supporting the growing renewable energy portfolio of the entire U.S. This emphasis was formalized through the adoption of the "25x'25 Initiative" of the Midwestern Governor's Association in House Bill No. 1462 by the 2007 North Dakota Legislative Assembly. The "25x'25 Initiative" is set forth in NDCC 17-01-01 and states that the goal, in part, is for not less than 25 percent of the total energy consumed in the U.S. to be provided from renewable resources. By adopting this initiative, North Dakota has signaled its recognition of a need for greater renewable energy generation throughout the U.S., and a desire to contribute to fulfilling that need.

TVA is an agency and instrumentality of the U.S., established by an act of Congress in 1933, to foster the social and economic welfare of the people of the Tennessee Valley region and to promote the proper use and conservation of the region's natural resources. One component of this mission is the generation, transmission, and sale of reliable and affordable electric energy. TVA operates the nation's largest public power system, producing 4 percent of all electricity in the nation. TVA provides electricity to most of Tennessee and parts of Virginia, North Carolina, Georgia, Alabama, Mississippi, and Kentucky. It serves about 9 million people in this seven-state region through 157

power distributors and 58 directly served large industries and federal facilities. The TVA Act requires the TVA power system to be self-supporting and operated on a nonprofit basis, and the TVA Act directs TVA to sell power at rates as low as are feasible.

TVA's Strategic Plan includes the objective to reduce its environmental footprint through demand reduction and by increasing clean energy resources in its generation mix. The TVA Board of Directors recently authorized the purchase of as much as 2,000 MW of renewable and clean energy by 2011 as part of TVA's plan to have half of its power supply from clean and renewable energy sources by 2020. Accomplishing this goal will require increasing the availability of clean generation such as wind power to TVA. Achieving these goals will also assist TVA in meeting potential renewable portfolio standards, broadening its generation mix, sustaining grid reliability, and meeting future consumer demand for electricity through low or no carbon-emitting facilities.

The construction and operation of the proposed Project will specifically contribute towards TVA's objectives by creating a profitable, economically viable wind-powered energy facility that will provide a significant source of clean, reliable, renewable energy to TVA customers. Based on the on-site meteorological data collected to date and long-term projections, the Project Area offers an optimal opportunity for a cost-effective, economically viable wind energy generation facility that will add a significant commercial-scale renewable energy generation source to the existing grid and TVA's renewable energy portfolio.

The Project will satisfy the state of North Dakota's goal of expanding the clean renewable energy portfolio of the entire U.S. and help TVA satisfy its commitments to environmental stewardship, providing affordable energy, and supporting regional economic growth.

2.2 Alternatives

Based on the stated need for the Project, reasonable alternatives to the proposed Project include other renewable energy sources, such as solar, geothermal, hydropower, and biomass. However, none of these renewable energy sources are economically viable alternatives for producing up to 200.1 MW of electricity within the Project Area. Also, in comparison to wind energy, biomass and solar would incur vastly greater environmental impact on the Project Area. The Project Area does not currently produce sufficient biomass to fuel a large-scale biomass plant, and the environmental impacts of converting large tracts of existing cropland and grassland to biomass production could be considerably greater than those of the proposed Project. Likewise, a commercial-scale solar project would require the use of thousands of contiguous acres of land, which would have far greater impact on landowners and the environment than will the proposed Project. Consequently, the proposed Project is the preferred alternative over other alternative renewable energy sources.

2.3 Ten-Year Plan

As required, CPV is filing a Ten-Year Plan with the PSC and the McIntosh County auditor concurrently with this application. A copy of the Ten-Year Plan is provided in Appendix G.

3. SITE SELECTION CRITERIA

As noted in Section 1.2, CPV selected the proposed Project Area on the basis of a number of factors, including its energetic wind resources, its accessibility to the existing electrical grid, the receptiveness of the local community to wind energy development, and numerous environmental factors and economic considerations. This decision was informed by various desktop and field environmental studies, informal interactions with state agencies, local agencies, and local landowners, meteorological data collection, and other studies conducted by CPV. Although CPV has identified the proposed Project Area as favorable for wind energy development, CPV continues to evaluate it in order to identify the optimal Project layout. This process of site selection will be conducted in conformance with the Act, which specifies that an energy conversion facility must be sited "in an orderly manner compatible with environmental preservation and the efficient use of resources" (NDCC 49-22-02). Detailed guidance for this siting process is provided by the energy conversion facility siting criteria described in NDAC 69-06-08-01, which identifies "exclusion areas," "avoidance areas," "selection criteria," and "policy criteria." The following sections detail the conformance of the Project's site selection with these criteria, as well as other factors critical to site selection, including design and construction limitations and economic considerations.

3.1 Exclusion Areas

In accordance with NDAC 69-06-08-01(1), each geographical area listed in Table 3-1 "shall be excluded in the consideration of a site for an energy conversion facility, and shall include a buffer zone of a reasonable width to protect the integrity of the area." Exclusion areas are mapped for the Project Area on Figure 4.

Table 3-1. Exclusion Areas

Exclusion Area	Present within Project Area?	Description and Proposed Buffer	Section Addressed
Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; historic districts; monuments; wilderness areas; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands.	Yes	Waterfowl Production Areas (WPA) are present within the Project Area boundary but none are on land subject to easement agreement between CPV and landowners. The Project turbines, substation, and O&M building will not be placed within 0.25 mi of WPAs.	7.8, 7.9, 7.15, 7.16, 7.17 Figures 4, 8, 10
Designated or registered state: parks; forests; forest management lands; historic sites; monuments; historical markers; archaeological sites; grasslands; wild, scenic, or recreational rivers; game refuges; game management areas; management areas; and nature preserves.	Yes	One presently recorded archeological site is known within the Project Area; no buffer is required to protect the integrity of site.	7.8, 7.9, 7.15, 7.16, 7.17 Figures 4, 8, 10
County parks and recreational areas; municipal parks; parks owned or administered by other governmental subdivisions; hardwood draws; and enrolled woodlands.	No		7.3, 7.9, 7.10

Exclusion Area	Present within Project Area?	Description and Proposed Buffer	Section Addressed
Prime farmland and unique farmland, as defined by the land inventory and monitoring division of the soil conservation service, United States Department of Agriculture (USDA), in 7 C.F.R. Part 657; provided, however, that if the Commission finds that the prime farmland and unique farmland that will be removed from use for the life of the facility is of such small acreage as to be of negligible impact on agricultural productions, such exclusion shall not apply.	Yes	Prime farmland and Farmland of Statewide Importance is present within the Project Area, however the acreage to be removed from use for the life of the Project will have a negligible impact on agricultural productions (0 acre of prime farmland affected; 0.4 acre of Farmland of Statewide Importance affected).Therefore, CPV requests that the Commission determine that a prime farmland exclusion shall not apply to the Project.	7.10, 7.11 Figures 4 and 13 Table 7-3
Irrigated land.	No		7.3.2
Areas critical to the life stages of threatened or endangered animal or plant species.	No	Piping Plover Critical Habitat is present near but not within the Project Area; no Project facilities will be placed within 0.5 mi of said habitat.	7.17 Figure 4
Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged.	No		7.14, 7.15, 7.16, 7.17

3.2 Avoidance Areas

In accordance with NDAC 69-06-08-01(2), the geographical areas listed in Table 3-2 "shall not be approved as a site for an energy conversion facility unless the applicant shows that under the circumstances there is no reasonable alternative." As with exclusion areas, avoidance areas shall include buffer zones of reasonable widths to protect the integrity of the areas. In determining whether an avoidance area should be designated for a facility, the PSC may consider, among other things: the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources; and alternative sites. Avoidance areas are also mapped for the Project Area on Figure 4.

Table 3-2. Avoidance Areas

Avoidance Areas	Present within Project Area?	Description and Proposed Buffer	Section Addressed
Historical resources which are not designated as exclusion areas.	Yes	Although not designated presently as recorded archeological sites, CPV will avoid cemeteries and mapped historic structures. No buffers are required to protect the integrity of these areas.	7.8 Figure 4
Areas within the city limits of a city or the boundaries of a military installation.	No		7.3 Figures 1-3
Areas within known floodplains as defined by the geographical boundaries of the hundred-year flood.	No	Floodplains have not been mapped by the Federal Emergency Management Agency (FEMA) in the Project Area. The State Water Commission acknowledged in a letter dated February 17, 2010 that the Project Area is not located in an identified floodplain and believes the Project will not affect an identified floodplain.	7.13, 10.11.10

Avoidance Areas	Present within Project Area?	Description and Proposed Buffer	Section Addressed
Areas that are geologically unstable.	No	United States Geological Survey (USGS) reports classify seismic activity in McIntosh County as being very low.	7.12
Woodlands and wetlands.	Yes	Wetland resources will be avoided to the extent practicable. Woodland impacts are not anticipated. No buffers are required to protect the integrity of these areas.	7.3, 7.10, 7.13, 7.14 Figures 4, 12 and 15
Areas of recreational significance which are not designated as exclusion areas.	No		7.9

3.3 Selection Criteria

In accordance with NDAC 69-06-08-01(3), "[a] site shall be approved in an area only when it is demonstrated to the commission by the applicant that any significant adverse effects resulting from the location, construction, and operation of the facility in that area, as they relate to [the selection criteria listed in Table 3-3], will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum."

Table 3-3. Selection Criteria

Selection Criteria	Potential Adverse Effects	Section Addressed
The impact upon agriculture:		
Agricultural production.	The Project will not result in a significant loss of agricultural production. Only 40% of the Project Area is agricultural lands (crop and hay); based on the layout, approximately 28 acres of agricultural land will be permanently impacted by Project operation.	7.3, 7.10
Family farms and ranches.	No turbines will be placed within 1,400 feet (ft) of occupied residences, which will greatly reduce potential adverse effects to local family farms and ranches. Landowners party to easement agreements with CPV for construction of the Project will receive a supplemental income that will offset farming and ranching losses due to Project facilities on their land.	7.2, 7.3, 7.10, Figure 10
Land which the owner demonstrates has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation.	Landowners party to easement agreements with CPV have not expressed concerns related to irrigation on their property. Currently, no known irrigation is present in the Project Area.	7.10, 7.11 Figures 13 and 14
Surface drainage patterns and ground water flow patterns.	No adverse impacts on surface drainage patterns or groundwater flow patterns are anticipated.	7.11, 7.12, 7.13, 7.14 Figure 15
The agricultural quality of the cropland.	No adverse impacts on the agricultural quality of the cropland are anticipated. Should soil compaction or other agricultural concerns occur on cropland during construction, CPV and the landowners will work to remedy the situation.	7.10, 7.11

Selection Criteria	Potential Adverse Effects	Section Addressed
The impact upon the availability and adequacy of:		
Law enforcement.	No adverse impacts are anticipated.	7.4
School systems and education programs.	No adverse impacts are anticipated.	7.4
Governmental services and facilities.	No adverse impacts are anticipated.	7.4
General and mental health care facilities.	No adverse impacts are anticipated.	7.4
Recreational programs and facilities.	No adverse impacts are anticipated.	7.4, 7.9
Transportation facilities and networks.	During construction, the Project Area will see a temporary increase in vehicle use of the existing public transportation facilities and networks. However, during operation no adverse impacts on the availability and adequacy of these resources are anticipated. CPV has entered into a Road Use and Maintenance Agreement (road agreement) with McIntosh County that will ensure that, following the completion of construction, roads are returned to as good or better condition than they were in pre-construction.	7.4 Figure 9
Retail service facilities.	No adverse impacts on the availability and adequacy of existing retail service facilities are anticipated; due to the influx of personnel during construction, local retailers will likely see a positive impact from the Project.	7.2
Utility services.	No adverse impacts on the availability and adequacy of existing utility services are anticipated. The Project will complete an interconnection process with MISO, MDU and any other affected utilities to ensure the continuity of utility services and to interconnect the Project in accordance with the Federal Energy Regulatory Commission (FERC), North American Electric Reliability Corporation (NERC), MISO, and MDU standards.	2.0, 6.0, 7.4
The impact upon:		
Local institutions.	No adverse impacts on existing local institutions are anticipated.	7.4
Noise-sensitive land uses.	No adverse impacts on existing noise-sensitive land uses are anticipated. The majority of noise-sensitive receptors are occupied residences of landowners party to easement agreements with CPV and turbines will be setback at least 1,400 ft from these occupied residences. McIntosh County does not have zoning or noise standards for wind turbines.	7.7
Rural residences and businesses.	No adverse impacts on existing rural residences and businesses are anticipated. Turbines will be setback at least 1,400 ft from occupied residences.	7.2, 7.3, 7.10, Figure 10
Aquifers.	No adverse impacts on aquifers are anticipated.	7.12
Human health and safety.	No adverse impacts on human health and safety to the community at large are anticipated; however, potential concerns resulting from any large construction project include construction safety, transportation safety, and safe O&M procedures.	6.5, 7.5

Selection Criteria	Potential Adverse Effects	Section Addressed
Animal health and safety.	No adverse impacts on domestic animals including livestock are anticipated. With regard to wild animal species, there exists the potential for adverse effects (displacement, injury, or mortality) to animals, but the effects are not anticipated to be at a significant level for federal or state-listed species. Working with the United States Fish and Wildlife Service (USFWS) and TVA, CPV will implement a post-construction monitoring plan in order to monitor animal health and safety issues with the Project. Monitoring efforts may include the implementation of a Wildlife Response and Reporting System (WRRS) and Adaptive Management Plan (AMP) developed with the USFWS and TVA.	7.10, 7.16, 7.17, Appendix C
Plant life.	The Project as proposed will permanently convert approximately 73 acres of vegetative cover for the turbines and ancillary facilities. No adverse impacts on federal or state-listed plant species are anticipated.	7.15 Figure 12
Temporary and permanent housing.	The Project may utilize temporary housing during construction. During operation, there is unlikely to be an adverse effect on temporary and permanent housing due to the small number of O&M employees required. It is likely that O&M employees will live near the Project and create a positive effect on the housing market by renting or purchasing then-available housing.	7.2
Temporary and permanent skilled and unskilled labor.	No adverse effects to temporary and permanent skilled and unskilled labor are anticipated. Project construction and operations should yield a benefit to the labor community, both short- and long-term.	7.2
Cumulative Impact		
The cumulative effects of the location of the facility in relation to existing and planned facilities and other industrial development.	No adverse cumulative effects due to the location of the Project in relation to existing or planned facilities and other industrial development are anticipated.	7.3

3.4 Policy Criteria

In accordance with NDAC 69-06-08-01(4), the PSC "may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices and in a proper case may require the adoption of such policies and practices." These policy criteria are presented in Table 3-4.

Table 3-4. Policy Criteria

Policy Criteria	Suitable Policy or Practice of Applicant	Section Addressed
Recycling of the conversion byproducts and effluents.	Not applicable.	N/A
Energy conservation through location, process, and design.	CPV has refined the Project layout to maximize the efficiency of the operations while avoiding or minimizing the environmental impacts. CPV is utilizing buried collection lines for all of the Project collection system and is minimizing the amount of these underground collection lines to the extent practicable to reduce energy line losses between the generation point and the substation.	4.2

Policy Criteria	Suitable Policy or Practice of Applicant	Section Addressed
Training and utilization of available labor in this state for the general and specialized skills required.	CPV has utilized North Dakota companies and personnel for local expertise during development of the Project and intends to use local labor to the extent practicable during construction and operation as well.	7.2
Use of a primary energy source or raw material located within the state.	Wind, the sole energy source/raw material required for the Project, is a plentiful and renewable energy source within North Dakota.	5.2, 5.3
Non-relocation of residents.	No residents will be re-located as a result of the Project.	7.2, 7.3, 7.10
The dedication of an area adjacent to the facility to land uses such as recreation, agriculture, or wildlife management.	The Project is compatible with existing land uses; CPV does not propose the dedication of an adjacent area to the Project for such land uses.	7.3, 7.9, 7.16, Figures 4 and 8
Economies of construction and operation.	Where feasible, CPV will utilize local contractors, materials, equipment, and personnel during construction and operation. The Project will positively impact local and state economies through tax revenues and payments to landowners.	7.2
Secondary uses of appropriate associated facilities for recreation and the enhancement of wildlife.	None are proposed; the Project will be constructed on privately owned lands that are not open to the public for recreation.	N/A
Use of citizen coordinating committees.	No citizen coordinating committee is proposed. CPV will work directly with the landowners party to easement agreements with CPV.	8.0
A commitment of a portion of the energy produced for use in this state.	The Project will interconnect with the local utility transmission line and grid. Any excess energy from the Project beyond what is delivered to TVA may be sold to local, in-state utilities.	2.1, 6.1
Labor relations.	The Project shall have an employment policy consistent with industry practices and be responsible for determining working hours, rates of compensation, and all other matters relating to labor and employment of site personnel.	6.4.1, 7.2
The coordination of facilities.	Existing facilities and facility corridors were considered in the location of the Project and its associated facilities.	3.6, 6
Monitoring of impacts.	CPV and the EPC contractor will employ best management practices (BMPs) during construction to monitor soil impacts and segregate topsoil. Storm water prevention plans will be prepared as necessary.	7.11, 7.16, 7.17

3.5 Design and Construction Limitations

In general, three predominant design and construction limitations apply to all wind farms: wind resources; capability of interconnection to the electric grid; and landowner easements.

Wind resource is essential in selecting and designing a wind farm that will serve as a reliable and productive energy conversion facility. CPV has conducted an assessment of the meteorological conditions of the proposed Project Area to ensure that the site has ample wind energy to generate revenue for the wind farm. Refer to Sections 5.2 and 5.3 for additional information regarding the wind resource within the Project Area.

Capability for interconnection to the existing electric grid is a significant factor in Project design due to the fact that development of new, extensive transmission facilities is costly from both environmental and economic perspectives. As noted, the Project location was selected due to its proximity to an existing 230-kV transmission line. The Project will interconnect directly to this transmission line, which is located within the Project Area, thereby reducing the environmental impacts of the Project and increasing its economic viability. Refer to Section 3.6 and 6.3 for more information regarding the importance of proximity to existing transmission resources.

Easements for the construction of turbine towers and transmission facilities are also critical to the Project. CPV has secured voluntary land easement agreements with landowners in order to develop the Project.

There are also several limiting factors in design and construction that are specific to the Project. These include:

- Terms of the Power Purchase Agreement (PPA) with TVA;
- Setback requirements from Piping Plover Critical Habitat, WPAs, and occupied residences;
- Avoidance of microwave beam path;
- Aviation restriction zones;
- Avoidance or mitigation of impacts on archeological sites;
- Turbine spacing requirements;
- Road agreement with McIntosh County;
- Engineering considerations such as slopes and geotechnical considerations; and
- Minimization of permanent impacts on wetlands and waterbodies.

3.6 Economic Considerations

A major economic factor in the development of the proposed Project is that the generation output is being purchased by the Tennessee Valley Authority (TVA). The construction and operation of the proposed Project will specifically contribute towards TVA's objectives by creating an economically viable wind-powered energy facility that will provide a significant source of clean, reliable, renewable energy to TVA customers, and will add a significant commercial-scale renewable energy generation source to the existing grid and TVA's renewable energy portfolio.

The Project will not be viable without the federal production tax credit (PTC), which the American Recovery and Reinvestment Act of 2009 extends to any project in operation by the end of 2012. Approval of permits will help ensure the Project is operational before the 2012 expiration of the PTC.

Two other major economic considerations involved in the selection of the Project Area were adequate wind resource and proximate transmission system capacity. As discussed above, it is important to select a site with a wind resource capable of generating energy in order to provide a reliable, productive, and economically sustainable wind energy conversion facility. Information on the wind resource at the site is discussed in Sections 5.2 and 5.3.

The presence of existing high voltage transmission lines in the Project vicinity was a significant factor in the selection of the Project Area and in initial Project design. Furthermore, having permission to interconnect into the existing transmission system is essential. If a transmission system were not present, or if connection were not permitted, the cost of interconnection would increase due to the need to construct a transmission line and large substation in order to interconnect to an existing electricity service provider.

4. GENERAL DESCRIPTION OF THE PROPOSED FACILITY

4.1 Wind Power Technology

Wind power technology relies upon the force created by the wind to drive a turbine, which in turn drives a generator. The rotor of the wind turbine turns due to the lift created as wind passes over the turbine blades. This rotational energy is then transferred to the generator via a hub, main shaft, and system of gears.

While the exact turbine manufacturer and model has not been selected for the Project, it is expected that the wind turbine generator to be used will fall between 2.3 and 2.5 MW per unit in generating capacity, 80 to 85 m in hub height, and 100 to 103 m in rotor diameter (Figure 5). Depending on the model selected, the Project could install up to 87 turbines to meet full generation capacity. Additional information on two possible wind turbines that could be used at the Project is provided in Section 6.2. The exact turbine model to be used is subject to change in order to ensure that the turbine model ultimately selected is both cost-effective and optimizes land and wind resources.

Each turbine tower will be constructed upon a dedicated concrete foundation. The design of this foundation may vary based upon local soil and other geotechnical conditions. A control panel containing communication and electronic circuitry will be housed within each turbine tower. Each turbine will be equipped with sensors for wind speed and direction, which will signal to the turbine's control system when winds are adequate for operation. To enhance aerodynamic efficiency, turbines are also equipped with variable-speed control and independent blade pitch.

In order to be distributed to the facility's power collection line system, the electricity from each turbine is raised (stepped up) to a voltage of approximately 34.5 kV by a pad-mounted transformer. The electricity is then collected by a system of underground power collection lines direct-buried on private property or public rights-of-way within the Project Area. Typically, underground electrical collection lines and communication cables are co-located adjacent and parallel to Project access roads or along public rights-of-way or easements, wherever practicable, at a depth of approximately 4 ft. Where underground collection lines are not co-located in access roads, they most often take a more direct path from the point of generation back to the substation and will also be buried at a depth of approximately 4 ft. Figure 6 depicts the general path of energy from the Project to energy users.

All-weather, permanent gravel access roads approximately 16 ft in width will connect wind turbines to the existing county and local road network. At the intersection of the access roads and public roads, the underground communication and collection lines will continue as feeder lines, distributing power to the Project substation. At the Project substation, the power will again be stepped up to 230 kV and transmitted via a 230-kV interconnection station to the existing 230-kV MDU transmission line. The Project substation and interconnection to the existing MDU line will conform to the NERC, MISO, and MDU standards as detailed in the Interconnection Agreement.

4.2 Wind Energy Project Layout

CPV will develop a Project layout that optimizes wind resource, minimizes the impact on land resources and potentially sensitive areas, and conforms to the energy conversion facility siting criteria described in NDAC 69-06-08-01.

The most important consideration in adequate and reliable generation of wind-powered electricity is the localized availability of the wind resource. The energy available from wind is directly related to wind speed; however, the relationship between wind speed and power generation is not linear. Rather, the capacity for power generation increases at the third power of the wind speed. Analysis of meteorological data collected at the Project Area suggests that turbine strings should optimally be aligned in strings running southwest to northeast. Turbines within strings are typically separated by approximately 0.25 mi, while strings are separated by approximately 0.75 to 1.25 mi. Design of the turbine array and collection system will seek to follow this general alignment, while minimizing energy loss due to wind turbine wakes and turbulence, and electrical line losses.

McIntosh County has no specific setbacks or standards for wind energy facilities. Table 4-1 identifies the minimum setbacks CPV is applying to the Project.

Table 4-1. Setback Distances Applied to the Project

Setback Type	Distance
Project Boundary*	1.1x blade tip height
Occupied Residence*	1,400 ft
Designated Piping Plover Critical Habitat	0.5 mi
Waterfowl Production Area**	1,320 ft
Center of County, State or Federal Road Right of Way*	1.1x blade tip height
Overhead Transmission and Distribution Lines*	1.1x blade tip height

* Setback is only applicable to turbines. This setback distance will not apply to O&M building, substation, roads, underground collection lines, and other near-ground activities.

** Setback is only applicable to turbines, O&M building, and substation. This setback distance will not apply to roads, underground collection lines, and other near-ground activities.

4.3 Associated Facilities

Additional standing facilities associated with the Project will include an O&M building, a Project substation, and up to four 80- to 90-m tall permanent met towers. In addition, five 60-m tall temporary met towers and a 2-m tall temporary Triton Wind Profiler have been installed within the Project Area and on surrounding land subject to easement agreements between landowners and CPV, which may remain during commercial operation. Refer to Section 6.5.3 for a description of the O&M building, Section 6.3 for a description of the substation, and Section 5.3 for a description of permanent and temporary met data collection facilities.

As noted in Section 4.1, minor facilities associated with the Project's electrical system include pad-mounted transformers at the base of each turbine, and a system of underground electrical collection lines. Additional details regarding the Project's electrical system are described in Section 6.3.

Additional temporary facilities associated with the Project will include a batch plant and laydown area during the construction period only.

4.4 Land Rights

CPV has secured the land rights necessary for construction and operation of the Project in the Project Area. CPV executed a road agreement with McIntosh County on April 6, 2010 in which CPV agrees to restore county roads that CPV has altered during construction of the Project to pre-construction conditions.

5. PROPOSED SITE

5.1 Identification of Project Area

The Project Area consists of approximately 17,400 acres of private land subject to easement agreements between landowners and CPV. The Project facilities will be located on land primarily consisting of pasture and cultivated cropland (wheat, soybeans, sunflowers, and corn) with a few rural residences and farmsteads. The Project Area is located in McIntosh County, approximately 6 mi north of the City of Ashley. Despite the overall size of the Project Area, the turbines and other wind farm infrastructure will occupy only approximately 0.4 percent of this area during operation. Table 5-1 presents a summary of proposed Project impact assumptions for both temporary impacts (construction footprint) and permanent impacts (operational footprint) based on the proposed Project layout, which is subject to change during micrositing (Figure 7).

Table 5-1. Estimated Project Impacts

Project Component	Temporary Impact (Acres)	Permanent Impact (Acres)	Total Impact (Acres)
Turbines	124	16	140
Access Roads	62	55	117
Miscellaneous Permanent Impacts (substation, O&M building, permanent met towers)	5.6	3.9	9.5
Miscellaneous Temporary Impacts (crane path, laydown area, batch plant, collection lines)	92.5	0	92.5
Total*	**261**	**73**	**334**

* Totals presented are less than the sum of the component impacts due to overlapping footprints of these features. The totals presented remove overlap to account for this issue.

About 261 acres will be disturbed temporarily during construction by the installation of: underground electrical collection lines; temporary crane crawl paths; access road widening to accommodate turbine delivery and crane movement; additional assembly and erection areas around the turbines, substation, and met towers; the batch plant; and a centralized laydown area for construction staging. Total permanent land disturbance for the Project is expected to be approximately 73 acres. See Section 7.0 for a detailed description of the Project Area impacts.

5.2 Wind Resource Areas – General

According to the United States Department of Energy (DOE) "Wind Resource Atlas of the United States," wind resources within the Project region consist of Class 4 winds or greater (Elliott et al. 1986). Class 4 winds have an average annual wind speed in the range of 16 to 17 mi per hour at 50 m height.

CPV has also acquired and analyzed meteorological information for the Project Area based on five temporary met towers and a Triton unit installed between 2008 and 2009. This information is described below.

5.3 Wind Characteristics in Project Area

Beginning in May and June of 2008, CPV installed two 60-m tall temporary met towers on land subject to easement agreements between landowners and CPV to assess the wind resource. A third temporary met tower was installed in June 2009 and a Triton Wind Profiler was positioned in July 2009. The fourth and fifth temporary met towers were erected in November 2009. CPV's meteorologist from RAM Associates selected the five monitoring locations to represent a variety of terrain characteristics across the Project Area and additional land outside the Project Area, but also party to easement agreements with CPV. Results from these studies and correlation to regional historic sources indicate that the yearly wind resource averages exceed those indicated by the DOE at hub height, which suggests that the net capacity factor of the proposed Project would be in the range of 40 to 48 percent. Site-specific wind characteristics indicate that the Project has highly suitable wind resource for economical, sustainable, and reliable production of power. In order to continue meteorological data collection over the lifetime of the Project and verify wind turbine power curves, up to four permanent met towers will be installed as part of the Project.

6. ENGINEERING AND OPERATIONAL DESIGN ANALYSIS

This section provides a summary of the Project layout and design, including turbines, electrical system, and associated facilities. Additional details are included in the Design Data Report (Appendix B). Specific design components addressed in this section are Project construction, schedule, operation, and decommissioning of the site.

6.1 Project Layout and Associated Facilities

The Project will consist of up to 87 wind turbines. In addition to the wind turbines the Project may include: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an O&M building; erection of up to four 80 to 90 m tall permanent met towers as well as the potential installation of temporary SODAR units; and construction of an interconnection substation facility. A temporary staging and laydown area as well as a batch plant are also planned for the construction phase of the Project. The network of access roads, O&M building, and location of any on-site facility operating structures will utilize civil works and minimize disturbance on the site, yet provide optimal access to all turbines during operations. The proposed Project will interconnect to the MISO electric grid via an on-site 230-kV MDU transmission line and therefore no high voltage transmission line is required on or off site to interconnect the facility.

6.2 Description of Wind Turbines

CPV plans to use the Siemens Energy, Inc. SWT 2.3-101 or the General Electric (GE) 2.5xl, but reserves the right to select alternate turbines representative of the same class of turbine. Turbine type may affect the number of turbines and configuration of the turbine layout. The turbine layout provided in Project figures is based on the SWT 2.3-101 because it would require the greatest number of total turbines (87) and represents the most comprehensive study area; should the Project ultimately use GE 2.5xl turbines, only 80 of the 87 turbine locations evaluated in this application will be required. Details on the SWT 2.3-101 and the GE 2.5xl are presented below.

6.2.1 SWT 2.3-101

The SWT 2.3-101 has a 2.3-MW asynchronous generator and utilizes a three stage planetary-helical designed gearbox. For this turbine, 87 units will be constructed at the Project in rows running from southwest to northeast (Figure 7). Within rows, turbines are expected to be spaced approximately 0.25 mi apart while the rows themselves are expected to be spaced approximately 0.75 to 1.25 mi apart. The wind turbine will operate automatically, self starting when the wind speed reaches the designed cut-in speed of approximately 4 meters per second (m/s). Once rated power is achieved at approximately 12 to 13 m/s, the wind turbine will regulate to maintain the rated power. The wind turbine will shut down once the maximum operational limit of approximately 25 m/s is reached and restart automatically once the wind drops below a preset restart wind speed. The braking system during standard operation is through feathering of turbine blades, while a mechanical brake fitted to the gearbox provides additional safety.

The tower for this turbine has an 80 m hub height. The wind turbine will be mounted on a tapered tubular steel tower with internal ascent and direct access to the yaw system and nacelle. It will be equipped with platforms and internal electric lighting. The tower will be designed, fabricated, and constructed consistent for service in the design climatic conditions of the Project.

The rotor for this turbine has a 101 m diameter with a swept area of 8,000 m^2 and a rotor speed ranging from 6 to 16 rotations per minute (rpm). The rotor is a three-bladed cantilevered construction mounted upwind of the tower. A yawing system will rotate the rotor around the turbine to keep it upwind of the tower. The power output will be controlled by pitch regulation, with a variable rotor speed to maximize efficiency.

For communications and control, this turbine uses a Supervisory Control and Data Acquisition (SCADA) system, which allows remote control and monitoring of the status of all turbines in the Project. The monitoring system provides status views of electrical and mechanical data, operation and fault status, meteorological data, and grid station data.

Lightning protection will be consistent with the wind turbine supplier's design and specifications and local utility or code requirements. Individual components are designed with specific lightning protection systems. Some of the lightning protection systems, which will likely be employed, are lightning receptors, pick-up systems, integrated conductors along key components to ground, and surge arrestors.

6.2.2 GE 2.5xl

The GE 2.5xl has a 2.5 MW synchronous permanent magnet generator and utilizes a three-stage planetary-helical designed gearbox. For this turbine, 80 units will be constructed at the Project in rows running from southwest to northeast. Within rows, turbines are expected to be spaced approximately 0.25 mi apart, while the rows themselves are expected to be spaced approximately 0.75 to 1.25 mi apart. The wind turbine will operate automatically, self starting when the wind speed reaches the designed cut-in speed of approximately 3 m/s. Once rated power is achieved at approximately 12.5 m/s, the wind turbine will regulate to maintain the rated power. The wind turbine will shut down once the maximum operational limit of approximately 25 m/s is reached and restart automatically once the wind drops below a preset restart wind speed. The braking system during standard operation is through feathering of turbine blades, while a mechanical brake fitted to the gearbox provides additional safety.

The tower for this turbine has an 85 m hub height. The wind turbine will be mounted on a tubular steel tower with internal ascent and direct access to the yaw system and nacelle. It will be equipped with platforms and internal electric lighting. The tower will be designed, fabricated, and constructed consistent for service in the design climatic conditions of the Project.

This turbine can utilize a rotor that has either a 100 or 103 m diameter with a swept area of 7,854 m^2 or 8,332 m^2 and a maximum rotor speed of approximately 14 rpm. The rotor is a three-bladed cantilevered construction mounted upwind of the tower. A yawing system will rotate the rotor around the turbine, to keep it upwind of the tower. The power output will be controlled by pitch regulation, with a variable rotor speed to maximize efficiency.

For communications and control, this turbine also uses a SCADA system as described in Section 6.2.1 above. Lightning protection for this turbine will be consistent with that presented in Section 6.2.1 as well.

6.3 Description of Electrical System

The Project will interconnect to the on-site MDU Wishek to Tatanka 230 kV line. The electrical system gathers the individual electrical distribution systems from each turbine and turbine rows into the central step-up transformer and substation located on-site. The gathering system will be below grade to minimize impact on the area. Each turbine will likely have a pad mounted transformer stepping up the voltage to 34.5 kV to the centrally located substation on-site, which will step up the power to the 230 kV line rating.

The Project interconnection will be designed per NERC and MISO generator interconnection requirements. CPV is expected to execute a Large Generator Interconnection Agreement with MISO and MDU in the first half of 2011.

6.4 Project Construction

The Project's EPC firm will be an experienced firm with proven capabilities in complex power and industrial projects. The EPC firm will utilize a combination of direct hire employees, local trade subcontractors, subcontractors with wind experience, and necessary owned or rented construction equipment.

Construction activities expected for the Project and possible time frames for their completion include:

- Geotechnical survey and analysis for proper foundation design and materials expected to occur in mid to late 2010;
- Procurement of Project facility components expected to commence as early as mid 2011;
- Construction of access roads to be used for construction and maintenance expected to commence as early as mid 2011;
- Design and construction of the Project substation expected to commence as early as mid 2011;
- Installation of tower foundations expected to commence as early as mid 2011;
- Installation of underground cables and collection lines expected to commence as early as mid 2011;
- Tower assembly and wind turbine setting expected to occur as early as mid 2012;
- System testing of facility expected to occur as early as mid 2012; and
- Commencement of commercial production expected to occur during late 2012.

The final schedule of key EPC milestones will be dependent upon receipt of necessary approvals and permits, and consistent with an on-line date of no later than late 2012.

6.4.1 Construction Management

CPV will engage an experienced EPC firm and will directly oversee the construction with a CPV Construction Manager. The EPC firm will provide site project management, site supervision, procurement, site security, labor, and tools to construct and commission the facility.

The EPC firm construction manager shall be the lead and point of contact for all construction activities. The CPV Construction Manager shall be the liaison for CPV with agencies, local officials, and landowners, as well as managing of the EPC firm. The CPV Construction Manager shall remain in this role through the commissioning of the Project, at which point a CPV Asset Manager shall assume responsibility for the Project. Following commissioning and the declaration of facility commercial operation, the O&M staff shall take care, custody, and control of the facility from the construction organization. This O&M staff will be an experienced and highly regarded third-party Operator, with a dedicated plant manager and O&M staff on-site. The O&M staff shall have full responsibility for the facility to ensure O&M are conducted consistent with the approved permits, prudent industry practice, and equipment manufacturer recommendations for the turbines, civil works, buildings and grounds, and on-site electrical infrastructure.

6.4.2 Foundation Design

The foundation design will be an engineered foundation as required per the soil conditions and turbine manufacturer recommendations. The final design parameters of the foundations at the Project will be based upon geotechnical surveys, turbine tower load specifications, and cost considerations. Foundations for turbines are expected to have a volume of approximately 400 cubic yards and be constructed primarily from concrete and steel. The most common foundation shape is a spread footing, which can range in depth from approximately 7 to 10 ft and can range in width from approximately 16 to 20 ft at the top of the foundation to approximately 48 to 60 ft at the bottom of the foundation. CPV will contract with a registered professional engineer licensed to practice in the State of North Dakota for wind turbine foundation design.

6.4.3 Civil Works

Civil works will include the civil infrastructure, turbine foundations, and the underground electrical collection and grounding system. Specific activities expected at the Project include:

- Any necessary upgrading of roads required for transportation of equipment and components;
- Construction of any necessary crane hard-standings, road entrances, turnarounds, and access ways required for transportation and erection;
- Erection of facility structures, such as an O&M building;
- Erection of the on-site substation; and
- Burying of electrical cables.

Any improvements to existing public access roads will consist of re-grading and filling of the surface to allow access in inclement weather. No asphalt or other paving is anticipated.

Turbine access roads will be constructed along turbine strings or arrays. These roads will be sited in consultation with McIntosh County and in accordance with local requirements where applicable. They will be located to facilitate both construction and continued O&M. The roads will be covered with road base designed to allow passage under inclement weather conditions. The roads will consist of graded dirt and will be covered with an aggregate surface. Once construction is complete, the roads will be regraded, filled, and dressed as needed.

6.4.4 Commissioning

The Project will be commissioned after completion of the construction phase. The Project will undergo detailed inspection and testing procedures prior to final turbine commissioning. Inspection and testing will occur for each component of the wind turbines, as well as the communication system, meteorological system, obstruction lighting, high voltage collection and feeder system, and the SCADA system.

6.5 Project Operation and Maintenance

CPV's Operator will have a proven record of successful power operations and wind turbine operations. It is expected that the wind turbine supplier will be contracted to perform the maintenance on the wind turbines for a period of 2 to 5 years in addition to the Operator.

The turbines will be supplied with an on-board turbine control and monitoring system and a computerized analysis and data acquisition system. These systems will allow the Operator control and access/interface with the turbine remotely, and will include information on electrical and mechanical data, operation and fault status, meteorological data, and grid station data. A specific system is also expected that monitors the vibration level of the main components.

Specifically, the SCADA system will:

- Monitor wind farm status;
- Allow for autonomous turbine operation;
- Alert operations personnel to wind farm conditions requiring resolution;
- Provide a user/operator interface for controlling and monitoring wind turbines;
- Collect meteorological performance data from turbines; and
- Provide diagnostic capabilities.

These systems, along with a facility computerized maintenance and management system, will equip the Operator with the necessary tools for a robust predictive and preventive maintenance program and optimal operations and availability.

6.5.1 Maintenance Schedule

The maintenance schedule for the wind turbines and any balance of plant equipment will be consistent with prudent industry practices and original equipment manufacturer (OEM) recommendations. An initial maintenance inspection of each turbine will be performed after commercial operation. Following this initial inspection, each turbine will then receive annual inspections.

The turbine service and maintenance plan will likely include the following:

- First Service Inspection: Check the turbines, tighten bolts, and check lubricants. Will occur shortly after commissioning.
- Annual Service Inspections: Full component check and bolt assembly check. At specific intervals (1-3 years), the annual inspection will also include more significant inspections of the various components (wind braking system, lubricants, balance, terminal checks).

6.5.2 General Maintenance Duties

The Project shall be maintained in accordance with prudent industry standards and OEM recommendations. The on-site personnel shall perform, or cause to be performed, all operating and maintenance services for the Project, including, but not limited to, maintenance on the wind turbines, roads, buildings, and electrical infrastructure. Some common maintenance duties may include:

- Track and perform the maintenance schedule;
- Conduct or coordinate the execution of corrective maintenance;
- Maintain all parts and tools;
- Perform or cooperate with required wildlife monitoring and reporting; and
- Maintain all computer software and file any required reports.

6.5.3 Operations and Maintenance Building

The O&M building is designed to provide the on-site personnel housing for the operations of the wind facility, serving as the central administrative facility for the plant operations personnel and the critical controls and operations systems. The building will also be designed to serve as the maintenance center to allow the plant maintenance staff to conduct on-site diagnostics, repairs, predictive maintenance, and preventive maintenance that cannot be conducted in the field. This facility will also serve as the warehouse for critical spares.

6.6 Decommissioning and Restoration

CPV has made a commitment regarding decommissioning and restoration to all Project landowners in its easement agreements. CPV will dismantle and remove all equipment, improvements, fixtures and other property owned or installed by CPV on the landowner property as part of the decommissioning and restoration process.

CPV will conduct decommissioning and restoration consistent with the requirements of applicable regulatory agencies, including the PSC decommissioning requirements detailed in NDAC 69-09-09. CPV will file a decommissioning plan for review by the PSC prior to the commencement of facility operations, and will abide by all applicable rules pertaining to decommissioning adopted by the PSC. CPV reserves the right to consider alternatives to decommissioning, such as retrofitting the turbines and electric system with upgrades to extend the productive lifetime of the facility.

7. ENVIRONMENTAL ANALYSIS

This section provides a description of the environmental conditions that exist within the Project Area. Consistent with the Act, exclusion and avoidance criteria, as well as selection and policy criteria, were considered in the selection and design of the Project. To support this siting process, maps of the site were generated that indicate the presence or absence of many of the criteria included in NDCC 69-06-08-01. In addition, a number of environmental studies have been conducted and copies of preliminary reports regarding those studies are included in Appendix C. If different from the preliminary reports, finalized versions of the reports will be provided once completed. Substantive changes to the preliminary reports are not expected.

7.1 Description of Environmental Setting

The Project Area is located in McIntosh County in south-central North Dakota, approximately 6 mi north of the City of Ashley. The Project Area is located approximately 2,000 to 2,200 ft above sea level, and is characterized by rolling hills interspersed with isolated glacial pothole wetlands. Land use consists primarily of pasture and cultivated cropland (wheat, soybeans, sunflowers, and corn), with a few rural residences and farmsteads.

7.2 Socioeconomics

7.2.1 Description of Resources

McIntosh County encompasses 975.19 mi^2 and is located in southern North Dakota, on the border with South Dakota. In 2000, the U.S. Census Bureau reported that McIntosh County had 3.5 persons per mi^2 and a population of 3,390. The U.S. Census Bureau estimate for the 2008 McIntosh County population was 2,639, which is a 22.2 percent reduction in the population. In 2008, the U.S. Census Bureau reported that 98.8 percent of the population was composed of white persons who are not of Hispanic or Latino origin. The remaining 1.2 percent of the population are minorities. As of 2008, the median age in McIntosh County was 51 years. In 2000, approximately 80.6 percent of the population was 18 years and over, 34.2 percent were 65 years and older, and only 4.2 percent were under five years of age (U.S. Census Bureau 2000).

In 2007, the U.S. Census Bureau reported that the median family income for McIntosh County was $32,245, and that 14.3 percent were living below the poverty level. The 2000 U.S. Census Bureau reported that there were 861 single-family, owner-occupied homes that had a median value of $28,100. The homeownership rate in 2000 was 83.1 percent (U.S. Census Bureau 2000).

The labor force in 2000 was comprised of 1,466 individuals, or 52.1 percent of the population 16 years and older. There were 36 individuals, or 1.3 percent that were unemployed. In 2000, the industry within McIntosh County was comprised of 28.6 percent in educational, health and social services; 21.3 percent in agriculture, forestry, fishing and hunting, and mining; and 10.3 percent in the retail trade. All other industries in McIntosh County account for less than 6.5 percent, with the most substantial industry being finance, insurance, real estate, and rental and leasing at 6.2 percent.

Agriculture is a large part of the economy for McIntosh County. According to the USDA, there were 513 farms in McIntosh County in 2007 that averaged 1,072 acres per farm. The total market value for agricultural products produced was $75,862,000, which averaged $147,880 per farm. Sixty-six percent of agricultural product production came from crops for a total of $49,985,000. The remaining 34 percent, or $25,877,000, came from livestock sales (USDA 2007).

7.2.2 Impacts

Overall, the Project is expected to have positive impacts on landowners and McIntosh County. Construction and operation of the Project will result in a long-term beneficial impact on the county's tax base. This will contribute to improving the local economy and strengthening and diversifying the economic base of the region. Additionally, Project landowners whose land is utilized will receive payments throughout the life of the Project. This will further contribute to strengthening the local economy and its tax base. Finally, the construction of the Project may contribute to the development of wind-related businesses, such as blade testing facilities and specialized O&M companies in the area, which would further contribute to the economic growth of the region. A study conducted at the Langdon Wind Energy Center located in Cavalier County, North Dakota estimated that the North Dakota economy received more than $225 million from construction of that project (Leistritz and Coon 2008).

The Project will permanently impact approximately 73 acres of the total Project Area as a result of the construction of Project facilities. The permanent impacts of the final installed infrastructure and equipment will include turbine sites, access roads, an O&M building, permanent met towers, and a substation. Construction of these facilities will not cause additional impacts on the industry of the area. In general, landowners will be able to continue to use their property for agricultural or other purposes around turbine locations. The county is predominately Caucasian and the Project Area is not located in a concentrated low-income area. Therefore, there will be no impact on low-income families or minorities as a result of the Project.

Local contractors will be used to the extent practicable. Wages and salaries paid to local contractors will directly benefit the regional economy. Wages and salaries paid to non-local contractors will likely benefit the regional economy as well. This benefit will come in the form of expenditures for supplies, lodging, fuel, and other services such as hotels, restaurants, etc. Additionally, the McIntosh County economy will benefit from the infusion of state and local taxes paid by CPV. It is expected that the Project will generate over $1,000,000 per year in state and local taxes.

Certain components of the Project will require specialized labor that will be brought in from other counties or other states, such as turbine erection and commissioning. Specialized training of local labor for construction is not warranted given the short duration of Project construction. However, it is likely that training of local labor will be necessary for O&M during the life of the Project. It is anticipated that there may be as many as 12 full-time personnel on-site to perform O&M services. Local skilled labor for the basic infrastructure and site development needs of the Project is likely available within the county or the state and will be utilized to the extent practicable.

There are no anticipated impacts on permanent housing. Imported laborers will require temporary lodging. It is likely that imported laborers will use lodging facilities in either Ashley or Wishek. Some

limited permanent housing accommodations for specialized labor necessary during the life of the Project will also be required. These accommodations will likely be found in close proximity to the Project Area such as the town of Lehr. Unoccupied residences in towns such as Lehr will likely be rented or purchased, providing additional revenue to these areas. Additionally, permanent O&M workers may construct new residences in these towns bringing in additional work for local contractors and additional income to the tax base.

7.2.3 Mitigative Measures

The increase in the county's tax base and the infusion of wages, payments to landowners, and expenditures as a result of construction and operation of the Project will have positive impacts on the region. To a lesser extent, this infusion is expected to occur for the life of the Project from day-to-day O&M activities. The payments to landowners are expected to offset potential financial losses from the removal of land from agricultural production and substantially increase landowner income as a result of Project operation.

7.3 Land Use

7.3.1 Description of Resources

The current land use within the Project Area is primarily grassland/herbaceous and in agricultural production (Figure 11). The Project is not within any city limits and there are no known military installations in the area. There will be no displacement of occupied residences or industrial facilities as a result of construction and operation of the Project.

The USFWS has been purchasing grassland easements in the Prairie Pothole Region for the last 20 years. Native grasslands provide habitat for a multitude of species and these easements allow for their perpetual protection. There are 169 acres of USFWS grassland easements within the Project Area; these are located on the southern portion of the Project Area (Figure 8). Due to the limited size of grassland easements within the Project Area, the Project has been designed to avoid these areas completely.

The Farm Services Agency (FSA) administers the Conservation Reserve Program (CRP) to protect soil and water resources, with the Natural Resource Conservation Service (NRCS) providing technical land eligibility determinations, conservation planning, and practice implementation. CRP lands are removed from agricultural production and preserved for wildlife habitat for approximately 10 years' time. CPV is working with the FSA to have affected CRP lands removed from the program, if necessary, and provide compensation to the FSA for any reduction in CRP lands.

Based on review of available databases, aerial photographs, and site visits, the Project Area is primarily undeveloped grassland or in agricultural production. Table 7-1 lists all vegetative land cover types within the Project Area, which are also depicted on Figure 12.

Table 7-1. Vegetative Land Cover Within the Project Area

Vegetative Land Cover	Acreage	Percent of Vegetative Land Cover
Crop and Hay	6,777	40
Native Prairie	8,520	50
Tame Grassland	1,662	10
Other	59	<1
Total*	**17,018**	**100**

Source: Native Prairie Survey
* Total acreage assessed during vegetation field survey is less than total Project Area as wetlands and waterways have not yet been surveyed.

CPV is unaware of existing or planned industrial development in the vicinity of the Project. The nearest existing wind energy facilities are Tatanka Wind Farm and North Dakota Wind II, which are located approximately 18 mi to the southeast and northeast, respectively. Rough Rider I is a permitted wind project located in Dickey County approximately 16 mi to the east, but it has not been constructed yet. A fourth project, Merricourt, is currently in development approximately 10 mi to the east, near the border between McIntosh and Dickey Counties; however, this project is still in an early stage and has not yet undergone county or state permitting.

7.3.2 Impacts

Land use within the Project Area will largely remain unchanged as a result of the Project. Landowners often continue to plant crops and graze livestock to the edge of Project facilities at other wind farms throughout the United States. CPV will work closely with landowners during the development phase of the Project to minimize land use disruptions from the siting of Project facilities. CPV will also work with landowners to avoid impacts on drainage tiles and irrigation infrastructure during construction. Additional areas may need to be temporarily disturbed during construction for laydown areas and staging areas. However, these areas will be returned to their original contours and reseeded as necessary.

Based upon the layout presented in this application, a total of 73 acres, or 0.4 percent of the total Project Area land cover, will be permanently affected from construction of the Project.

In general, the public has historically expressed concerns over the potential devaluation of property values from the development of wind energy projects across the United States. Based on the best data currently available, there is no evidence to suggest that wind projects have a negative impact on property values. A study published by Hoen et al. in December 2009 found that the view and/or distance from homes of a wind facility do not have a statistically significant effect on sale prices. For this study, 24 wind facilities in nine states were analyzed with 7,429 sale transactions in the area. The transactions were analyzed by distance of turbines, timing of the home sale in relation to the public notice of the wind facility, and view. Other data concerning the locations of the transactions such as area amenities were also recorded during the three-year study. The results determined that while impacts on home sales could exist, those impacts are statistically insignificant. Impacts were also immeasurable for homes within 1 mi of the wind facility.

The Renewable Energy Policy Project (REPP) conducted a comprehensive study of U.S. projects in 2003 (Sterzinger et al. 2003). Based on three different analyses of real estate transactions within 5 mi of the 10 wind energy projects included in the study (i.e., property value trends throughout the entire study period, trends before and after construction of the wind energy project, and comparison of property value trends with comparable control communities), the REPP study concluded that there is no statistical evidence to suggest that wind farms have a negative effect on property values. Additionally, the Lawrence Berkeley National Laboratory recently released a power point presentation entitled, "The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis." The results of the study are presented below:

- Area Stigma: Homes in the study areas analyzed do not appear to be measurably stigmatized by the arrival of a wind facility;
- Scenic Vista Stigma: None of the various models find strong statistical evidence that the view of a nearby wind facility impacts sales prices in a significant and consistent manner; and
- Nuisance Stigma: Homes in the sample that are within 1 mi of the nearest wind facility, where various nuisance effects have been posited, have not been broadly and measurably affected by the presence of those wind facilities (Hoen et al. 2009).

Based on the results of these studies, it does not appear that the Project will have a direct negative impact on property values.

Additionally, no adverse cumulative effects due to the location of the Project in relation to existing or planned facilities and other industrial development are anticipated.

7.3.3 Mitigative Measures

CPV will work closely with the FSA, USFWS, and landowners in an effort to minimize impacts to sensitive areas to the extent practicable. The Project will not require the industrial use of non-renewable resources or emissions into the environment. To reduce potential impacts on occupied residences, turbines will be installed a minimum of 1,400 ft from occupied residences.

7.4 Public Services

7.4.1 Description of Resources

Local Services

The Project is located in a highly rural, lightly populated area in south-central North Dakota. Homesteads and farms within the Project Area, and small towns nearby, are served by an established transportation and utility network. The closest towns to the Project Area are Lehr (4.5 mi to the north), Ashley (6 mi to the south), and Wishek (7 mi to the northwest). Wishek has the largest population with 1,122 people, followed by Ashley with 882 people, and Lehr with 114 people (USCB 2000). The abandoned town of Danzig is also located 2 mi west of the Project Area.

Ashley is the county seat of McIntosh County. It provides sanitary water, sewer, utilities (e.g., natural gas and electricity) services, solid waste disposal services, educational facilities, and recreational facilities (e.g., a 9-hole golf course, two city parks, and opportunities for fishing, boating, skiing, and

camping at nearby Hoskins Lake). Ashley also provides emergency services, including a hospital with two clinics, a full-time police department, a volunteer fire department, a qualified emergency medical technician staff, and a qualified first response team (City of Ashley 2009).

Emergency services within the Project Area are provided out of Lehr, Ashley, and Wishek. The closest ambulance services to the Project Area are in Wishek and Ashley. The Project Area straddles three fire protection districts, including Wishek Fire Protection District in its northwestern portion, Lehr Rural Fire Department in its northeastern portion, and Ashley Rural Fire Department in its central and southern portions (NDGIS 2009).

Electrical Service

Two existing high voltage transmission lines, a MDU 230-kV line and a Basin Electric Power Coop 345-kV line, pass through the Project Area. Two substations are located in Ashley, including one MDU 42-kV substation and one KEM Electric Cooperative, Inc. (KEM) 42-kV substation. One MDU 230-kV substation is located in Wishek. Electrical service is distributed to the Project Area by KEM (2009).

Roads

The existing roadway infrastructure within the Project Area consists of county and township (section line) roads, typically comprised of gravel or packed dirt. No federal or state highways are located within or adjacent to the Project Area. The closest highways include: State Highway 13, which runs east-west through Lehr and Wishek approximately 3 mi north of the Project Area; State Highway 11, which runs east-west through Ashley approximately 6.5 mi south of the Project Area; and State Highway 3, which runs north-south from Wishek, approximately 6.5 mi west of the Project Area.

Traffic

Existing traffic volumes on the state highways in the vicinity of the Project are presented in Table 7-2 and Figure 9. Due to the complexity of determining the specific capacity of any highway, general estimates are used for planning purposes. For the purposes of this application, these estimates include Average Annual Daily Traffic (AADT) and Commercial Truck Traffic counts provided by the North Dakota Department of Transportation (NDDOT). For purposes of comparison, the functional capacity of a two-lane paved rural highway is approximately 5,000 vehicles per day. The state highways in the vicinity of the Project Area carry levels of traffic that are fairly typical for rural North Dakota, representing only a fraction of their capacities (NDDOT 2008).

No vehicle count estimates are available for the additional county and township roads that run through the Project Area. However, based on the condition, width, and function of these roads, they are likely to have far lower daily traffic than the nearby state highways.

Table 7-2. Existing Daily Traffic Levels

Roadway Segment	AADT/Commercial Truck Traffic
Highway 13 east of Lehr	370/70
Highway 13 west of Lehr	550/90
Highway 13 east of Wishek	950/95
Highway 11 east of Ashley	440/70
Highway 11 at Ashley	700/130
Highway 11 west of Ashley	460/115
Highway 3 north of Highway 11	260/70
Highway 3 south of Wishek	675/120

Source: NDDOT 2008

Water Supply

The Project Area is located entirely within an unincorporated, highly rural portion of McIntosh County. Water supply is assumed to be provided primarily from private groundwater wells for construction and operation. Drillers' logs from the North Dakota State Water Commission (NDSWC) indicate the presence of 16 private wells in the Project Area, including 15 stock wells and one domestic well (NDSWC 2009).

Telecommunications

Telecommunications infrastructure and services that could potentially be impacted by Project construction or operation include underground telephone and fiber optic cables, amplitude modulation (AM) and frequency modulation (FM) radio broadcasts, off-air television, non-federal government microwaves, and land mobile radio (LMR). The locations of underground communication cables in the Project Area will be identified by the respective utility companies prior to Project construction. Early in Project planning, CPV identified existing telecommunications services and assessed the potential for impacts of the proposed construction and operation of the Project through a review by Comsearch. Infrastructure and services within or near the Project Area include two off-air television stations with very limited programming (KJRE and K59BL), one non-federal government microwave beam path licensed to Basic Electric Power Cooperative that crosses through the center of the Project Area from northwest to southeast, and one LMR that is located approximately 1 mi south of the Project Area. Project planning has explicitly considered these services and sought to minimize impacts in the siting of turbines and other Project components. The telecommunications study conducted by Comsearch is attached as Appendix C.

7.4.2 Impacts

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

Local Services

No material impacts on local services are expected as the Project is relatively self-sufficient with respect to consumables and services. The number of full-time employees at the Project is expected

to be of a small enough number to benefit the tax base without having a detrimental impact on the ability of existing services (e.g., schools) to maintain the current level of service. The Project will utilize subcontractor services where such services are outside the routine capability of the plant staff, and such services will likely be of a specialized nature so as not to have an impact on the local community. However, where such local skills and services are available, those services would likely be utilized by the Project on an as-needed basis resulting in a beneficial impact on the local community.

Electrical Service

The Project will require electrical service from the local provider during the construction period and may also require electrical service during brief operational periods when the wind project is not generating electricity. No adverse long-term or significant impacts on the local rural electrical service are expected.

Roads

Construction of the Project will include approximately 10 mi of new gravel access roads. Both the new and existing roads will be up to 34-ft wide during construction, with low vertical relief to allow cross-travel by farm equipment. This improved and expanded transportation network will be used by construction vehicles during Project construction, and O&M crews inspecting and servicing the wind turbines during Project operation. The access roads will be sited between towers, with one road typically required for each string of turbines. Roads will be reduced to approximately 16 ft wide during operation and shoulders reseeded. Construction of roads will be conducted in conformance with applicable state laws and the road agreement between McIntosh County and CPV.

Traffic

Traffic impacts from the Project will be greatest during Project construction. Impacts may be most noticeable on the local county and township roads within the Project Area, which have particularly low existing traffic use. However, based on the existing traffic use and the rural nature of the area, the impacts from the additional construction-related traffic are expected to be minimal. Any impacts on county roads will be addressed in accordance with the road agreement between McIntosh County and CPV.

Trucks will likely access the Project Area from State Highways 11, 13, or 30; this will vary depending on the truck source and delivery destination. Operating permits (i.e., oversize or overweight) will be acquired from the state, county, and/or township, as necessary.

Water Supply

Construction and operation of the Project will not significantly impact the water supply. Project facilities are not likely to be sited near wells due to the fact that wells are typically sited in close proximity to the homesteads or farmsteads they serve, and turbines will not be sited within 1,400 ft of occupied residences. The Project will not require the abandonment of any wells, the appropriation of surface water, or permanent dewatering. Temporary dewatering of groundwater may be required during construction of turbine foundations and water may also be used at batch plants. It is likely that the Project will require a single domestic-sized well for the O&M facility with

additional water required for blade washing and dust control. Refer to Section 7.12 for detailed discussion of groundwater resources.

Telecommunications

Prior to Project construction, underground telephone and fiber optic cables will be located by the respective utility companies. Negative impacts on these buried telecommunications cables will therefore be avoided.

Available information indicates that there are no licensed operating AM/FM stations within a 15 mi search radius of the Project. Off-air television coverage in the Project Area includes very limited programming from two stations. Because off-air programming is so limited, it is likely that local residents supplement their television service with either cable or direct satellite broadcast, neither of which will be affected by wind turbines or other Project components.

Impacts on the one non-federal government microwave beam path that crosses the Project Area have been mitigated by avoiding the path's Worst Case Fresnel Zone (WCFZ), which is approximately 27.9 m (91.5 ft) in width along either side of the centerline of the microwave beam path. Turbines and other Project components have been located outside of the WCFZ to minimize interference (Figure 10).

Although one LMR is located approximately 1 mi south of the Project Area, very little, if any, change in the coverage of the repeaters will occur once the turbines are installed. In the unlikely event that there is a reported change in coverage attributable to the Project, it could be corrected by repositioning or adding repeaters that operate with the LMR system mobile units. Also, repeater antennas could be installed on utility, meteorological or turbine towers in the wind facility if needed.

7.4.3 Mitigative Measures

Construction and operation of the Project will be conducted in accordance with all associated local, state, and federal permits and regulations and industry standards. Based on the minor impacts expected to the existing public services and infrastructure from the Project, extensive mitigation measures will not be required.

Local Services

As noted, no impact on local services is anticipated; therefore, no mitigation is required. CPV will coordinate with local fire, police, and hospital facilities prior to construction and operation of the Project.

Electrical Service

In order to prevent adverse effects to the existing electrical transmission system, CPV will comply with NERC and MISO regulations and any requirements of their Interconnection Agreement, which specifically address electrical service. CPV will also use a turbine setback equal to 1.1 times the turbine blade tip height from existing transmission lines when siting wind turbines (Figure 10). No additional mitigation is necessary.

Roads

CPV will coordinate with landowners in order to site access roads in a manner that preserves existing land uses to the greatest extent practicable. CPV will also acquire all required state permits to ensure that road construction or widening is in conformance with applicable regulations and minimizes adverse impacts. CPV has a road agreement with McIntosh County to address the utilization of county roads during construction of the Project. CPV will also use a turbine setback equal to 1.1 times the turbine blade tip height from the center of county, state, and federal road right-of-ways.

Traffic

As noted, the traffic capacity of the existing road network is anticipated to be adequate to support Project-related traffic with minimal impacts. As such, no mitigation is proposed.

Water Supply

In the unlikely event that wells must be abandoned due to Project construction, they will be sealed as required by North Dakota law. Any temporary dewatering of groundwater during Project construction will be conducted under the requirements of the National Pollutant Discharge Elimination System (NPDES) permit and Storm Water Pollution Prevention Plan (SWPPP). Refer to Section 7.12 for additional mitigation measures related to groundwater resources.

Telecommunications

As noted, an underground utilities locator company will be contacted prior to construction to locate underground facilities. To the extent Project facilities cross or otherwise affect existing telephone or fiber optic lines or equipment, CPV will enter into agreements with service providers so as to avoid interference with their facilities.

Impacts on AM, FM, and off-air television broadcasts are expected to be minimal, and specific mitigative measures are therefore not proposed. Impacts on the single microwave beam path crossing the Project Area have been preemptively avoided through the siting of Project components outside of the WCFZ as shown on Figure 10. Although not anticipated, impacts on LMR could be mitigated, if necessary, by installing repeater antennas on met towers in the Project. In its easement agreement with Project landowners, CPV commits to using reasonable efforts to correct any degradation to television reception.

7.5 Human Health and Safety

7.5.1 Description of Resources

Air Traffic

Two general aviation airports are located within 7 mi of the Project Area: Wishek Municipal Airport (located 6 mi to the northwest) and Ashley Municipal Airport (located 7 mi to the south) (NDGIS 2009). Wishek Municipal Airport has one 3,450-ft long asphalt runway oriented roughly northwest-southeast at an approximate elevation of 2,038 ft above sea level. Ashley Municipal Airport has one 4,300-ft long asphalt runway oriented northwest-southeast and one 2,825-ft long turf runway oriented east-west. The airport is at an approximate elevation of 2,015 ft above sea level (AirNav 2009a; 2009b). USGS 1:24,000 scale topographic maps also depict two private landing strips

(Nietzsche Field and Rau Field) within 7 to 10 mi of the Project Area's southern boundary; however, these two landing strips are no longer utilized. The nearest commercial airport in North Dakota is Jamestown Regional Airport located approximately 60 mi northeast of the Project Area (North Dakota Aeronautics Commission 2009; NDGIS 2009).

Electromagnetic Fields

Every electrical device generates both electric and magnetic fields in its vicinity. These fields, referred to in combination as electromagnetic fields (EMF), arise from voltage, or electrical charges, and current, or the flow of electricity, associated with electrical systems. The intensity of any particular electric field is related to the voltage, while that of the associated magnetic field is related to the current. EMF can be present both outdoors and indoors, associated with large scale structures such as transmission lines, power collection lines, and substation transformers, as well as local household wiring and electrical appliances. The primary source of existing EMF within the Project Area is likely the two high voltage transmission lines that currently intersect it. The general scientific consensus is that electric fields pose no risk to humans.

Hazardous Materials / Hazardous Waste

The site is located in a relatively rural area of North Dakota that has not experienced significant industrial activity. CPV has nonetheless investigated the likelihood of environmental contamination from hazardous materials/waste through an Environmental Data Resources, Inc. (EDR) Database Search for Environmental Contaminants dated November 10, 2008. The EDR Database Search consisted of a computerized search of pertinent federal and state databases associated with potential subsurface contamination or hazardous materials within and near the Project Area. The search was performed pursuant to the American Society for Testing and Materials (ASTM) Standard E1527-05 using a database maintained by an independent consultant.

The EDR review did not identify any environmental database records within the Project Area or adjacent search areas. Because production of petroleum products is often regulated differently than storage of petroleum products, oil and gas production facilities are often excluded from the EDR database review. However, information from the North Dakota Industrial Commission (NDIC), Department of Mineral Resources, Oil and Gas Division (2009), indicates that petroleum production facilities are not present within the Project Area.

Since the completion of this review, no large industrial or commercial activities likely to produce hazardous wastes have been conducted within the Project Area. Nevertheless, a Phase I Environmental Site Assessment (ESA) of the Project Area will be performed following receipt of required permits and prior to construction to identify and assess thoroughly any recognized environmental conditions (RECs) that may exist.

Security

The Project is located in an area that has a low population density and crime rate (City of Ashley 2009). Impacts on the security and safety of local communities from construction and operation of the Project will be negligible. Wind turbine towers will be locked when O&M personnel are not utilizing the towers.

7.5.2 Impacts

Air Traffic

Due to the height of wind turbines, their installation creates a potential for obstruction to navigable airspace. However, similar obstructions are already present within the Project Area in the form of tall high-voltage transmission lines. Furthermore, the distance from existing airports to the Project Area mitigates potential aviation impacts. A desktop feasibility evaluation conducted by Aviation Systems, Inc. in September 2009 (Appendix C) indicated that, based on elevations within the Project Area and a maximum turbine height of 500 ft above ground level, the Project will not impact air traffic associated with nearby airports.

Electromagnetic Fields

The general scientific consensus is that electric fields pose no risk to humans. However, the relationship between magnetic fields and biological responses or health effects remains a subject of research and debate (National Institute of Environmental Health Sciences EMF-RAPID Program Staff 1999). EMFs will be associated with Project components, including turbines, collection lines, and the Project substation.

Hazardous Materials / Hazardous Waste

The Project will require the use of petroleum products, primarily including fluids with associated turbines and substation/transformer equipment. Each turbine will use three types of fluids derived from petroleum during operation: gear box oil, hydraulic fluid, and gear grease. Transformers will contain mineral oil. Heavy machinery used during Project construction will also use minor amounts of hydraulic fluid. Impacts include the potential for spills, leaks, and contamination from these sources if improperly stored and used.

Security

Project construction and operation will have minimal impacts on the security and safety of the local communities.

7.5.3 Mitigative Measures

Air Traffic

Early in Project planning, CPV contracted with Aviation Systems, Inc. to conduct a desktop evaluation of the Project from the perspectives of air traffic and aviation. CPV has proactively used the results of that September 2009 evaluation in developing a Project Area at a sufficient distance from local airports such that no impacts on air traffic are expected (Figure 10). CPV has submitted a Notice of Proposed Construction or Alteration to the Federal Aviation Administration (FAA) in accordance with Federal Aviation Regulations (FAR), Part 77. Turbine locations were submitted for review by the Federal Aviation Administration (FAA). The FAA issued a "Determination Of No Hazard To Air Navigation" with respect to all turbines on February 24, 2010 (Appendix D).

Electromagnetic Fields

CPV will set back wind turbines from all occupied residences, bury collection lines to a depth of approximately 4 ft, and fence off and place warning signs around the Project substation. Due to

these mitigative measures, EMFs will decrease to background levels at potential receptors (i.e., occupied residences) and the EMF generated by the Project is anticipated to have no impact on public health and safety.

Hazardous Materials / Hazardous Waste

A Phase I ESA, conducted in conformance with the ASTM standard, will be used to minimize risk associated with any potentially existing recognized environmental conditions that may pose a threat to human health and safety. Significant findings are not anticipated due to the known historic uses of the properties and the previously conducted EDR review.

CPV does not anticipate generating any hazardous wastes, although minor amounts of petroleum products will be used during Project construction and operation. Any petroleum wastes generated will be handled and disposed of in accordance with local, state, and federal regulations. Additional handling, storage, and reporting requirements for hazardous material will be covered in association with the NPDES permit application and SWPPP.

Security

CPV will follow security measures in order to reduce the chance of damage to physical property and personal injury, including:

- Siting of wind turbines away from potential receptors such as occupied residences and the centers of road right-of-way, using setbacks of 1,400 ft and 1.1 times turbine tip height, respectively. These setback distances are considered appropriate based on developer experience and examples set by other wind projects in North Dakota. These distances will also serve to mitigate EMF levels (as discussed above), as well as sound.
- Use of temporary and permanent precautions during construction and operation, such as safety fences, warning signs, and locks on equipment and wind power facilities.

For most turbines, all associated electrical equipment, with the exception of the pad-mounted transformers, will be contained within the solid steel enclosed tubular towers on which the turbines are mounted. Access to the tower will be restricted to a single solid steel door to be locked when not in use. The Project substation will have applicable warning signs and will be fenced and locked.

7.6 Shadow Flicker

7.6.1 Description of Resources

A wind turbine's rotating blades can cast a moving shadow on locations within a certain distance of a turbine. These moving shadows are called shadow flicker, and can be a temporary annoyance to people at nearby occupied residences or public gathering places. The potential impact area depends on the time of year and day (which determines the sun's azimuth and altitude angles) and the wind turbine's physical characteristics (height, rotor diameter, blade width, and orientation of the rotor blades). Shadow flicker generally occurs during low angle sunlight conditions, typical during sunrise and sunset times of the day. However, when the sun angle is very low (less than 3 degrees), the light has to pass through more atmosphere and becomes too diffuse to form a coherent shadow. Shadow

flicker will not occur when the sun is obscured by clouds/fog, at night, or when the source turbine is not operating.

Shadow flicker intensity is defined as the difference in brightness at a given location in the presence and absence of a shadow. Shadow flicker intensity diminishes with greater receptor-to-turbine separation distance. In general, the largest number of shadow flicker hours, along with greatest shadow flicker intensity, occurs nearest the wind turbines.

7.6.2 Impacts

Shadow flicker frequency is related to the wind turbine's rotor blade speed and the number of blades on the rotor. The blade pass frequency for any of the wind turbines that may be selected will be less than 1.0 Hertz (Hz) (less than 1 alternation per second). From a health standpoint, such low frequencies generated by wind turbines are harmless. Public concerns that flickering light from wind turbines can have negative health effects, such as triggering seizures in people with epilepsy, are unfounded. Epilepsy Action (working name for the British Epilepsy Foundation) states that there is no evidence that wind turbines can cause seizures (Epilepsy Action 2008). However, they recommend that wind turbine flicker frequency be limited to 3 Hz. Since the blade pass frequency for any of the wind turbines that may be selected will be less than 1.0 Hz, no negative health effects to individuals with photosensitive epilepsy are anticipated.

Shadow flicker impacts are not regulated in applicable state or federal law and there is no permitting trigger with regard to hours per year of anticipated impacts on a receptor from a wind energy project. However, a general precedent has been established in the industry both abroad and in the United States that fewer than 30 hours per year of shadow flicker impacts is acceptable to receptors in terms of nuisance and well below health hazard thresholds. In a German court case for example, a judge found 30 hours of actual shadow flicker per year at a certain neighbor's property to be tolerable (WindPower 2003). CPV is committed to completing a shadow flicker analysis for the Project, and the report will be provided to the PSC as a supplemental filing to this application prior to the Certificate hearing. The results of the shadow flicker analysis are pending; however, shadow flicker impacts are anticipated to be minor due to the low number of sensitive receptors (occupied residences) in the Project Area, the 1,400 ft setback of turbines from occupied residences, as well as the Project Area's geographical and meteorological conditions.

7.6.3 Mitigative Measures

CPV will mitigate shadow flicker impacts from the Project through the setback distances employed for wind turbines. The setback of at least 1,400 ft occupied residences acts as a mitigation measure to minimize potential adverse shadow flicker impacts. Additional mitigation measures such as strategic vegetative screening at affected occupied residences and/or installation of curtains and blinds on the windows facing the turbine casting the shadows are effective and economically viable options that CPV will consider on an individual basis with landowners, if necessary.

7.7 Sound

7.7.1 Description of Resources

McIntosh County would generally be characterized as agricultural and rural, and existing ambient sound levels are expected to be relatively low, although sound levels can be sporadically elevated in localized areas during periods of human activity. Background sound levels will vary both spatially and temporally depending on proximity to area sound sources and natural sounds. Principal contributors to the existing acoustic environment likely include motor vehicle traffic, mobile farming equipment, farming activities such as plowing and irrigation, all-terrain vehicles, local roadways, rail movements, periodic aircraft flyovers, and natural sounds such as birds, insects, and leaf or vegetation rustle during elevated wind conditions in areas with established tree stands or established crops. Diurnal effects result in sound levels that are typically quieter during the night than during the daytime, except during periods when evening and nighttime insect sound dominate.

7.7.2 Impacts

McIntosh County has not adopted a zoning ordinance or any specific noise-related provisions. At the state level, the NDAC (Article 69-06-08, Section 3) requires that the potential for adverse impacts at noise sensitive areas (NSAs) be assessed during the site selection process; however, there are no numerical decibel limits or formal compliance guidelines provided either by the PSC or any other agency at the state level. Based on a review of regulations and precedent set by other recently permitted wind energy projects in the area, it is expected that a baseline sound survey, which measures the existing noise levels in an area and sets a "baseline" for purposes of comparison, is not required by the PSC to show Project compliance.

Potential acoustic impacts associated with Project construction and operation are being assessed. For Project operation, a screening-level acoustic modeling analysis will be conducted using CadnaA, a comprehensive three-dimensional acoustic software model that conforms to the Organization for International Standardization (ISO) standard ISO 9613-2 "Attenuation of Sound during Propagation Outdoors." Using manufacturer sound specifications, the selected Project layout, site-specific terrain and topography, and specialized wind turbine modeling techniques, received sound levels at NSAs will be calculated for operation ranging from cut-in to maximum rotational wind speeds. Maximum received sound levels at each NSA will be compared against appropriate environmental noise criteria such as that prescribed by the United States Environmental Protection Agency (USEPA). Project background information, a regulatory criteria overview, a discussion of the acoustic modeling methodology, comparison to applicable limits, and final analysis conclusions will be contained within the Project acoustic impact assessment. The results of the acoustic assessment are pending; however, impacts are not anticipated to be unreasonable or inconsistent with similar wind energy projects due to the low number of sensitive receptors (occupied residences) in the Project Area and the 1,400 ft setback of turbines from occupied residences.

7.7.3 Mitigative Measures

CPV will mitigate sound impacts from the Project through setback distances employed for wind turbines. The setback of at least 1,400 ft from occupied residences mitigates and minimizes potential adverse sound impacts at NSAs.

7.8 Cultural and Archeological Impacts

7.8.1 Description of Resources

Cultural resources include archeological sites, standing structures, objects, districts, traditional tribal properties, and other properties that illustrate important aspects of prehistory or history or have important and long-standing cultural associations with established communities or social groups. CPV conducted a Class I cultural resources survey (Survey) to identify possible Project effects on archeological sites and historic architectural resources that are potentially eligible for listing in the National Register of Historic Places (NRHP) and/or State Historic Sites Register (Tetra Tech 2010), as provided in Appendix C. The Survey included review of previously recorded cultural resources and identification of cultural contexts that might aid evaluation of significant cultural resources. The Survey was conducted in anticipation of consultations with the North Dakota State Historic Preservation Office (SHPO), and in compliance with Section 106 of the National Historic Preservation Act (NHPA).

Local and regional studies suggest that Native Americans might have occupied the Project Area over the last 12,000 years (Gregg et al. 2008). Ethnohistoric accounts suggest that the area of McIntosh County was occupied during the eighteenth and nineteenth centuries by shifting populations of Cheyenne, Lakota, Dakota, Yankton and Yanktonai (Schneider 2002). SHPO's North Dakota Cultural Resource Survey (NDCRS) site files indicate that Native American archeological sites in McIntosh County commonly included cultural material scatters and stone circles, often found on hills and ridges. Local histories also stated that Native American archeological sites were common near ponds and streams (Wishek 1941:41-42). Many archeological sites with stone circles and/or rock cairns have been disturbed during historic period field clearing and plowing.

The first Euro-Americans moved to McIntosh County in 1884, and settlement progressed rapidly over the following 25 years (Wishek 1941). Most settlers were Russian immigrants of German heritage. Research questions about pioneer settlements, ethnicity and changing rural society and economy are important local and regional cultural contexts. Historic period archeological sites might be indicated by mapped historic structures. A 1911 atlas indicates that the Project Area contained one mapped cemetery, one church, one school, and 38 undifferentiated structures (probably both dwellings and agricultural outbuildings) (Ogle 1911). Many of these mapped structures were abandoned or demolished and may be associated with archeological sites. The Project Area has at least four historic cemeteries that are protected by state statutes (NDCC 23-06-27 and 40-02-03). The cemeteries include: the Salem German Congregational Cemetery in T131N, R70W, Sect. 23; the George Stanton German Baptist Cemetery in T131N, R69W, Sect. 05; and the Bethany #1 and Bethany #2 Cemeteries in T131N, R69W, Sect. 22 (Karms 1973). Mapped historic structures and standing structures might be associated with archeological sites, including perhaps unmarked graves.

NDCRS site files contained records for one archeological site in the Project Area. This is prehistoric site 33MT049, a series of Native American stone circles located in T131N, R69W, Sect. 19. No historic architectural resources or NRHP-listed properties have been recorded in the Project Area. The only property listed on the NRHP in McIntosh County is the McIntosh County Courthouse, located approximately 6.5 mi south of the Project Area.

The small number of reported archeological sites and historic architectural resources in the Project Area reflect the rarity of archeological and architectural surveys. Historic maps indicate many cultural landscape features that might contain archeological sites. Limited field observations conducted for the Survey did not reveal extensive ground disturbances from erosion, surface mining or previous construction that might have destroyed archeological sites. In summary, there is potential for prehistoric Native American archeological sites and historic Euro-American archeological and architectural resources in the Project Area.

7.8.2 Impacts

Based on their review of the Survey report, SHPO may request additional information about whether unrecorded archeological sites or historic architectural resources will be affected by the proposed Project. The area of potential effect (APE) for archeological resources will include locations that may undergo possible ground disturbances resulting from construction, operation and decommissioning of Project facilities. The APE for historic architectural resources might include an area of visual effects to be determined in consultations with SHPO. SHPO may require a Class III archeological field investigation in areas of proposed Project construction. SHPO may also require additional documentation of historic architectural resources. If required, archeological and architectural field investigations will follow SHPO guidelines for archeological surveys and historic architectural investigations.

7.8.3 Mitigative Measures

CPV will continue consultations with SHPO through TVA as the lead federal agency under Section 106 of the NHPA concerning possible Project impacts on cultural resources. CPV is considering several mitigative measures during Project design to avoid or reduce impacts on possible cultural resources in the APE:

- Project designs will avoid construction around ponds and stream drainages to the extent practicable where prehistoric and historic sites may be located;
- Mapped historic structures will be avoided to the extent practicable to reduce impacts on potential archeological sites, architectural resources, and possible unmarked graves;
- All marked cemeteries and recorded archeological sites will be avoided during Project planning (Figure 4 and Figure 10);
- Project setbacks from extant roads and occupied buildings will have the added benefit of reducing impacts on some historic period archeological sites and architectural resources, if present; and
- An *Unanticipated Discoveries Plan* will be prepared that describes procedures to be followed if archeological sites and/or human remains are unexpectedly encountered during Project construction.

7.9 Recreational Resources

7.9.1 Description of Resources

Recreational opportunities in McIntosh County include fishing, hunting, wildlife/bird observation, boating, skiing, and camping (Ruff 2009; City of Ashley 2009). Local recreational facilities near the Project Area include the Ashley and Wishek 9-hole public golf course, as well as two city parks in Ashley (Dakota Heartland Champion Community 2009; City of Ashley 2009).

There is one North Dakota State Recreation Area in McIntosh County; Doyle Memorial State Recreation Area located 2.5 mi west of the Project Area. In addition, eight state Wildlife Management Area (WMAs) are located within McIntosh County, four of which are within 5 mi of the Project Area, as shown on Figure 8 (Green Lake WMA, Clear Lake WMA, Ashley WMA, and Lehr WMA). The closest WMA is Green Lake WMA, located approximately 1 mi west of the Project Area. WMAs are open to a variety of public uses, including but not limited to hunting, fishing and trapping (NDGIS 2009). There are also several parcels of land enrolled in the North Dakota Private Lands Open to Sportsmen (PLOTS) program, which provide public access to private lands for hunting. One quarter section of PLOTS is located within the Project Area, near its southern boundary (NDGFD 2010).

There are no National Park Service (NPS) lands within McIntosh County or neighboring counties, with the closest site being Knife River Indian Villages National Historic Site, approximately 120 mi from the Project Area. The Project Area is adjacent to multiple USFWS WPAs, including one WPA (Geisler WPA) present as an inholding of non-leased land within the Project Area boundary (NDGIS 2009). WPAs are part of the National Wildlife Refuge System and preserve wetlands and grasslands critical to waterfowl and other wildlife. WPAs are open to a variety of public uses, including hunting, trapping, fishing, and wildlife observation and photography.

7.9.2 Impacts

In general, impacts on nearby recreational areas will be visual in nature, primarily affecting individuals using public or private property within or adjacent to the Project Area for hunting, fishing, trapping, or nature observation. To minimize physical intrusion on recreational activities, Project turbines, buildings, and the substation will be sited at least 0.25 mi from nearby WPAs. Additional impacts on recreational uses due to the Project include increased traffic along county roads in the area, although these impacts will be temporary in nature and primarily associated with the construction period. During construction, local wildlife may be temporarily displaced but then return to the area during Project operations. Finally, potential impacts on the avian species associated with the WPAs are addressed in Section 7.16.

7.9.3 Mitigative Measures

Wind turbines, substations, and O&M buildings will be sited at least 0.25 mi from nearby WPAs in order to mitigate direct, physical impacts preemptively to recreational resources within and adjacent to the Project Area. Mitigative measures proposed relative to traffic are included in Section 7.4. Because the Project will not result in the removal or deterioration in functional value of nearby

recreational facilities, CPV does not propose compensational conversion or dedication of adjacent land to recreational use or wildlife management.

7.10 Effects on Land-Based Economies

7.10.1 Description of Resources

Agriculture/Farming

Agricultural lands (hay and crop) comprise approximately 40 percent of the Project Area (Table 7-1). Landowners also use their property for pasturing animals.

According to the 2007 Census of Agriculture, the top crop item for McIntosh County is wheat (93,336 acres) followed by forage land for hay, grass silage, and greenchop (57,022 acres) (USDA 2007). Other crops grown in McIntosh County include soybeans, sunflowers, and corn. Cattle were the primary livestock in McIntosh County in 2007. In 2007, McIntosh County had 513 farms comprising 549,685 acres. This is a slight decline from 2002 when McIntosh County had 526 farms comprising 568,544 acres. Crop sales accounted for 66 percent of products sold in 2007, while livestock sales represented 34 percent of products sold (USDA 2007).

The NRCS mapped soil units within the Project Area include prime farmland and farmlands of statewide or local importance (Figure 13). Prime farmland and farmlands of statewide importance are lands that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Farmlands of statewide importance generally do not produce a yield as high as prime farmland, but can if conditions are favorable and the land is treated and managed according to acceptable farming methods. Prime farmlands in McIntosh County are presented in Table 7-3 below.

There is only one prime farmland soil within the Project Area. This soil comprises 15 acres or less than 0.1 percent of the Project Area. There are two soils that are considered prime farmland when drained. These comprise 58 acres or approximately 0.3 percent of the Project Area. Additionally, the Project Area contains 297 acres or approximately 1.7 percent of farmland of statewide importance.

Table 7-3. Prime Farmland Soils in McIntosh County

Soil Unit	Prime Farmland	Prime Farmland If Drained	Farmland of Statewide Importance	Area (acres)	Percentage of Project Area (17,385 acres)
Bearden silt loam, 0 to 2 percent slopes	X			15	0.1
Marysland loam		X		52	0.3
Colvin silt loam		X		6	0.0
Williams-Bowbells loams, 0 to 3 percent slopes			X	105	0.6
Arnegard loam, 0 to 6 percent slopes			X	87	0.5
Williams-Bowbells loams, 3 to 6 percent slopes			X	73	0.4
Hamerly loam, 0 to 3 percent slopes			X	22	0.1
Makoti silty clay loam, 0 to 3 percent slopes			X	10	0.1

Woodlands

Economically important forestry resources are not found in the Project Area. The 2007 Census of Agriculture has no record of any market value for cut Christmas trees and short rotation woody crops in McIntosh County. Generally trees are limited in the Project Area and are associated with drainages and shelter belts around homesteads, which have limited economic value.

7.10.2 Impacts

Agriculture/Farming

The Project will not have a significant impact on grazing or pasture land. Only permanent facilities such as physical turbine locations and access roads will reduce the amount of grazing land available. All land surrounding these facilities will remain available for grazing. Therefore, no impacts are anticipated to animal health and safety as a result of construction and operation of the Project.

All temporary disturbances, estimated to be approximately 105 acres, will be restored to pre-construction conditions.

Lease payments will provide farmers with supplemental income that will be significantly greater than any potential losses due to operation of the Project. Lease payments will typically contribute more income per acre than the market value per acre for agricultural production. It is anticipated that no prime farmland and 0.4 acre of farmland of statewide importance will be permanently disturbed from operation of the Project according to the proposed layout. This impact is considered negligible when compared to the agricultural production of the rest of the county. During construction and operations, CPV will reimburse landowners for damaged crops as specified in the easement agreement between CPV and the landowner.

As discussed in Section 7.3.2, there are no negative impacts anticipated to the valuation of homes in the area. The Project layout will be designed to ensure that no turbines will be placed within 1,400 ft of occupied residences. While the exact impact will not be known until the Project layout has been finalized, the loss of land from construction and operation of the Project will have minimal impact on agricultural production. Any impacts caused by construction and operation of the Project will be more than offset by lease payments.

Woodlands

There are no anticipated significant impacts on woodlands.

7.10.3 Mitigative Measures

Agriculture/Farming

Available data will be analyzed and landowners will be consulted to minimize impacts on prime farmland and other productive farmland areas in the final Project layout. Only land for turbines, substation, O&M building, and access roads will be unavailable for crop production during the life of the Project. All construction areas will be separated from grazing animals. The loss of land from construction and operation of the Project will have minimal impact on agricultural production. Any impacts caused by construction and operation of the Project will be more than offset by lease payments.

Woodlands

There are no anticipated significant impacts on woodlands.

7.11 Soils

7.11.1 Description of Resources

North Dakota, including McIntosh County, was subject to glacial migration and as a result has surface boulders and scraped out depressions. Soils within a few feet of the surface are generally a fine loam with glacial till. The USDA has mapped 32 soil map units within the Project Area (Figure 14) (USDA 2008). These soils are primarily well-drained loams derived from underlying till, glaciofluvial sediments, and alluvial sediments. Five soil types comprise over 85 percent of the Project Area. The most extensive of these are "Zahl-Williams loams, 9 to 15 percent slopes" (approximately 33 percent of the Project Area), "Zahl-Williams loams, 6 to 9 percent slopes" (approximately 18 percent), and "Zahl-Max loams, 15 to 60 percent slopes" (approximately 16 percent). Table 7-4 provides a summary of the soil map units within the Project Area, including their acreages and percentages of the Project Area.

Approximately 2 percent of the soils within the Project Area are prime farmland, prime farmland if drained, or farmland of statewide importance. More than half of the Project Area (64 percent) is underlain by partially hydric soils (i.e., soils containing hydric inclusions); however, soils classified as entirely hydric comprise only 4 percent of the Project Area (USDA 2008).

Table 7-4. SSURGO Soil Map Units Within the Project Area

Map Unit Name	Area (acres)	Percentage of Project Area (17,385 acres)
Zahl-Williams loams, 9 to 15 percent slopes	5651	32.5
Zahl-Williams loams, 6 to 9 percent slopes	3126	18.0
Zahl-Max loams, 15 to 60 percent slopes	2725	15.7
Williams-Zahl loams, 3 to 6 percent slopes	1824	10.5
Wabek-Appam sandy loams, 6 to 25 percent slopes	1507	8.7
Max-Zahl-Arnegard loams, 9 to 35 percent slopes, very stony	664	3.8
Wabek-Lehr complex, 2 to 6 percent slopes	472	2.7
Parnell silty clay loam	338	1.9
Southam silty clay loam	264	1.5
Williams-Bowbells loams, 0 to 3 percent slopes	105	0.6
Water	105	0.6
Arnegard loam, 0 to 6 percent slopes	87	0.5
Williams-Bowbells loams, 3 to 6 percent slopes	73	0.4
Hamerly-Parnell complex, 0 to 3 percent slopes	61	0.4
Wabek-Appam sandy loams, 0 to 6 percent slopes	56	0.3
Marysland loam	52	0.3
Stirum fine sandy loam, 0 to 1 percent slopes	49	0.3
Harriet loam, 0 to 2 percent slopes	46	0.3
Makoti-Rusklyn silty clay loams, 2 to 6 percent slopes	37	0.2

Map Unit Name	Area (acres)	Percentage of Project Area (17,385 acres)
Hamerly and Vallers loams, saline, 0 to 3 percent slopes	23	0.1
Hamerly loam, 0 to 3 percent slopes	22	0.1
Noonan-Williams loams, 0 to 6 percent slopes	18	0.1
Appam sandy loam, 0 to 6 percent slopes	16	0.1
Bearden silt loam, 0 to 2 percent slopes	15	0.1
Lehr-Bowdle loams, 2 to 6 percent slopes	11	0.1
Makoti silty clay loam, 0 to 3 percent slopes	10	0.1
Bowdle-Lehr loams, 0 to 2 percent slopes	10	0.1
Schaller loamy sand, 6 to 15 percent slopes	7	0.0
Colvin silt loam	6	0.0
Pits, gravel and sand	5	0.0
Williams-Zahl-Parnell complex, 0 to 15 percent slopes	1	0.0
Rusklyn silty clay loam, 2 to 6 percent slopes	0	0.0

Source: USDA 2008

Although all of the soils in the Project Area (with the exception of areas mapped as "Water") have low to moderate susceptibility to erosion by water (i.e., K-factors from 0.1 to 0.4), the majority (81 percent) have a moderate to high susceptibility to wind erosion (i.e., USDA Wind Erosion Groups 5 or less) (USDA 2008).

7.11.2 Impacts

Impacts on soils within the Project Area will consist primarily of the removal of areas from agricultural production by occupancy of Project components. In isolated cases, grading may be required for roadway construction. Estimated impacts include approximately 73 acres of permanent disturbance due to turbines, met towers, access road construction or widening, the Project substation, and the O&M facility. Because of the deliberate siting of facilities on level terrain, outside of wetland areas, the potential for soil loss due to erosion or impacts on hydric soils, such as compaction, is low.

7.11.3 Mitigative Measures

Following construction, CPV will restore disturbed areas to pre-construction conditions. Soil erosion, compaction, and other related disturbance will be minor and short-term, and will be minimized by implementing environmental protection measures in accordance with the SWPPP. These measures will include BMPs for erosion and sediment control, such as temporary seeding, permanent seeding, mulching, filter strips, erosion blankets, and sod stabilization. If cuts are made during construction, top soil will be segregated and reapplied after final contours have been graded. With the proper implementation of environmental protection measures intended to prevent, minimize, and/or reclaim soil erosion, compaction, and spill effects, no unmitigated loss of highly productive soil will result from the Project.

7.12 Geologic and Groundwater Resources

7.12.1 Description of Resources

South-central North Dakota lies within the Glaciated Missouri Plateau section of the Great Plains physiographic province. McIntosh County is located entirely within the Glaciated Missouri Plateau, spanning its two easternmost physiographic districts, the Missouri Coteau to the east and the Coteau Slope to the west. The Project Area is located entirely within the Missouri Coteau, an area of thick glacial sediments characterized by hilly topography and numerous, isolated small lakes and ponds that comprise a non-integrated drainage system (Clayton 1962).

The primary process responsible for shaping the physiography of the Project Area is large-scale glacial stagnation (i.e., long periods during which glaciers remained relatively static, neither advancing nor retreating) during the Wisconsin Glaciation. The topography of the Project Area is dominated by the Burnstad end moraine, a low, broad ridge of knobby hills with moderate local relief (typically 15 or 20 ft) and steep slopes (up to 15 degrees) that extend northwest from the Project Area to the northwestern portion of Logan County. The eastern extent of the Project Area varies slightly from the rest, consisting of dead-ice moraine characterized by more moderate topography and more numerous small waterbodies (Clayton 1962; NDGS 1980).

The surficial geology of the Project consists of end-moraine and dead-ice moraine glacial tills of Quaternary Coleharbor Formation. These tills are texturally heterogeneous (i.e., consisting of clays, silts, sands, gravel, and boulders) and are typically deep, ranging from 50 to 300 ft thick. Along the western extent, the sediments consist of collapsed glacial outwash sands and gravels (Clayton 1962; NDGS 1980).

The surficial sediments of the Project Area are underlain by the Upper Cretaceous Fox Hills and Pierre Formations. The Fox Hills is the younger of the two formations; however, both are flat-lying and their contact is not well defined in the area of the Project due to the thickness of surficial sediments and the lack of bedrock outcrops. Both formations were deposited in a marine environment. The Fox Hills formation consists of interbeds of weakly consolidated or unconsolidated sand and mudstone and well consolidated sandstone, siltstone, claystone, and shale. It is abundantly fossiliferous in some locations. The Pierre Formation is a thick unit of dark gray to black marine shale (Clayton 1962; NDGS 2001). Within the Project Area, both of these formations are deeply buried under surficial glacial sediments (Clayton 1962; NDGS 1980).

According to the North Dakota Geological Survey, North Dakota is located in an area of very low earthquake probability. There are no known active tectonic features in south-central North Dakota and the deep basement formations underlying North Dakota are expected to be geologically stable (Bluemle 1991). This information is supported by USGS seismic hazard maps, which show that the Project Area is located in an area with very low seismic risk (USGS 2008). Related geologic hazards, such as soil liquefaction, are consequently also unlikely. Other potential geologic hazards, such as subsidence due to karst topography, have not been identified (Tobin and Weary 2005).

The primary geologic-related resources in McIntosh County are sand and gravel. These resources are extremely abundant (Clayton [1962] described them as "nearly unlimited"). USGS topographic maps

depict two sand and gravel pits within the Project Area, one near the center and one at the western extent. The status of these two operations is uncertain; however, the central facility corresponds to a 5-acre area mapped as "Pits, gravel and sand" by the USDA soils (SSURGO) database (USDA 2008). The Project Area is not located in an area with economic reserves of hydrocarbons, as supported by information from the NDIC, Department of Mineral Resources, Oil and Gas Division (2009), including well locations, mapped oil and gas fields, and monthly oil and gas production totals.

Groundwater is the primary source of water for municipal, domestic, and livestock needs in McIntosh County. Groundwater resources are available from aquifers in both surficial glacial sediments and Cretaceous bedrock. Within the Project Area, the primary sources of groundwater are glacial surficial sediments and the Fox Hills Formation. Water from both sources is typically hard to very hard. Well yields within the Project Area are generally less than 50 gallons per minute (gpm) (Klausing 1981). Review of driller logs available from the NDSWC indicates that 16 private wells have been drilled within the Project Area, including 15 stock wells and one domestic well. Well logs indicate that static water levels in the Project Area range mainly from about 20 to 25 ft below ground surface (bgs); however, static water depths as shallow as 6 inches and as deep as 80 ft have also been recorded (NDSWC 2009).

7.12.2 Impacts

Impacts of the proposed Project to available geologic resources are likely to be limited. Due to the thickness of surficial materials, excavation or blasting of bedrock is extremely unlikely. In the event that active commercial sand and gravel extraction facilities are present within the Project Area and cannot be avoided, CPV will coordinate with landowners regarding impacts and any necessary mitigation. Some gravel pits have been observed in the Project Area during site visits; however, they are relatively few and minor in size and may not be commercially active. As noted, review of the available literature has not identified any geologic hazards, such as seismic activity, soil liquefaction, and subsidence, likely to affect the Project.

Impacts on groundwater resources within the Project Area are anticipated to be minimal. It is probable that O&M water requirements will be satisfied with a single domestic-sized water well. Based on the small amount of increased impervious surface area that will be created by Project components relative to the separation of these components and the size of the entire Project Area, the Project will likely have minimal impacts on regional groundwater recharge. In isolated areas where the groundwater table is locally elevated, Project construction activities such as excavation and construction of foundations may encounter groundwater. The construction of turbine foundations may therefore affect shallow groundwater flow patterns; however, such impacts will likely be minor and highly localized, with the groundwater resuming its normal course of flow downgradient of the foundation. If dewatering of excavations is necessary, water will be discharged to the surrounding surface, allowing it to infiltrate back into the ground to minimize potential impacts. In addition, each turbine will be located a minimal distance of 1,400 ft from existing occupied residences, thereby minimizing the risk of impacts on private wells in the area, which are assumed to be located in proximity to the occupied residences they serve. Construction of the turbine foundations is not likely to require subsurface blasting; therefore, disturbances to groundwater flow from newly fractured bedrock are not anticipated.

7.12.3 Mitigative Measures

Wind turbines and other Project components will be sited to avoid active sand and gravel extraction operations identified within the Project Area. Where such resources cannot be avoided, CPV will coordinate with landowners regarding impacts and any necessary mitigation. No other mitigation is anticipated to be necessary.

Wind turbine locations are not likely to affect the use of existing water wells because the turbines will not be sited within 1,400 ft of occupied residences. In the event that subsurface blasting is required, a blasting plan will be developed and implemented to keep the impacts localized and fracture the least amount of bedrock necessary for construction. Any dewatering required during construction will be discharged to the surrounding surface, thereby allowing it to infiltrate back into the ground to minimize potential impacts.

7.13 Surface Water and Floodplain Resources

7.13.1 Description of Resources

Surface water and floodplain resources were identified for the Project Area using FEMA Flood Insurance Rate Maps (FIRM), USGS topographic maps, National Land Cover Dataset (NLCD), USFWS National Wetlands Inventory (NWI) data, and the National Hydrography Dataset. According to NLCD data, open water accounts for 1,417 acres, or 8 percent of the entire Project Area. NWI and National Hydrography Dataset waters are depicted on Figure 15. Situated in the West Missouri Coteau Watershed, the Project Area is located in the Rolling Soft Shale Plain of the Northern Great Plains Spring Wheat Region (USDA 2006). The topography in the region contains nearly level plains that include "prairie potholes" and small glacial lakes. The elevation ranges from 1,650 ft in the east to approximately 3,600 ft in the west (USDA 2006).

The extent of floodplains in the vicinity of the Project Area is unknown. McIntosh County has not been mapped for floodplains. However, the North Dakota State Water Commission acknowledged in a letter dated February 17, 2010 that the Project Area is not located in an identified floodplain and believes the Project will not affect an identified floodplain (see Section 10.11.10).

7.13.2 Impacts

Project facilities will be designed to avoid impacts on surface water resources to the extent practicable. Wind turbines will be built on uplands to avoid surface water resources in the lower elevations to the extent practicable. However, Project facilities, such as underground electrical collector lines, access roads, turbine pads, and the O&M building, will impact land and, therefore, potentially impact surface water runoff within the Project Area. These impacts are expected to be minimal.

The North Dakota State Water Commission reports that no identified floodplains are located in the Project Area (see Section 10.11.10). The Project will be designed to avoid flooding areas and wetlands and waterbodies to the extent practicable. Therefore, it is unlikely that the Project will impact floodplain resources.

7.13.3 Mitigative Measures

Runoff from the upper portions of watersheds adjacent to access roads will be allowed to flow unrestricted to the lower portion of the watershed. A Notice of Intent (NOI) to obtain coverage under the NPDES general permit for storm water discharges associated with construction activity will be submitted to the North Dakota Department of Health (NDDOH) prior to construction of the Project.

7.14 Wetlands

7.14.1 Description of Resources

The Project is located within the prairie pothole region. Prairie potholes are glacially formed water-holding depressions. These depressions provide ideal habitat for waterfowl and other migratory and resident wildlife. Wetlands also perform important hydrologic (flood attenuation and groundwater recharge) and water quality (sediment attenuation and nutrient removal) functions.

Desktop wetland analysis methods were used to identify wetlands and waterbodies within the Project Area. The desktop analysis included an assessment of data from the NWI and information from WPA, NRCS, Wetland Reserve Program (WRP) easements, and North Dakota geographic information system (GIS).

The desktop wetland analysis identified 1,067 acres or 6 percent of the Project Area classified as NWI wetlands (Figure 15). Additionally, the desktop wetland analysis identified 8,728 acres of property or 50 percent of the Project Area in USFWS wetland easements (Figure 10). Actual wetland acreage within these easements is substantially less. In many locations, the NWI wetlands and USFWS wetland easements overlap. NLCD data identified 11,041 acres or 63.5 percent of the Project Area as having partially hydric soils and 651 acres or approximately 4 percent of the Project Area as having hydric soils. Soils are one of the parameters considered in addition to hydrology and vegetation when identifying wetlands.

An on-site wetland delineation will be performed in the spring of 2010 within the construction area footprint of the proposed Project layout. The delineation will be performed using the methods described in the 1987 United States Army Corps of Engineers (USACE) Wetland Delineation Manual (Environmental Laboratory 1987), the Great Plains Regional Supplement to the 1987 Manual (USACE 2008). These methods incorporate a three-parameter approach using vegetation, soils, and hydrology to identify the presence of freshwater wetland. The extent of relatively permanent waters (RPWs), other than wetlands, will be determined by applying the USACE definition of Ordinary High Water Mark (OHWM) and methods for jurisdictional determinations as detailed in the USACE Jurisdiction Determination Form Instructional Guidebook (Corps JD Guidebook) revised in 2007, including the December 2, 2008 USACE/USEPA revised Rapanos guidance.

7.14.2 Impacts

Wetland impacts as a result of construction and operation of the Project are yet to be determined. Impacts will be assessed once the on-site wetland field delineation is completed. The finalized turbine layout will take advantage of higher elevations and avoid low-lying areas which are more

likely to contain wetland areas. Final turbine placement prior to construction will be designed to ensure that the majority of wetland sites are left intact. CPV plans to avoid direct impacts within USFWS wetland easements, thereby avoiding the need for a USFWS compatibility analysis and issuance of a Special Use (temporary impact) or Right-of-Way Permit (permanent impact).

Wetland Permitting

Wetlands with "jurisdictional status" are waters of the United States as defined by Section 404 of the Clean Water Act (CWA). Jurisdictional areas covered under Section 404 are regulated by the USACE and the USEPA. Several classes of waterbodies are subject to Section 404, including traditional navigable waters (TNWs), non-navigable tributaries of TNWs that are RPW, and wetlands that directly abut RPWs (USACE 2007).

The USEPA and the USACE are required to assert jurisdiction over certain types of other waters based on a fact-specific analysis as to whether the water has a significant nexus with a TNW (USACE 2007). These types of waters include:

- Non-navigable tributaries that are not relatively permanent waters (non-RPWs), but have a surface connection to TNWs.
- Wetlands adjacent to RPWs or non-RPWs, and separated by a natural berm, dike, or similar structure.
- As defined by the USACE, a wetland is adjacent when it is "bordering, contiguous, or neighboring," to other Waters of the United States, but not directly "touching" or abutting the waters of United States (USACE 2007).

The USACE does not presently assert jurisdiction over the following features:

- Drainage swales or erosional features (i.e., gullies, small washes with small volumes and infrequent flow).
- Ditches (including roadside ditches) excavated wholly in and draining only uplands, and that are not RPWs.

In the absence of adjacent or abutting wetlands, lateral jurisdiction extends to the OHWM. The definition of the OHWM is "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (Code of Federal Regulations (CFR) 2002; USACE 2005, 2007).

The OHWM is also used in the identification of the upstream limits of jurisdiction for tributary waters. Federal jurisdiction generally extends upstream banks and upstream within a tributary to the point where the OHWM is no longer discernible. Additionally, non-RPW channels are considered jurisdictional if an OHWM is discernable. Thus, jurisdictional tributaries range from substantial rivers with definite OHWMs to channels that are usually dry, and may have faint or ill-defined OHWMs, provided there is an eventual surface connection with a TNW (USACE 2005).

North Dakota has been granted authority in Section 404 permit decisions through State Water Quality Certifications (CWA, Section 401). Under the 401 Certification, the NDDOH has prohibited work that will have impacts in classified waters (i.e., certain lakes) under the USACE Nationwide Permit 12 (NDDOH 2007). In accordance with NDCC 43-36-23, hydric soils will be classified by a certified North Dakota soil classifier following wetland delineations as defined in NDCC 43-36-01.

7.14.3 Mitigative Measures

Wetlands will be avoided to the extent practicable during construction and operation of the Project and a pre-construction inventory of existing wetlands will be conducted and filed with the PSC and applicable agencies prior to construction. Prior Project authorization under a Section 404 USACE Nationwide Permit (NWP) will be obtained if impacts on CWA jurisdictional waters are unavoidable and less than 0.5 acre. Permanent impacts on jurisdictional waters will be mitigated according to USACE requirements.

CPV plans to avoid direct impacts on wetlands within USFWS wetland easements. CPV intends to avoid impacts on wetlands under wetland easements in the Project Area thereby avoiding the need for a USFWS permit. If boring for underground collection is required beneath wetlands within USFWS wetland easements, CPV will give USFWS prior notice. If impacts on these areas cannot be avoided, the USFWS will be consulted regarding permits or letters of authorization that may be necessary. If required, mitigation will be performed according to USFWS recommendations. The USFWS may require a compatibility assessment for any direct wetland impacts that occur on easement land.

If applicable, NWP specific General and/or Regional Conditions prescribed for projects in North Dakota as set forth by the USACE and other applicable BMPs will be used during construction and operation of the Project to protect topsoil, minimize soil erosion and protect adjacent wetland resources from direct and indirect impacts. Practices may include containing excavated material, use of silt fences, protecting exposed soil, stabilizing restored material, and re-vegetating disturbed areas with native species.

7.15 Vegetation

7.15.1 Description of Resources

The Project encompasses land that is a mix of native prairie, grassland, pasture, and cropland (hay, corn, soybean, barley, and sunflower). Plant communities within the Project Area are dominated by large tracts of native and historically disturbed prairie with equal amounts of cultivated cropland and hay land. Native prairie consist primarily of mixed-grass prairie dominated by components of the short and tall-grass prairies that may include the species big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), Indian grass (*Sorghastrum nutans*), and green needlegrass (*Stipa viridula*), with prairie cordgrass (*Spartina pectinata*) and northern reedgrass (*Calamagrostis stricta*) near wetlands. Common forbs found in the mixed grass prairie communities include western yarrow (*Achillea millefolium*), pussytoes (*Antennaria* spp.), fringed sagewort (*Artemisia frigida*), milk vetch (*Astragalus* spp.) and purple avens (*Geum rivale*). Prairies provide valuable habitat to a wide variety of

upland bird species and prairie potholes provide critical nesting and brooding habitat to many species of waterfowl.

Cropland and pasture are managed for the production of livestock forage and cereal crops. Management may include fertilization, weed and brush control by pesticide application, fallow, and reseeding. Species composition often includes mixtures of introduced grasses, mixes of grasses and legumes, small grain hay or monocultures of legumes such as alfalfa or clover. Croplands are planted in the spring and may include wheat, barley, sunflower or corn with rotations to hayland crops in cycles. Cropped species are not static and tilled areas will fluctuate with market demands and farm-specific operational requirements.

Native prairies serve as a vital ecological resource by improving water quality, providing erosion control, and supporting a diverse population of plants and animals. However, due to the native prairies' fertile soils and predominantly flat topography, large portions of the native prairie have been converted to agricultural lands. This widespread loss of native prairie makes this an ecosystem of conservation concern and one of the most endangered ecosystems in North America (Samson et al. 1998).

Native prairies serve as vital habitat for the Dakota skipper (*Hesperia dacotae*), a species of butterfly that is currently classified as a federal candidate species (see Section 7.17.1). Native prairies are also critical habitat used by prairie grouse (e.g., sharp-tailed grouse, greater prairie-chicken) for lekking, nesting, brood rearing, and wintering. Grouse lek habitat is classified as open, short grass vegetation with minimal amounts of agriculture. Development in grouse lekking habitat could result in direct habitat loss, habitat loss through avoidance, predator facilitation, and construction-related disturbance. Most prairie grouse are considered gamebirds and are often managed locally by state fish and game agencies for hunting purposes.

CPV has conducted a native prairie survey for the Project Area (see Appendix C). At the time of the survey (July 27 – August 14, 2009), a total of 8,520 acres (50 percent of Project Area) were classified as native prairie and 1,662 acres (10 percent of Project Area) were classified as tame grasslands (Table 7-1; Tetra Tech 2009c). An additional 40 percent were either active crops (corn, alfalfa, soybeans) or grazing pastures for cattle. The largest contiguous areas of native prairie were found in the northwestern region of the Project Area (Tetra Tech 2009c). None of the plant species identified are species listed by the state of North Dakota or federally protected as endangered, threatened or species of concern. Three species listed by the state of North Dakota as being noxious weeds were found in the native and tame grasslands: absinthe wormwood (*Artemisia abisinthium*), Canada thistle (*Cirsium arvense*), and leafy spurge (*Euphorbia esula*).

7.15.2 Impacts

The Project Area contains native prairie. Within the Project Area, potential impacts on plant communities due to construction activities include proposed turbine locations, collector and transmission line routes, crane paths, laydown areas and batch plant, O&M building, and access roads. Permanent components will result in an estimated loss of 36 acres of native vegetation (Figure 10). Construction activities like the installation of a proposed buried collector system and laydown area will result in some temporary effects to native and non-native grasslands. The spread

of noxious weeds during construction is an additional potential impact considered in this application.

7.15.3 Mitigative Measures

In terms of mitigative measures, CPV will:

- Reseed disturbed areas with native material following completion of construction activities;
- Develop a management plan to prevent the spread of noxious weeds throughout the Project or adjacent areas during construction and ongoing operations, in accordance with state and county regulations;
- Work closely with the USFWS and North Dakota Game and Fish Department (NDGFD) during micrositing to minimize impacts on vegetation within the Project Area; and
- Avoid impacts on USFWS WPAs and work with the USFWS to avoid or minimize impacts on wetlands and native prairie within USFWS easements.

CPV will use BMPs during construction and operation of the Project to protect topsoil and adjacent resources and to minimize soil erosion. Practices may include containing excavated material, protecting exposed soil, stabilizing restored material, and re-seeding rangelands with native species.

7.16 Wildlife

7.16.1 Description of Resources

Information on the existing wildlife in the Project Area was obtained from a variety of sources, including observations during site visits, communication with local residents and information from the NDGFD, North Dakota Parks and Recreation Department (NDPRD), North Dakota Natural Heritage Inventory (NDNHI), University of North Dakota (UND) Environment-Natural Resources Extension Office, and USFWS.

Wildlife within the Project Area consists of birds, mammals, fish, reptiles, amphibians, and insects, both resident and migratory, which utilize the site habitat for forage, migratory stopover, breeding and/or shelter. Species present in the Project vicinity are associated with agricultural fields, pasture grasslands, and wetland areas. Common mammals in the Project vicinity include raccoon (*Procyon lotor*), mink (*Mustela vison*), striped skunk (*Mephitis mephitis*), least weasel (*Mustela nivalis*), white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), badger (*Taxidea taxus*), porcupine (*Erethizon dorsatum*), and eastern cottontail (*Sylvigagus floridanus*).

Avian Species

North Dakota has 365 documented bird species (Faanes and Stewart 1982) and is situated within the Central Flyway, one of the main bird migratory routes (USFWS 2008a). A fall avian survey was conducted for the Project in order to quantify local avian use within the area and to identify potential avian impacts associated with building and/or operating the proposed facility (Tetra Tech 2009a; Appendix C). Weekly surveys were performed in the Project Area and in adjacent additional land subject to easement agreements between landowners and CPV between August 11 and October 31, 2009. Fixed point count surveys (800-m radius) were conducted at 7 points

distributed throughout the study area. CPV has commenced spring avian point counts at the same locations.

Waterfowl, Waterbirds, and Cranes

Several waterfowl and waterbird species, such as the Canada goose (*Branta canadensis*), snow goose (*Chen caerulescens*), and American white pelican (*Pelecanus erythrorhynchos*) had high encounter rates. Encounter rate is the frequency with which a species flies at heights consistent with the anticipated rotor swept area (RSA); encounter rates greater than 10 birds flying within the RSA per 20 minute (min) (as is the case for these species; Appendix C) suggests the potential for negative turbine interactions. Snow geese and Canada geese mortality has been documented at other wind energy facilities, but the overall numbers of fatalities are very low (Erickson et al. 2004; Anderson et al. 2005; Jain et al. 2007). The combination of the high encounter rate and prior evidence of negative turbine interactions suggest that some fatalities of Canada and snow geese could occur at the Project. If fatalities do occur, they are not expected to have population-level impacts as local breeding population of Canada geese (population estimate ~600,000) and regional migratory populations for Canada and snow geese are quite large (population estimate ~2,000,000) and stable (Sauer et al. 2008; USFWS 2009a). Waterbirds were also ranked high in mean use at the Project, with American coot (*Fulica americana*) and American white pelican ranking the highest. American coot mortality has been recorded at other wind energy facilities but in low numbers (Johnson et al. 2002; Anderson et al. 2005; Kerlinger et al. 2006). Given the high numbers of coots using the area, some fatalities could occur at the Project. If fatalities of American coots do occur, they are not expected to have impacts on the local population as the North Dakota populations currently are increasing slightly (Sauer et al. 2008). Mortality of American white pelicans has not been reported at a wind farm. However, the encounter rates suggest the potential exists for negative interactions for this species. American white pelicans are known to breed in North Dakota (Knopf and Evans 2004) and the large breeding population in North Dakota is showing a slight increase (Sauer et al. 2008). As a result, if any mortality were to occur, it is unlikely to have any population-level impacts.

Sandhill cranes (*Grus canadensis*) had the second highest encounter rate of all species observed during the fall 2009 survey. All of the sandhill cranes were observed outside of the Project Area boundary; however, the observed flight direction suggested that the cranes had flown through the Project Area prior to observation. All observations were made on one day (October 31, 2009) at the end of the survey period. No sandhill crane fatality has been reported at wind energy facilities. Sandhill cranes tend to migrate at heights between 150 to 760 m (Tacha et al. 1992) putting migratory individuals above RSA height; however, the flight height profile of the cranes observed suggests that these birds had either recently taken off from a nearby location, or were searching for a place to land. Theoretically, sandhill cranes are most at risk of collisions with turbines when individuals are either taking off from the ground or coming in to land within the Project Area or the surrounding area; they may also be at risk during weather events that reduce visibility. The central region of the North American population of sandhill cranes is very large (~650,000 individuals according to the International Crane Foundation; http://www.savingcranes.org/sandhillcrane.html) and appears to be stable (Sauer et al. 2008). As a result, in the unlikely event of a facility-related fatality, it is unlikely to have population-level impacts.

Raptors

Most raptor species observed were seen infrequently or exhibited behaviors that should not put them at high risk of turbine collisions, indicating that negative turbine-related impacts are unlikely. Northern harriers (*Circus cyaneus*) and red-tailed hawks (*Buteo jamaicensis*) were the most commonly observed raptor species during avian surveys. Both species have been reported as fatalities at existing wind farms (Johnson et al. 2002; Young et al. 2003; Erickson et al. 2004; Jain 2005); however, their observed flight behavior in the Project Area suggests that the probability of turbine-related fatalities is low. A list of other raptor species can be found in Appendix C.

Listed and Sensitive Species

No federal threatened or endangered species have been observed in the Project Area. During avian surveys, three bald eagles were observed flying at 400 m (i.e., above the RSA) outside of the Project Area boundary on August 22, 2009. Due to the observed flight direction, it is possible the eagles passed through the Project Area prior to the observation. Overall, due to their low use of the Project Area during fall, negative turbine-related impacts are unlikely during this season. In addition, no bald eagle fatalities have been reported during post-construction mortality monitoring at a wind farm site, supporting the assessment that negative turbine-related impacts are unlikely.

State-listed species observed during avian surveys or as incidental observations included 10 Level I and 7 Level II Species of Conservation Priority (Appendix C). Of these state-listed species, Franklin's gull (*Leucocephalus pipixcan*), black tern (*Chlidonias niger*), American white pelican, canvasback (*Aythya valisineria*), northern pintail (*Anas acuta*), northern harrier, Swainson's hawk (*Buteo swainsoni*), ferruginous hawk (*Buteo regalis*), and prairie falcon (*Falco mexicanus*) were observed flying at the height of the anticipated RSA. However, most had very low encounter rates, mostly due to the low overall numbers observed; these low encounter rates suggest a low probability of negative interactions with turbines.

Bats

Based on a desktop study (Tetra Tech 2009b) of the 46 bat species in the United States, 10 occur in North Dakota (ASM 2007); three of these are listed by the NDGFD as sensitive species (Hagen et al. 2005): western small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), and long-legged myotis (*Myotis volans*). None of the sensitive species are likely to occur in the Project Area. Six bat species are likely to occur: little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*), silver-haired bat (*Lasionycteris noctivagans*), big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), and hoary bat (*Lasiurus cinereu*) (Swier 2003; ASM 2007; Lacki et al. 2007; NatureServe 2008; WBWG 2009). When viewed on a regional scale, the Project Area contains less suitable bat habitat than the surrounding landscape, suggesting a low likelihood of occurrence for bat species across the Project Area (Appendix C).

7.16.2 Impacts

Activities such as road construction can destroy or disrupt wildlife habitat and allow for the introduction of unwanted plant species. In areas where disturbance is significant and natural regeneration of onsite plant propagules will not occur, the temporary loss of habitat may be

mitigated by reseeding of the affected areas with native prairie plant species. Displaced wildlife will likely relocate to nearby unaffected areas within the Project Area.

In addition to mortality associated with wind farms, concerns have been raised that some bird species may avoid areas near turbines after the wind farm is in operation (Drewitt and Langston 2006). For example, at the Buffalo Ridge wind energy facility near Lake Benton in Minnesota, densities of male songbirds were significantly lower in CRP grasslands containing turbines than in CRP grasslands without turbines (Leddy et al. 1999). Reduced abundance of grassland songbirds was found within 50 m of a turbine pad for a wind farm in Washington and Oregon, but the investigators attributed displacement to the direct loss of habitat or reduced habitat quality and not the presence of the turbines (Erickson et al. 2004). However, no studies have addressed whether or not these avoidance effects are temporary (i.e., the birds may habituate to the presence of turbines over time) or permanent.

7.16.3 Mitigative Measures

In terms of mitigative measures, CPV will:

- Minimize permanent impacts on wetlands during design and construction of turbines and associated infrastructure. This will help minimize wildlife impacts (e.g., waterfowl, waterbirds, bats);
- Minimize disturbance of native prairie during design and construction of turbines and associated infrastructure;
- Protect existing trees and shrubs where practicable. If impacts are unavoidable, CPV will replant trees and shrubs unless directed otherwise by the landowner;
- Re-seed non-cropland and pasture areas with a native seeding mix as recommended by USFWS and NRCS;
- Control noxious weeds in the immediate vicinity of the turbines, access roads, and associated facilities, immediately after construction and periodically for the life of the Project;
- Bury the electrical collection system connecting the turbines to the Project substation underground, if site conditions are favorable;
- Implement an Avian and Bat Protection Plan that will be developed with the USFWS and TVA;
- Set back Project wind turbines, substations, and buildings at least 0.25 mi from USFWS WPAs;
- Minimize disturbance of active nests of breeding birds (including raptors) found during Project construction; and
- Conduct pre-construction avian monitoring at the site (e.g., spring avian point counts). Pre-construction avian monitoring protocols are contained in Appendix F.

CPV has conducted environmental studies of the Project Area to aid in the placement of turbines, roads, and associated facilities to avoid or minimize impacts on wildlife and habitat. Also, the Project is coordinating with USFWS and NDGFD regarding avian monitoring and minimization of impacts

on WPAs and other areas. Spring avian use surveys are being conducted prior to Project construction to better document the use of the Project Area and surrounding areas. This may assist in identifying sites with elevated potential for avian/turbine interactions.

7.17 Rare and Unique Natural Resources

7.17.1 Description of Resources

No federal threatened and endangered species have been detected at the Project to date, and in the unlikely event that they do occur, potential impacts will be minimized by proposed avoidance and minimization measures. The Endangered Species Act (ESA) requires the protection of species that are federally listed as threatened or endangered. Significant changes to the habitats of these species, or projects that have the potential to result in "take," would require special permitting from the USFWS. According to the USFWS (2008b), of the federally listed species known to occur within North Dakota, only the whooping crane, piping plover, and gray wolf are listed in McIntosh County.

Whooping cranes (*Grus americana*), a regular spring and fall migrant in North Dakota, were first federally listed as threatened in 1967 and federally listed as endangered in 1970 (Canadian Wildlife Service and USFWS 2007). The primary threats to this species include loss of roosting and foraging habitat and collisions with power lines and fences. In North Dakota, whooping cranes have the potential to occur anywhere suitable feeding and roosting habitat is found; however, 94 percent of all documented whooping crane occurrences have been within a 200-mi corridor adjacent to the Missouri River (Austin and Richert 2001). The Project is located on the eastern edge of the whooping crane migration corridor. While suitable habitat is present at the Project, the likelihood of a whooping crane using the Project Area is low mostly due to the Project's location to the whooping crane's migratory corridor and better habitat located in the surrounding region (Tetra Tech 2009d). The whooping crane likelihood of occurrence report is included in Appendix C. The USFWS is working with the American Wind Energy Association and a group of wind developers, including CPV, to develop a bi-regional Habitat Conservation Plan.

The piping plover (*Charadrius melodus*) is a small, migratory member of the shorebird family. Piping plovers found in the northern Great Plains prefer habitat types that include mixosaline to hypersaline wetlands, rivers, reservoirs, and inland lakes that have beaches, sandbars, shoreline, and flats (USFWS 2002a). The piping plover is listed as a federally threatened species and a Level II Species of Conservation Priority in North Dakota, which indicates a moderate to high conservation priority (Hagen et al. 2005). The Project is located within the range of the piping plover and this species has been recorded in McIntosh County at nearby Salt Lake (Designated Critical Habitat by USFWS). However, no suitable piping plover breeding habitat exists within the Project Area.

Gray wolves (*Canis lupus*) became nearly extinct in the conterminous United States in the early part of the twentieth century. By December 2006, recovery programs had established 1,243 wolves in the Yellowstone area and the northern Rocky Mountains of Montana, Idaho, and Wyoming. The wolf's comeback nationwide is due to its listing under the ESA, resulting in increased scientific research and protection from unregulated killing, along with reintroduction and management programs and education efforts that increased public understanding of wolf biology and behavior. The Project is located in the gray wolf's historic range; however, the current range is far to the north in the

northeast corner of the state and Canada, and the Project does not fall within the boundaries of any recovery programs. The most recent recorded sighting in McIntosh County occurred in 1990 (Licht and Fritts, no date). In the unlikely event that a wolf occurs on the Project Area, construction activities will not affect wolf survival.

The bald eagle was detected during fall surveys and is federally protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act. The bald eagle is listed by the state of North Dakota as a Level II Species of Conservation Priority, which indicates a moderate to high conservation priority. This species is a permanent resident in the Dakotas and typically resides near large bodies of open water such as lakes, marshes, and rivers with adequate prey and tall trees for nesting and roosting. Bald eagles breed and over-winter in the Dakotas primarily along the Missouri River and other large rivers. Bald eagles have been documented to nest in North Dakota in western Burleigh and southern McLean Counties, along the Missouri River (Gomes no date). For breeding, they build large nests in tall trees or other sturdy structures, and are most often found in forested habitats close to water (Gomes no date). While bald eagles have been observed near the Project Area, they are unlikely to be nesting on or near the site due to the lack of suitable trees.

Native prairies serve as vital habitat for the Dakota skipper, a federal candidate species. The Dakota skipper is classified as a candidate species because, although its historic range once consisted of vast unbroken native prairies in north-central United States and south-central Canada, its current range is now limited to scattered remnants of high quality native prairies in Minnesota, North and South Dakota, and southern Manitoba (USFWS 2002b). The Dakota skipper population has declined due to sensitivity to disturbances, such as grazing and fire, and the loss of native prairie habitat. The Dakota skipper's classification as a federal candidate species does not entitle it to legal protection under the ESA; however, if a candidate species becomes listed as threatened or endangered, then protection for that species becomes mandated under the ESA. Immediately upon listing, any Projects that impact the Dakota skipper are not "grandfathered" or exempt from providing protection. The USFWS has indicated that the Dakota skipper has not been reported from McIntosh County (http://www.fws.gov/northdakotafieldoffice/county_list.htm); the Dakota skipper has been recorded in 16 counties in North Dakota, the closest being Stutsman County (approximately 30 mi north from its nearest point to McIntosh County). There is no Dakota skipper designated critical habitat in the county. However, of the area classified as native prairie within the Project Area during the prairie survey (Section 7.15), 52 percent (4,505 acres; 26 percent of the Project) was classified as either good or excellent potential habitat for the Dakota skipper based on the presence of key plant species (e.g., bluestem [*Andropogon* spp.], coneflower [*Echinacea* spp.], camas [*Zygadenus* spp.]; Tetra Tech 2009c). The largest portion of continuous prairie habitat classified as excellent for the Dakota skipper is located in the northwest portion of the Project Area (Tetra Tech 2009c).

7.17.2 Impacts

With respect to the whooping crane, the likelihood of occurrence is low due to the Project's location on the edge of the whooping crane migration corridor and the availability of suitable roosting and foraging habitat on the landscape. The primary threats to this species include loss of roosting and foraging habitat; indirect effects, such as avoidance, are undocumented.

It is unlikely that the Project will have any affect on the piping plover because there is no Designated Critical Habitat nor any suitable breeding habitat within the Project Area. Additionally, CPV has committed to a 0.5-mi setback of all Project facilities from the Critical Habitat southeast of the Project Area. The bald eagle, protected under the BGEPA, is known to use the area in low numbers, but bald eagle breeding activity will not likely be affected by this proposed action. It is unlikely that the Project will have any affect on the gray wolf because Project activities will not negatively affect wolf survival. The USFWS does not list the Dakota skipper as occurring in McIntosh County, nor is there any designated critical habitat in the county; therefore, it is unlikely that the Project will have a significant affect on that candidate species.

7.17.3 Mitigative Measures

In terms of mitigative measures for all of these federally listed and candidate species, CPV will:

- Re-seed disturbed areas with native seed mix;
- Minimize the construction footprint;
- Bury the electrical collection system connecting the turbines to the Project substation underground, if site conditions are favorable;
- Maintain a minimum of 0.5-mi setback from piping plover Designated Critical Habitat for Project facilities;
- Establish a 0.25-mi setback from USFWS WPAs for Project wind turbines, substations, and buildings;
- Implement an Avian and Bat Protection Plan that will be developed with the USFWS and TVA;
- Minimize impacts during preconstruction to sensitive areas such as wetlands to the extent possible;
- Prepare a manual in accordance with the BMPs prior to construction, which will then be provided to construction personnel;
- Train construction personnel on all BMPs; and
- Implement speed limits on Project access roads.

7.18 Summary of Impacts

Table 7-5 summarizes the resources that will be impacted as a result of the Project and the appropriate mitigation.

Table 7-5. Summary of Impacts and Mitigation

Resource	Impact	Mitigation
Socioeconomics	Overall beneficial due to increased tax base and infusion of wages, payments to landowners, and expenditures from Project construction and operations. Negative impacts are minor and limited to removal of land from agricultural use due to siting of Project components.	Net impacts will be positive. Landowner lease payments are expected to offset potential financial losses from the removal of land for agricultural production and substantially increase landowner income as a result of Project operation.
Land Use	Land use within the Project Area will largely remain unchanged. The Project is not expected to have a direct negative impact on property values.	CPV will work closely with the NRCS, USFWS, and landowners to minimize impacts on sensitive areas. To reduce potential impacts on occupied residences, turbines will be installed a minimum of 1,400 ft from occupied residences.
Public Services	There will be a minimal effect on the existing services and infrastructure in and nearby the Project Area.	Construction and operation of the Project will be conducted in accordance with all associated local, state, and federal permits and regulations and industry standards. In order to prevent adverse effects to the existing electrical transmission system, CPV will abide by NERC and MISO regulations and any requirements of their Interconnection Agreement that address electrical service. In its easement agreement with Project landowners, CPV commits to using reasonable efforts to correct any degradation to television reception. Additional mitigation measures will not be required.
Human Health and Safety	No impacts are anticipated.	Turbines will be lighted to comply with FAA requirements. To minimize exposure to EMFs, CPV will setback wind turbines from all occupied residences, bury collection lines to a depth of approximately 4 ft and fence off and place warning signs around the Project substation. CPV will also implement a number of security measures to reduce the chances of physical property damage or personal injury.
Shadow Flicker	Based on distance from turbines to occupied residences and the blade pass frequency of the turbines under consideration, no negative health effects to individuals with photosensitive epilepsy are anticipated.	The 1,400-ft setback of turbines from all occupied residences minimizes potential adverse shadow flicker impacts.
Sound	Potential acoustic impacts associated with Project construction and operation are anticipated to be consistent with similar wind energy projects and no negative health effects are anticipated.	The setback of at least 1,400 ft from all occupied residences minimizes potential adverse sound impacts on noise sensitive areas.
Visual	Visual impacts will occur; however, impacts will be based on subjective human responses.	CPV will work with landowners and agencies to site turbines. Existing infrastructure will be used wherever possible.
Cultural and Archaeological	CPV will avoid the one recorded archeological site and small number of other historic and architectural resources located within the Project Area; no impacts on these resources are anticipated.	CPV will continue consultations with SHPO under Section 106 of the NHPA concerning possible Project impacts on cultural resources. Mitigative measures may include: avoidance of ponds, stream drainages, mapped historic structures, marked cemeteries, and recorded archaeological sites; setbacks from extant roads and occupied buildings; and development of an *Unanticipated Discoveries Plan*.
Recreational Resources	The Project will not result in the removal or deterioration in functional value of nearby recreational facilities. Impacts will be limited to indirect, visual effects.	Wind turbines, substations and O&M buildings will be sited at least 0.25 mi from nearby WPAs in order to mitigate direct, physical impacts on recreational resources.
Land-based Economies	The Project will not have a significant impact on grazing land or woodlands. Construction of Project facilities will result in minimal removal of land from agricultural production for the life of the Project.	Landowners will be consulted to minimize impacts on prime farmland and other productive farmland areas. Once the Project layout has been finalized and the extent of impacts from construction and operation is known, additional mitigative measures, such as lease payments to landowners, will be implemented.
Soils	Impacts on soils will consist primarily of removal of areas from agricultural production by occupancy of Project components. The potential for soil loss due to erosion or impacts on hydric soils, such as compaction, is low.	CPV will restore disturbed areas to pre-construction conditions. To minimize soil impacts, CPV will implement environmental protection measures and BMPs in accordance with the SWPPP.

Resource	Impact	Mitigation
Geologic and Groundwater Resources	Impacts on geologic and groundwater resources will be minor. Blasting of bedrock is not anticipated to be required. Geologic hazards are unlikely to affect the Project. Minor, localized effects to shallow groundwater flow patterns may occur during Project construction.	If active commercial sand and gravel extraction facilities are present, they will be avoided. In the unlikely event that subsurface blasting is required, a blasting plan will be developed and implemented to keep the impacts localized and fracture the least amount of bedrock possible. Impacts on existing groundwater resources will be minimized by the siting of turbines at least 1,400 ft from existing occupied residences.
Surface Water and Floodplain Resources	The Project will be designed to avoid flooding areas, wetlands, and waterbodies to the extent practicable. The North Dakota State Water Commission reports that no identified floodplains are located in the Project Area. Therefore, it is unlikely that the Project will impact surface water or floodplain resources.	A NOI to obtain coverage under the NPDES general permit for storm water discharges associated with construction activity will be submitted to the NDDOH prior to construction of the Project.
Wetlands	Impacts on wetlands will be assessed once the on-site wetland field delineation is completed. Final turbine placement will be designed to minimize impacts on wetlands and ensure that the majority of wetland sites are left intact. CPV intends to avoid impacts on wetlands under USFWS wetland easements in the Project Area.	Wetlands will be avoided to the extent practicable during construction and operation of the Project. A Section 404 USACE NWP will be obtained if impacts on CWA jurisdictional waters are unavoidable and less than one-half acre. If applicable, NWP specific General and/or Regional Conditions prescribed for projects in North Dakota as set forth by the USACE and other applicable BMPs will be used during construction and operation of the Project. Permanent impacts on jurisdictional waters will be mitigated according to USACE requirements. If impacts on wetland easements cannot be avoided, the USFWS will be consulted regarding permits or letters of authorization that may be necessary.
Vegetation	Potential impacts on plant communities due to construction activities include proposed turbine locations, collector and transmission line routes, and access roads.	CPV will work closely with the USFWS and NDGFD while micrositing facilities to minimize impacts. A variety of additional mitigative measures will be implemented, as discussed in Section 7.15.3, including reseeding disturbed areas with native material following completion of construction activities.
Wildlife	Project construction may destroy or disrupt wildlife habitat. Displaced wildlife will likely relocate to nearby unaffected areas within the Project Area. Potential avian and bat collisions may occur; however, based on the 2009 fall avian survey, avian species with the highest encounter rates and greatest potential for negative turbine interactions are unlikely to experience population-level impacts.	A variety of mitigative measures will be implemented, as discussed in Section 7.16.3. These include implementing an Avian and Bat Protection Plan that will be developed with the USFWS and TVA. Spring avian use surveys will be conducted prior to Project construction to better document the use of the Project Area and surrounding areas. This may assist in identifying sites with elevated potential for avian/turbine interactions.
Rare and Unique Natural Resources	No federal threatened and endangered species have been detected at the Project to date, and in the unlikely event that they do occur, potential impacts will be minimized by proposed avoidance and minimization measures. Federally listed species known to occur in McIntosh County include the whooping crane, piping plover and gray wolf. The likelihood of impacts on each of these species is low, as discussed in Section 7.17.2. The bald eagle, which is protected under the BGEPA, was detected in low numbers during the 2009 fall avian survey; however, bald eagle breeding activity will not likely be affected by this proposed action. The Project will impact native prairie, which serves as vital habitat for the Dakota skipper, a federal candidate species. However, Dakota skipper is not listed by USFWS as a species found in McIntosh County.	CPV has committed to a 0.5 mi setback of all Project facilities from the piping plover Designated Critical Habitat southeast of the Project Area. Additional mitigative measures are detailed in Section 7.17.3, including burying collection lines to reduce collision risk to birds including the whooping crane, piping plover, and bald eagle. In the unlikely event of a gray wolf occurring within the Project area, Project construction activities will not impact wolf survival.

8. PUBLIC COORDINATION

Public coordination and interaction is a key component to Project success. CPV has been actively engaged in the Project community since December 2007, including interactions with private landowners and local agencies and authorities. To date, CPV has engaged the McIntosh County Commissioners, the McIntosh County Zoning Board, the Mayors of Ashley and Lehr, the Ashley Economic Development Coordinator, the Wishek Job Development Authority, the McIntosh County Wind Energy Committee, LLC, and many other McIntosh County Officials. On February 3, 2010, CPV received a letter from the McIntosh County Commissioners indicating that no county permits are required for wind projects in McIntosh County (Appendix E). CPV is committed to keeping key stakeholders, including county officials and participating private landowners, engaged as the Project progresses.

CPV and its representatives have also engaged state and federal agencies to inform them of the Project and identify and address potentially sensitive issues. In addition to key federal stakeholders (e.g., USFWS, USACE, etc.), CPV has notified and requested input from the 21 designated state agencies and officers identified by NDAC 69-06-01-05. Refer to Section 10.11 and Appendix E for comments received from these agencies and officers.

9. IDENTIFICATION OF POTENTIAL PERMITS/APPROVALS

The federal and state permits or approvals that have been identified as potentially required for the construction and operation of the Project are shown in Table 9-1. Permits dependent on the final site layout will be applied for after receiving PSC approval, but prior to construction.

Table 9-1. Potential Permits and Approvals Required for Construction and Operation of the Proposed Facility

Agency	Type of Approval	Status	Need
Federal Approvals			
TVA	National Environmental Policy Act (NEPA) Review	2	NEPA requires federal agencies to integrate environmental values into their decision-making process by considering the environmental impacts of their proposed actions and reasonable alternatives through an Environmental Assessment (EA) or Environmental Impact Statement. TVA is required to perform NEPA review due to their execution of a PPA with CPV for power generated by the Project.
	NHPA Section 106 Consultation	2	NHPA compliance is required as a component of NEPA review. Under Section 106, federal agencies must take into account the effects of their undertakings upon historically-significant districts, sites, buildings, structures, and objects and consult with the SHPO.
	Archeological Resources Protection Act (ARPA), Archeological Investigation Report	3	ARPA protects archeological resources and sites that are located on federal property and Native American tribal lands. If construction or operation of the Project is likely to impact archaeological resources, compliance may be required as a component of NEPA review.
	ESA Section 7 Consultation	2	Section 9 of the ESA prohibits the take of an endangered species. With a federal action, a Section 7 consultation with the USFWS is required under NEPA review by the lead agency.
USFWS	Compatibility Analysis of Disturbed Easements	3	If constructing in wetlands within wetland easements or in WPAs, then compatibility analysis by USFWS is required.
	Right of Way Permit	3	If use is compatible, then a Right of Way Permit may be required for permanent disturbance in wetlands within wetland easements.
	Special Use Permit	3	If use is compatible, then a Special Use Permit is required for temporary disturbance in wetlands within wetland easements.
USACE	CWA, Section 404 Permit (NWP)	3	Permit required for fill in jurisdictional waters of the U.S. Further investigation is required to determine USACE jurisdiction of wetlands within the Project Area.

Agency	Type of Approval	Status	Need
USEPA	Oil Pollution Prevention Regulations (40 CFR 112.5), SPCC Plan	3	Plan is required if aggregate storage capacity of 1,320 gallons of oil on site with the potential to discharge to waters of the U.S.; however, qualified Tier 1 facilities can self-certify SPCC Plan if less than 10,000 gallons is stored aboveground onsite. Assessment of on site oil storage during both construction and operations of the facility.
FAA	Form 7460-1, Notice of Proposed Construction or Alteration	1	Notice and approval are required for structures over 200 ft in height. FAA approval of lighting and marking of turbines is required.
FERC	Federal Power Act, Section 205 rate approval	2	Prior to commissioning of the facility, rates and charges for selling electric energy must be reviewed and authorized by FERC. CPV will apply for market-based rate authorization.
FERC	Federal Power Act, Section 201	2	CPV will file for Exempt Wholesale Generator Status.
State of North Dakota			
PSC	Certificate of Site Compatibility	1	LOI and CSC application required for construction of generation facility over 60 MW in size.
NDDOH, Division of Water Quality	NPDES Permit: General Construction Storm Water	2	NOI required for disturbance of over 1 acre of land for minor projects or greater than 5 acres for major projects. Must prepare a SWPPP.
	Section 401 Water Quality Certification	3	Applicants receiving a Section 404 permit from USACE are required to obtain a Section 401 Water Quality Certification from the state.
NDDOH	Septic Tank and Drainfield Permit	2	Required for installation of septic system at O&M facility.
NDDOT, North Dakota Highway Patrol	Overheight/Overweight Permit	2	Permit required for hauling construction equipment and materials on State Highways.
	Trip Permit/Fuel Permit	3	A trip permit and fuel permit will be required if the trucking company is not currently registered in the state.
NDDOT	Driveway Application and Permit Form SFN 5918 (Rev. 10-2008)	3	Permit required for construction of access roads from State Highways.
	Utility Occupancy Application and Permit Form SFN 7995 (Rev. 11-2008)	3	Permit required for utilities placed within or crossing State Highway rights-of-way.
Local Permits			
No applicable local permits (McIntosh County, townships) have been identified. CPV has entered into a road agreement with McIntosh County.			

* Status Explanation: 1 Applied and/or Decision Pending
2 In Progress or Will Apply Once Certificate is Received
3 Final Layout will Determine Whether Permit/Approval is Needed

10. FACTORS CONSIDERED

The Act lists 11 factors to guide the PSC in the evaluation and designation of the site of the facility.

10.1 Public Health and Welfare, Natural Resources, and the Environment

Research and investigations relating to the effects of the proposed Project on public health and welfare, natural resources, and the environment are discussed in the preceding sections. Section 7.18 provides a summary of these effects and the proposed mitigation measures intended to minimize them.

10.2 Technologies to Minimize Adverse Environmental Effects

In order to minimize adverse environmental effects, CPV will use the most recent technologies available at the Ashley Wind Energy Project. The use of current wind turbine technologies, including the equipment and siting tools, will optimize wind and land resources.

10.3 Potential for Beneficial Uses of Waste Energy

No waste energy will be created by the Project; therefore, this factor is not applicable.

10.4 Unavoidable Adverse Environmental Effects

Unavoidable adverse environmental effects associated with the Project consist primarily of the placement of Project facilities and permanent use of land within the site. Despite the overall size of the Project Area, the turbines and other wind farm infrastructure will occupy only approximately 0.5 percent of this area. According to the proposed Project layout, which is subject to change during micrositing, it is anticipated that the approximate amount of permanent impact will be: approximately 16 acres for the turbines; 55 acres for new gravel access roads; and 3.9 acres for other permanent impacts, such as a substation site, O&M building site, and up to four permanent met towers. Total permanent land disturbance for the Project is expected to be up to 73 acres. An additional 261 acres will be disturbed by temporary impacts such as the underground electrical collection lines, temporary crane paths, temporary batch plant and a centralized laydown area for construction staging. In addition to the physical footprint of the facilities, the Project will also result in a change to the visual character of the site. These impacts will be based on subjective human responses to the alteration in the viewshed.

10.5 Alternatives to the Proposed Site

Alternative renewable energy sources are discussed in Section 2.2. CPV believes that the proposed Project Area is the most viable option due to its energetic wind resources, accessibility to the existing electrical grid, and positive community reception; therefore, alternative project areas were not explicitly considered. CPV is nonetheless committed to maintaining flexibility on the proposed site layout and working closely with landowners and regulatory agencies to examine all feasible alternatives to the site layout.

10.6 Irreversible and Irretrievable Commitment of Natural Resources

Irreversible and irretrievable commitment of natural resources refers to the use of nonrenewable resources that, as a result of their proposed use, will be unavailable to future generations. These commitments are irreversible in the sense that the resources cannot be replaced within a reasonable time frame. They are also irretrievable because they involve a loss in value or utility of the affected resources that cannot be restored. The Project involves very few commitments of natural resources that are irreversible and irretrievable, limited primarily to the construction phase of the Project.

Nonrenewable resources that will be used during the construction of the Project include aggregate resources, concrete, steel, and petroleum fuel. The Project's access roads will consist of aggregate (i.e., gravel), while concrete will be used for the foundations of multiple Project facilities, most notably including turbines. Each turbine will be constructed primarily of steel. Lastly, hydrocarbon fuels will be used during construction by construction and delivery vehicles, as well as construction machinery.

10.7 Direct and Indirect Economic Impacts

Overall, the Project will have a significant net positive impact.

Construction of the Project will not cause additional impacts on the industry of the area. The areas of permanent impact (approximately 73 acres) will be removed from their current use for the lifetime of the Project, primarily resulting in a loss of agricultural land. In general, landowners will be able to continue to use their property for agriculture around turbine locations. Properties with Project facilities will be entitled to compensation, as established by individual easement agreements.

In the long-term, the Project will result in positive impacts on the local economy. Construction and operation of the Project will provide an infusion of money into the local economy through a number of different avenues. The Project will increase the tax base of McIntosh County, improving the local economy. In addition, Project landowners whose land is utilized will receive payments throughout the life of the Project. This will further contribute to strengthening the local economy and its tax base. During construction, local contractors will be used to the extent practicable, resulting in wages and salaries that will directly benefit the regional economy. Wages and salaries paid to non-local contractors will also likely benefit the regional economy through expenditures for supplies, lodging, fuel, and other services. During operation, there may be as many as 12 full-time dedicated personnel on-site to perform O&M services. Local skilled labor will be utilized to the extent practicable to staff these positions. Finally, the construction of the Project may contribute to the development of wind-related businesses such as blade testing facilities and specialized operations and maintenance companies in the area which will further contribute to the economic growth of the region.

10.8 Existing Development Plans of the State, Local Government and Private Entities at or in the Vicinity of the Site

CPV is unaware of any conflicts with existing development plans of state, local government, or private entities at or in the vicinity of the site.

10.9 Effect of Site on Cultural Resources

CPV conducted a Survey for the Project to identify previously reported cultural resources within the Project Area. The Survey identified a small number of previously reported archeological and historic resources. These resources included at least four mapped historic cemeteries, a historic church, a historic school, and one prehistoric archeological site consisting of a series of Native American stone circles. No historic architectural resources or NRHP-listed properties have been recorded in the Project Area. CPV will avoid the previously reported sites; therefore, they will not be affected by construction or operation of the Project.

The small number of reported archeological sites and historic architectural resources in the Project Area reflect the rarity of archeological and architectural surveys. There is, however, potential for previously unreported prehistoric Native American archeological sites and historic Euro-American archeological and architectural resources in the Project Area.

CPV will continue supporting TVA's consultations with SHPO under Section 106 of the NHPA concerning possible Project impacts on cultural resources. Mitigative measures are detailed in Section 7.8.3.

10.10 Effect of Site on Biological Resources

Biological resources that may be affected by the Project include wetlands, native plant communities and wildlife. CPV will seek to avoid or minimize impacts on these resources through additional studies, including field wetland delineations and pre-construction avian surveys, as well as various mitigative measures, as detailed in Sections 7.15.3, 7.16.3, and 7.17.3. CPV will work closely with the USFWS and NDGFD to microsite Project facilities in a manner that minimizes potential impacts on biological resources to the greatest extent practicable.

10.11 Agency Comments

It is CPV's business practice to seek agency input early and often on their development projects. For this Project, CPV met with a number of interested agencies, including the PSC, USFWS, NDGFD, the Department of Commerce, North Dakota Aviation Commission, among others, in advance of this application filing. Additionally, CPV requested input from 33 federal, state, and local agencies and authorities on the development of the proposed Project through a letter posted on January 8, 2010 (Appendix E). A total of 12 agencies provided letter responses to CPV's inquiry letters; two additional agencies responded via telephone call. Agency responses are summarized below. A matrix of these 33 agencies contacted and when their responses were received, along with copies of correspondence, are included in Appendix E. Appendix E also contains a letter from the McIntosh County Commission indicating there are no permitting requirements specific to the County for this Project.

10.11.1 Federal Aviation Administration

The FAA responded to CPV's inquiry in a letter dated February 2, 2010. The FAA's response advised CPV to file a Notice of Proposed Construction or Alteration, to contact FAA technical operations regarding possible impacts on aircraft navigation and communication equipment, and to avoid creating hazardous wildlife attractants in the design, construction, and operation of the

Project. The FAA also requested that CPV include the Ashley Municipal Airport in the Project planning process. As discussed in Section 7.5.3, the FAA issued a "Determination Of No Hazard To Air Navigation" with respect to all turbines on February 24, 2010 (Appendix D).

10.11.2 USDA Farm Service Agency

The USDA FSA responded to CPV's inquiry in a letter dated January 25, 2010. The FSA's responses provided guidelines for potential effects or transactions involving CRP land or FSA Farm Loan Program (FLP) borrowers. For reference, the letter also included FSA-2060 "Application for Partial Release, Subordination, or Consent," FSA Handbook 4-FLP Par. 196 A and B, and Notice FLP-628.

10.11.3 USEPA

In a letter dated February 5, 2010, the USEPA responded to CPV's inquiry. USEPA's letter acknowledged the receipt of the CPV inquiry letter, but stated that the information it presented was insufficient to determine whether any review would be necessitated the agency. The letter indicated that the USEPA would provide additional evaluation if an NEPA EA or Environmental Impact Statement were initiated.

10.11.4 North Dakota State Historical Society

The State Historical Society of North Dakota responded to CPV's inquiry in a letter dated January 13, 2010. The letter identified the "potential for unrecorded and recorded properties in a variety of physiographic settings in the overall study area," and recommended that CPV conduct a Class I Cultural Resources Inventory. The letter indicated that the necessity and extent of follow-up investigations would be determined based on the Class I survey results and, once developed, the Project layout.

10.11.5 North Dakota Parks and Recreation Department

The NDPRD responded to CPV via a letter dated January 29, 2010. The letter stated that the Project will not affect state park lands or Land and Water Conservation Fund recreation projects. The department also provided results of a review of the North Dakota Natural Heritage database, which indicated records for the occurrence of piping plover in a section adjacent to the Project Area. The department recommended that any disturbed areas be revegetated with native species and that CPV conduct pre-construction and post-construction avian and bat monitoring surveys.

10.11.6 North Dakota Office of Attorney General

The North Dakota Office of Attorney General responded via a letter dated January 25, 2010. The letter acknowledged the receipt of CPV's inquiry letter and stated that the office is prohibited from providing legal assistance to private businesses or reviewing private legal matters. No input on the Project was provided.

10.11.7 North Dakota Geological Survey

The NDGS responded to CPV via a letter dated January 12, 2010. The letter stated that no permits are required from the NDGS, and provided a summary of geological information for the Project Area and references for additional information.

10.11.8 North Dakota Department of Health

The NDDOH provided input to CPV in a letter dated January 26, 2010. The NDDOH provided comments regarding fugitive dust emissions during construction, effects to waterbodies, storm water runoff, and noise. The department also provided guidelines for minimizing degradation to waterways during construction.

10.11.9 North Dakota Department of Transportation

CPV received a response from the NDDOT in a letter dated January 21, 2010. The NDDOT informed CPV that the segment of North Dakota Highway 13 between Wishek and Lehr is scheduled for reconstruction during 2011 and 2012, which may temporarily prevent transport of over dimensional loads. The department also stated that additional permits may be needed if the Project crosses a state highway with a power line or if any work needs to be done on a highway right-of-way.

10.11.10 North Dakota State Water Commission

In a letter dated February 17, 2010, the North Dakota State Water Commission provided comments on the Project. The letter stated that the Project is not located in an identified floodplain or near any sole-source aquifers, and advised that all waste material from the Project be disposed of properly and not placed in identified floodway areas.

10.11.11 North Dakota Department of Labor

The North Dakota Department of Labor provided a written response to CPV's inquiry in a letter dated January 13, 2010. The letter stated that the Department of Labor could not identify any concerns and took no position on the Project.

10.11.12 Job Service North Dakota

In a letter dated January 13, 2010, Job Service North Dakota stated that it had no comments regarding the Project and that no applicable permits are required from that office.

10.11.13 Mayor of Ashley

The Mayor of Ashley responded to CPV's letter through a telephone call placed on January 12, 2010. Mayor Donald Kosel expressed that the City of Ashley's only concerns pertaining to the Project are construction traffic on city streets and the potentially insufficient capacity of existing hotels and motels in the city for construction workers. Mayor Kosel indicated that CPV had already initiated consultation with the city to address these issues.

10.11.14 McIntosh County Commissioner

Mr. Ron Meidinger, McIntosh County Commissioner, responded to CPV's letter through a phone call placed on January 27, 2010. Commissioner Meidinger stated that he would request that the county's energy committee draft a letter response to CPV stating that the County Commissioners do not have any particular concerns or comments regarding the Project, but that they will participate in Project planning and help in any manner they can. CPV has not yet received the aforementioned letter. In a separate correspondence, the McIntosh County Commission provided CPV with a letter indicating there are no permitting requirements specific to the County for this Project (Appendix E).

11. QUALIFICATIONS OF CONTRIBUTORS

NAME PROJECT ROLE	EDUCATION AND PROFESSIONAL EXPERIENCE
JOHN HAFNER Manager CPV	John Hafner has been a member of CPV since 2007 and has been directly involved in the Project since its inception. He has been especially active in the northern Midwest and is responsible for projects in North Dakota and Minnesota. John has monitored and participated in multiple MISO task forces and is CPV's representative in the development of a Bi-regional Whooping Crane Habitat Conservation Plan. Previously, John served as an Officer in the United States Navy, leaving as a Lieutenant (O-3). While serving, John was a Reactor Electrical Division Officer aboard USS RONALD REAGAN (CVN-76), where his watch-standing duties included directing the O&M of a Naval nuclear power reactor, steam plant and propulsion system. John also served as the Anti-Submarine Warfare Officer aboard USS COLE (DDG-67) where his watch-standing duties included Officer of the Deck, a senior at-sea watch directing all operations of the ship. John holds a Masters in Engineering Management from Old Dominion University and a Bachelor of Arts from the University of Rochester, dual-majoring in Astrophysics and Religion.
GENER GOTIANGCO Vice President CPV	Gener Gotiangco has been with CPV since 2005 and has 21 years of experience in all phases of thermal and renewable project development, construction, and operations and will have responsibility for operations of the Ashley Wind Energy Project. Gener has been involved in over a dozen thermal power projects (development, construction, or operations) and two operational wind projects (development, construction, and operations). On those projects, Gener has taken direct responsibility for managing 2,400 MW of operating thermal plants, technical and commercial lead on project development and construction activities, and was actively engaged in the development to operations life cycle of two active wind turbine projects. Previously, Gener was employed at PG&E Generating Company where he held positions within the organization's Project Engineering and Development Group. He was actively involved in project engineering, development, acquisition, and operations. Prior to that, Gener was employed by Bechtel Power Corporation where he was involved in the design and construction of numerous thermal power projects in the United States and abroad. Gener holds a Bachelor of Science Degree in Mechanical Engineering from Virginia Polytechnic Institute and State University and has a Professional Engineer's License.
JOHN MURPHY Senior Vice President Construction CPV	John Murphy has 25 years of experience managing the successful installations of power plants throughout the United States and will have overall responsibility for construction of the Ashley Wind Energy Project. John has experience in bidding and negotiating EPC Power Contracts and has negotiated 15 turnkey EPC Contacts throughout his career. John has successfully installed power plants throughout all regions of the United States in both union and non-union environments, and has also installed several facilities throughout Latin America.

NAME PROJECT ROLE	EDUCATION AND PROFESSIONAL EXPERIENCE
	As a Senior Executive for Gemma Power Systems, a national EPC Contractor, John was responsible for profit and loss on the turnkey installation of 10 power projects ranging in size from 50 MW peaking facility to 600 MW combined cycle facility, totaling more than 2,500 MW. All of these projects were completed on time, under budget and went on to operate reliably. John has been responsible for installing the prime movers of every major equipment manufacturer, including ABB, Siemens, Westinghouse, and GE, both aero derivative and frame machines. Throughout his career John has been dedicated to the successful completion of EPC power projects and has performed in the role of every vital position within an EPC contractor organization, starting out with Worley Parsons, as a mechanical field engineer, and subsequently fulfilling the roles of project engineer, construction manager, commissioning manager, project manager, project executive, EPC contract negotiator and most recently as a Senior Executive with Gemma Power Systems, responsible for all project operations. John holds a Bachelor of Science Degree in Mechanical Engineering, from the University of Notre Dame, and a Bachelor of Arts from St. Anselm College.
SEAN FINNERTY Senior Vice President Renewable Development CPV	Sean Finnerty has been a member of CPV since its inception and has taken a variety of leadership roles for the Company including project development, marketing, portfolio acquisitions, and asset management. Currently, Sean is responsible for all aspects of the Company's renewable energies program including operation of CPV Renewable Energy Company and the Ashley Wind Energy Project. He provides strategic direction for the program, overseeing project developers, leading all major commercial negotiations and directing investment recommendations related to renewable energy endeavors. Sean holds an MBA from the Sawyer School of Management at Suffolk University and a BS in Resource Economics from the University of Massachusetts at Amherst.
ROBERT BURKE General Counsel CPV	Robert has over 20 years of experience representing energy companies in the United States and abroad in numerous contexts, including complex project developments, acquisitions, operations, regulatory matters and financings. As General Counsel, Robert oversees the legal representation of the Company, including its compliance program, and participates in the broad spectrum of the Company's project development activities. Previously, Robert was an officer of PPL Corporation, serving as Vice President and Chief Counsel for PPL Global, which was responsible for the development, acquisition and financing of energy resources domestically and throughout Europe and Latin America. Prior to joining PPL, Robert was counsel for Mission Energy and was lead counsel in the development and related financings of electric generation projects in New York and Virginia. Prior to that, Robert was an attorney with Hunton & Williams, LLP, where he represented energy companies before the Federal Energy Regulatory Commission. Robert holds a JD and MA from the University of Virginia, and a BA from Providence College.

NAME PROJECT ROLE	EDUCATION AND PROFESSIONAL EXPERIENCE
MOLLIE SMITH Attorney for Applicants Fredrikson & Byron, P.A.	Mollie Smith assists clients with a variety of energy-related matters, including federal, state, and local permitting for wind energy conversion facilities and transmission facilities in North Dakota and Minnesota, as well as other states. Mollie has been providing legal assistance to CPV with respect to the Ashley Wind Energy Project since mid-2008. Mollie holds a J.D. from the University of Minnesota, a M.A. from Colorado State University, and a B.A. from Northern State University.
ERIKA ROBERTS Project Manager Tetra Tech EC, Inc.	Erika Roberts has over 9 years of experience in the environmental consulting field and works directly with clients, subcontractors, state and federal agencies, and local communities in the preparation of environmental studies and permit application submittals. She leads and directs internal teams in various technical disciplines to support environmental due diligence, critical issues analyses, and permitting efforts. As a Project Manager at Tetra Tech EC, Inc., Erika focuses on supporting wind power development projects; however, she also has experience in a range of areas including power generation facility permitting, audits and due diligence, natural gas transmission and storage, electric transmission and distribution, and pollution prevention programs. Erika has been supporting the Ashley Wind Energy Project since April 2009, providing comprehensive environmental studies and permitting support for CPV. She has consulted for Competitive Power Ventures, Inc. since 2001, managing wind energy environmental work for them under CPV Wind Ventures and then CPV REC since 2005 (involved with approximately 20 wind projects at various stages of development). Erika holds a Bachelor of Arts in Environmental Science from the University of Virginia.
JASON JONES, PH.D. Senior Ecologist Tetra Tech EC, Inc.	Jason Jones is the senior ecologist supporting the Ashley Wind Energy Project and has served as the task lead and senior reviewer of the 2009 Fall Avian Report, native prairie survey, bat and whooping crane likelihood of occurrence reports, and wildlife and avian sections of this application. Jason has been with Tetra Tech for 2 years and has over 17 years experience as a wildlife ecologist, with a focus on avian and bat ecology and natural resource management. Jason holds a Ph.D. in Biology from Queen's University and a B.S. in Biology and Environmental Studies from the University of Victoria. He has published more than 25 peer-reviewed scientific publications and has given dozens of invited seminars and scientific conference presentations on avian and bat ecology.
SCOTT GLAUBITZ, P.E., P.L.S. President B.S.E. Consultants, Inc.	Scott Glaubitz has over 27 years experience in designing and providing construction observation for civil engineering projects. He is licensed as a professional engineer in ten states. Scott has provided engineering assistance to Competitive Power Ventures, Inc. on two power plant projects and approximately 10 wind farm sites. Scott holds a Bachelor of Civil Engineering from the University of Minnesota and is President of B.S.E. Consultants, Inc. located in Melbourne, Florida.

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Figures

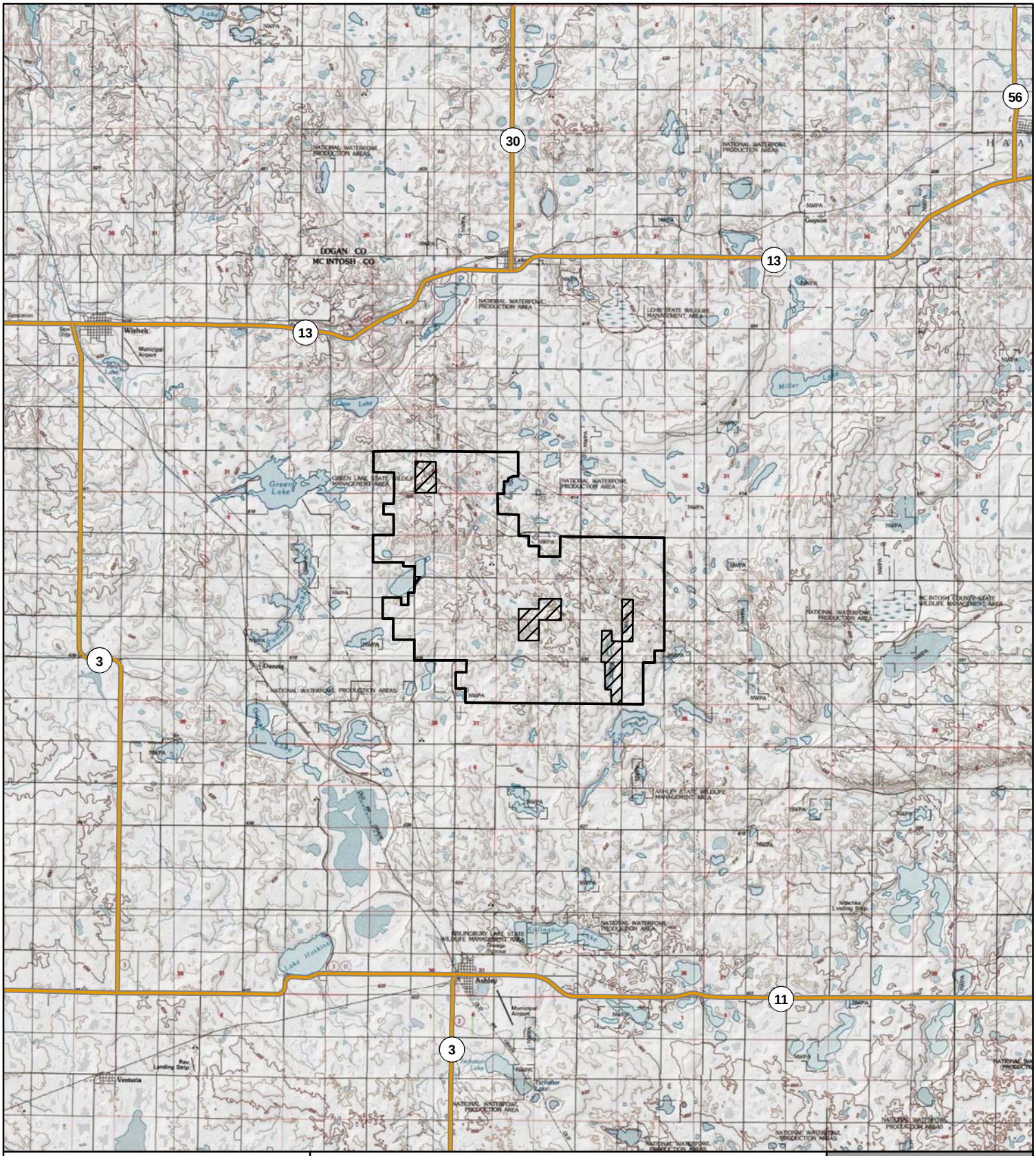


Figure 1
Project Vicinity

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure1_Project_Vicinity.mxd

Figure 2
Project Location Map (Aerial)

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

- Project Area
- Non-Leased Area
- Proposed Turbine
- Proposed Permanent Met Tower
- Proposed Access Road
- Proposed Temporary Crane Path
- Proposed Buried Collection Line
- Proposed Laydown/O&M Building
- Proposed Temporary Batch Plant
- Proposed Substation

N

0 0.5 1 Miles

Source:USDA NAIP, 2006. Mortenson electrical layout 2-25-2010, Turbine layout 4-21-2010, Road layout 5-6-2010.

Mortenson

North Dakota

Project Location

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure2_Location_Aerial.mxd

Figure 3
Project Location Map (Topographic)

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

- Project Area
- Non-Leased Area
- Proposed Turbine
- Proposed Permanent Met Tower
- Proposed Access Road
- Proposed Temporary Crane Path
- Proposed Buried Collection Line
- Proposed Laydown/O&M Building
- Proposed Temporary Batch Plant
- Proposed Substation

N

0 0.5 1 Miles

Source:USGS 24k Quads, 1985. Mortenson electrical layout 2-25-2010, Turbine layout 4-21-2010, Road layout 5-6-2010.

Mortenson

North Dakota

Project Location

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure3_Location_Topo.mxd

Figure 4
Exclusion and Avoidance Areas

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

- Project Area
- Non-Leased Area
- Proposed Turbine
- Proposed Permanent Met Tower
- Proposed Access Road
- Proposed Temporary Crane Path
- Proposed Buried Collection Line
- Proposed Laydown/O&M Building
- Proposed Temporary Batch Plant
- Proposed Substation
- Cultural Resource Feature
- Archeological Site
- NWI Wetlands
- State Land
- State Wildlife Management Area
- Piping Plover Critical Habitat with 0.5 mile setback from all project features
- USFWS Waterfowl Production Area with 0.25 mile setback from project standing structures such as turbines, substations and buildings, but not roads or buried electrical lines
- Prime Farmland
- Prime Farmland if Drained
- Farmland of Statewide Importance

N

0 0.5 1 Miles

Source:USFWS, NDGIS, NRHP, NWI, NRCS, Mortenson electrical layout 2-25-2010, Turbine layout 4-21-2010, Road layout 5-6-2010.

Mortenson

North Dakota

Project Location

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure4_Exclusion_and_Avoidance.mxd

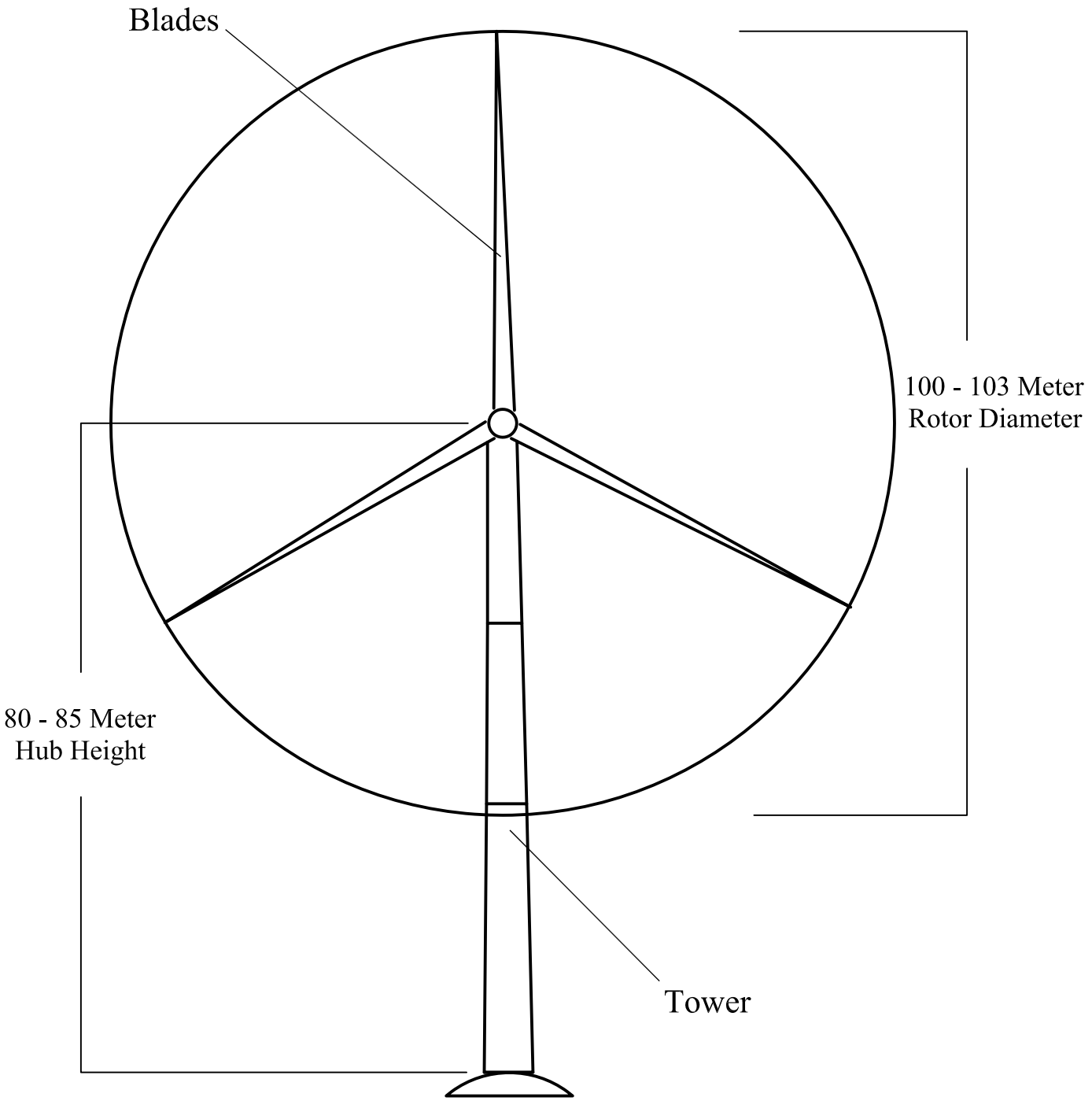


Figure 5
Wind Turbine Design Features

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

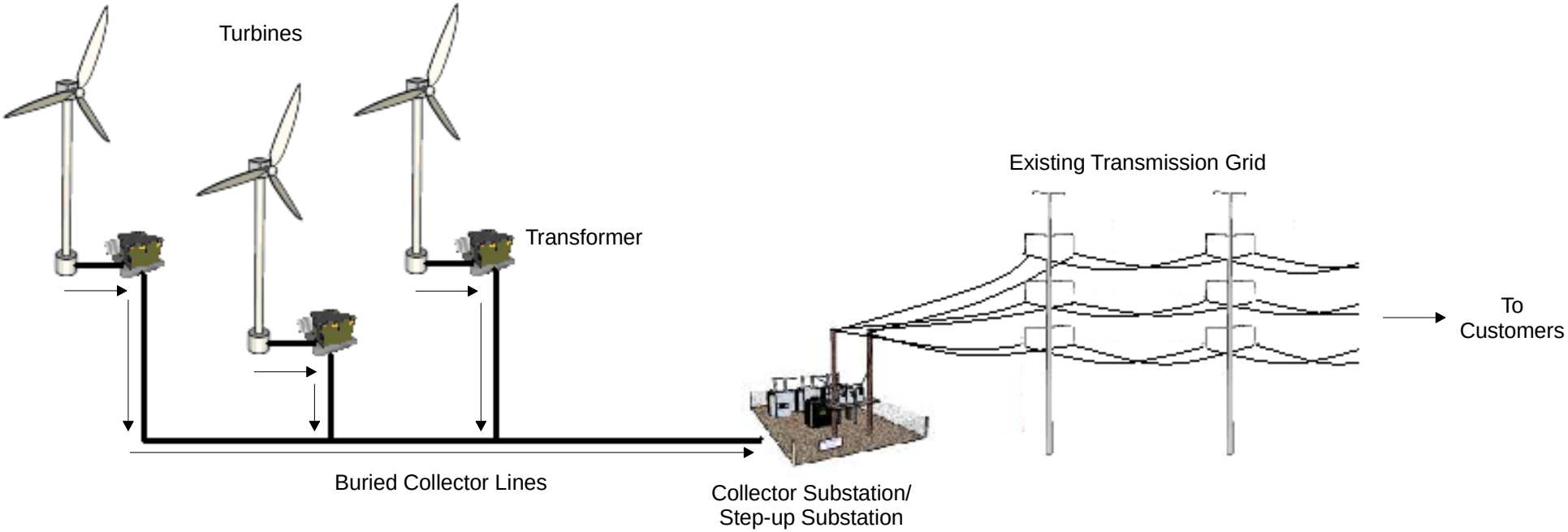


Figure 6
Path of Energy Diagram

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

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Figure 7
Proposed Project Layout

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area

Non-Leased Area

Existing MDU 230-kV Transmission Line

Temporary Impacts

Proposed Buried Collection Line

Proposed Temporary Crane Path

1 Proposed Permanent Met Tower

E6 Turbine Laydown

Permanent Impacts

Proposed Access Road

1 Proposed Permanent Met Tower

E6 Turbine Area

N

0 0.5 1 Miles

Source: Mortenson electrical layout, 2-25-2010, Turbine layout 4-21-2010, Road layout 5-6-2010.

Mortenson

North Dakota

Project Location

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure7_Layout.mxd

Figure 8
Public Lands and Easements

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

- Project Area
- Non-Leased Area
- Proposed Turbine
- Proposed Permanent Met Tower
- Proposed Access Road
- Proposed Temporary Crane Path
- Proposed Buried Collection Line
- Proposed Laydown/O&M Building
- Proposed Temporary Batch Plant
- Proposed Substation
- USFWS Waterfowl Production Area Area with 0.25 mile setback from project standing structures such as turbines, substations and buildings, but not roads or buried electrical lines
- State Wildlife Management Area
- USFWS Wetlands Easement *
- USFWS Grassland Easement
- State Land
- PLOTS (Private Lands Open to Sportsmen)

* USFWS Wetlands Easement only applies to defined wetlands within easement areas

N

0 0.5 1 Miles

Source:USFWS, NDGF, NDGIS, Mortenson electrical layout 2-25-2010, Turbine layout 4-21-2010, Roads layout 5-6-2010.

Mortenson

North Dakota

Project Location

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure8_Public_Lands_and_Easements.mxd

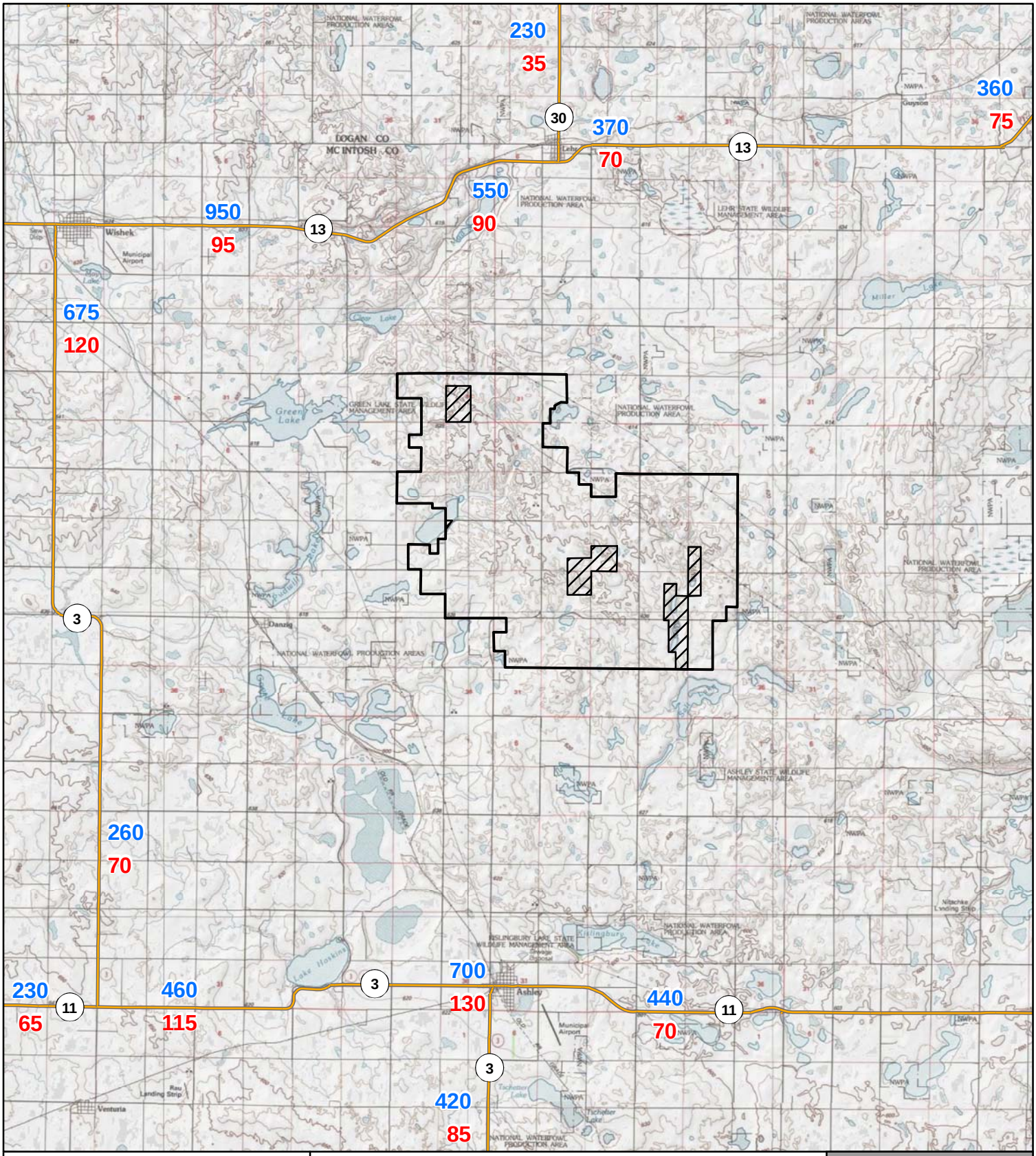


Figure 9
Average Annual Daily Traffic

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area

Non-Leased Area

550 Average Annual Daily Traffic

90 Commercial Truck Traffic

N

0 1 2 Miles

Source: NDDOT, 2008 totals.

North Dakota

Project Location

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure9_Average_Traffic.mxd

Figure 10
Environmental and Siting Considerations

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

- Project Area
- Non-Leased Area
- Proposed Turbine (not to scale)
- Proposed Permanent Met Tower
- Proposed Access Road
- Proposed Temporary Crane Path
- Proposed Buried Collection Line
- Proposed Laydown/O&M Building
- Proposed Temporary Batch Plant
- Proposed Substation
- Occupied Structure
- Unoccupied Structure
- Unknown Structure
- Microwave Beam Path (WCFZ)
- Native Prairie
- USFWS Grassland Easement
- Turbine Setback

Turbines will not be built within 1,400 ft of occupied structures or within 1.1x blade tip height from property boundaries, overhead transmission lines, or the center of county, state or federal road right-of-ways. Assuming a GE 2.5xl turbine model, 1.1x blade tip height is equal to a 150.2 m (492.5 ft) setback.

Aviation Systems Sectors

- Sector B - 2733' AMSL
- Sector B1 - 2733' AMSL

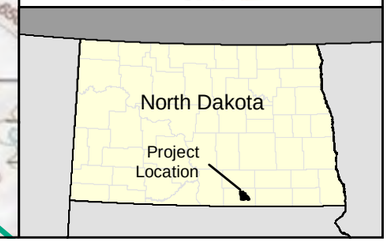
Note: Environmental and siting considerations illustrated here are in addition to, not inclusive of, the setbacks depicted under Figure 4. Exclusion and Avoidance Areas. Exclusion and avoidance area setbacks are often more stringent and take precedence over additional environmental and siting considerations.

N

0 0.5 1 Miles

Source:USFWS, NDGIS, NRHP, ComSearch, Aviation Systems Inc, Mortenson electrical layout 2-25-2010, Turbine layout 4-21-2010, Road layout 5-6-2010.

Mortenson Construction



Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure10_Constraints.mxd





Figure 11
Photos of Typical Landscape

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Source: Tetra Tech Site Visit - August 5, 2009

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure11_Site_Photo.mxd

Figure 12
Land Cover

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

- Project Area
- Non-Leased Area
- Proposed Turbine
- Proposed Permanent Met Tower
- Proposed Access Road
- Proposed Temporary Crane Path
- Proposed Buried Collection Line
- Proposed Laydown/O&M Building
- Proposed Temporary Batch Plant
- Proposed Substation
- Crop
- Crop and Hay
- Hay
- Forested
- Native Prairie
- Tame Grassland
- Lake/Stream
- Other

N

0 0.5 1 Miles

Source: Mortenson electrical layout, 2-25-2010, Turbine layout 4-21-2010, Road layout 5-6-2010, Tetra Tech Native Prairie Survey August 2009.

Mortenson

North Dakota

Project Location

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure12_Land_Cover.mxd

Figure 13
Prime Farmland Soil Distribution

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

- Project Area
- Non-Leased Area
- Proposed Turbine
- Proposed Permanent Met Tower
- Proposed Access Road
- Proposed Temporary Crane Path
- Proposed Buried Collection Line
- Proposed Laydown/O&M Building
- Proposed Temporary Batch Plant
- Proposed Substation
- Prime Farmland
- Prime Farmland if Drained
- Farmland of Statewide Importance

N

0 0.5 1 Miles

Source: Mortenson electrical layout 2-25-2010, Turbine layout 4-21-2010, Roads layout 5-6-2010, NRCS SSURGO database for McIntosh County, ND, 2008.

Mortenson

North Dakota

Project Location

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure13_Prime_Farmland.mxd

Figure 14
Soils

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

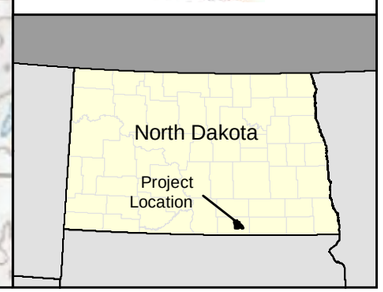
- Project Area
- Non-Leased Area
- Proposed Turbine
- Project Layout
- Proposed Laydown/O&M Building
- Proposed Temporary Batch Plant
- Proposed Substation

N

0 0.5 1 Miles

Source: Mortenson electrical layout 2-25-2010, Turbine layout 4-21-2010, Roads layout 5-6-2010, NRCS SSURGO database for McIntosh County, ND, 2008.

Mortenson



Soils

- Appam sandy loam, 0-6% slopes
- Arnegard loam, 0-6% slopes
- Bearden silt loam, 0-2% slopes
- Bowdle-Lehr loams, 0-2% slopes
- Colvin silt loam
- Hamerly and Vallers loams, saline, 0-3% slopes
- Hamerly loam, 0-3% slopes
- Hamerly-Parnell complex, 0-3% slopes
- Harriet loam, 0-32% slopes
- Lehr-Bowdle loams, 2-6% slopes
- Makoti silty clay loam, 0-3% slopes
- Makoti-Rusklyn silty clay loams, 2-6% slopes
- Marysland loam
- Max-Zahl-Arnegard loams, 9-35% slopes, very stony
- Noonan-Williams loams, 0-6% slopes
- Parnell silty clay loam
- Pits, gravel and sand
- Rusklyn silty clay loam, 2-6% slopes
- Schaller loamy sand, 6-15% slopes
- Southam silty clay loam
- Stirum fine sandy loam, 0-1% slopes
- Wabek-Appam sandy loams, 0-6% slopes
- Wabek-Appam sandy loams, 6-25% slopes slopes
- Wabek-Lehr complex, 2-6% slopes
- Water
- Williams-Bowbells loams, 0-3% slopes
- Williams-Bowbells loams, 3-6% slopes
- Williams-Zahl loams, 3-6% slopes
- Williams-Zahl-Parnell complex,0-15% slopes
- Zahl-Max loams, 15-60% slopes
- Zahl-Williams loams, 6-9% slopes
- Zahl-Williams loams, 9-15% slopes

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure14_Soils.mxd

Figure 15
Wetlands and Surface Waters

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

- Project Area
- Non-Leased Area
- Proposed Turbine
- Proposed Permanent Met Tower
- Proposed Access Road
- Proposed Temporary Crane Path
- Proposed Buried Collection Line
- Proposed Laydown/O&M Building
- Proposed Temporary Batch Plant
- Proposed Substation
- NHD Stream

NWI Wetland Type

- Freshwater Emergent Wetland or Forested/Shrub Wetland
- Freshwater Pond
- Lake/Riverine

* The area of proposed Project construction will be subject to a formal wetland delineation; results may vary from the publically available data presented here.

N

0 0.5 1 Miles

Sources: Mortenson electrical layout 2-25-2010, Turbine layout 4-21-2010, Roads layout 5-6-2010, NWI Wetlands, National Hydrography Dataset.

Mortenson

North Dakota

Project Location

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\ND_CSC\Figure15_Waters.mxd

Appendices

Appendix A
CPV Policies and Commitments to the Environment

CPV Company Overview

Competitive Power Ventures Holdings, LLC (CPVH) is a leading North American electric power generation development and asset management company headquartered in Silver Spring, Maryland, with offices in Braintree, Massachusetts, San Francisco, California, and Ontario, Canada. CPV's development arm adheres to a focused strategy of creating significant new clean energy supplies across strategic markets, informed by current operational expertise and with a focus on community values. A highly-experienced development team concentrates on a clean energy strategy utilizing combined-cycle natural gas, wind-powered generation and solar energy development to meet growing demand in high load areas across North America.

CPV Renewable Energy Company, LLC (CPV REC)

CPV Renewable Energy Company (a wholly-owned subsidiary of CPVH) is clean powering North America. As a proven wind developer with a 3,600 MW portfolio sold in 2007 the company is an industry leader. Currently CPV REC is developing 20 major wind projects representing more than 10,000MW across North America. During the past year, CPV REC signed power purchase agreements on three major wind facilities in the Midwest. In addition the company is currently developing multiple major solar photovoltaic (PV) projects in the US. In early 2010 CPV acquired former Skypower development assets representing thousands of MWs across Canada. CPVH is acting upon its belief that wind is an integral part of the solution to a clean energy future.

The Environment

CPVH's corporate mission is built around a belief that progressive companies can be powerful agents of change for a better world and a cleaner environment. To this end, we have focused our core activities around developing and operating energy facilities that can make a significant difference in improving the environments and economic circumstances of the regions in which they are located.

Your Community

CPVH is dedicated to increasing America's sustainability; both economically and environmentally. Using energy sources that are domestically available, like wind and natural gas, and partnering with host communities to support their tax base and school districts, works to stabilize and improve local and state economies. The thousands of jobs created by construction and operation of these energy facilities will directly improve American lives through well-paying positions and the secondary (or ripple) effects from worker spending at local establishments.

Our Financial Partners

Competitive Power Ventures is owned by Warburg Pincus, certain individual investors and many of the members of CPVH's management team. Warburg Pincus has been a leading private equity investor since 1971. The firm currently has approximately $15 billion of assets under management for investment in a range of sectors including energy, consumer and retail, industrial, business services, healthcare, financial services, real estate and technology, media and telecommunications. Warburg Pincus has raised 12 private equity investment funds which have invested more than $25 billion in approximately 550 companies in 30 countries. The firm has been involved in oil and gas exploration and production, energy and power projects and oilfield and other services since the late 1980s. An experienced partner to entrepreneurs seeking to create and build durable companies with sustainable value, the firm has offices in Beijing, Frankfurt, Hong Kong, London, Menlo Park, Mumbai, New York, Shanghai and Tokyo.

# # #

Appendix B
Design Data Report

CPV Ashley Renewable Energy Company – Design Data Report

Project Overview

- Approximately 200 megawatts (MW)
- Wind turbine generator type to be determined, two possible models are the Siemens SWT 2.3-101 and the GE 2.5xl
- Public Service Commission (PSC) to receive final layout after turbine micro-siting, but prior to construction

Wind Turbine Generator

Potential Model Type	Siemens SWT 2.3-101	GE 2.5xl
Generator MW rating	2.3 MW	2.5 MW
Generator type	Asynchronous generator	Synchronous permanent magnet generator
Generator rated voltage	690 kV	690 kV
Rotor diameter	101 m	100 m or 103 m
Rotor swept area	8,000 m^2	7,854 m^2 or 8332 m^2
Hub height	80 m	85 m
Pitch system	Independent blade pitch control	Independent blade pitch control
Approximate cut-in wind speed	3 – 4 m/s	3 – 4 m/s
Approximate cut-out wind speed	25 m/s	25 m/s
Lighting	In accordance with FAA determination	In accordance with FAA determination
Likely foundation type	Spread footing	Spread footing

kV = kilovolt m = meter m / s = meter per second FAA = Federal Aviation Administration

Project Collector System

System voltage	34.5 kV
Approximate buried depth	4 ft
Cable sizes	1/O AWG, 4/O AWG, 500 kcmil, 750 kcmil, 1000 kcmil, 1250 kcmil
Approximate cable length	Approximately 268,500 circuit feet

ft = feet kcmil = thousands of circular mils

Project Substation

Approximate area	5 acres
Main transformer	34.5 kV/230 kV
Interconnection utility	Montana-Dakota Utilities, Co. (MDU)
Interconnection station standards	In accordance with Federal Energy Regulatory Commission, North American Electric Reliability Corporation, Midwest Independent Transmission System Operator and MDU standards

Appendix C
Studies and Assessments

Native Prairie Survey

Native Prairie Survey

Ashley Wind Energy Project
McIntosh County, North Dakota

Prepared For:



CPV Ashley Renewable Energy Company, LLC
50 Braintree Hill Office Park, Suite 300
Braintree, Massachusetts 02184

Prepared By:



Tetra Tech EC, Inc.
160 Federal Street, 3rd Floor
Boston, Massachusetts 02110

May 2010

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 STUDY AREA AND METHODS 2

2.1 Ashley Wind Energy Project Study Area 2

2.2 Prairie Assessment Methodology 2

3.0 RESULTS 3

4.0 CONCLUSIONS 3

5.0 LITERATURE CITED 4

TABLES

Table 1. Distribution of habitat types surveyed during native prairie assessment at the Ashley WEP. Total area assessed is less than total WEP as wetlands and waterways were not surveyed.

Table 2. Patch characteristics for native prairie, tame grassland, and potential Dakota skipper habitat at the Ashley WEP.

Table 3. Species Observed in Tame Grasslands.

Table 4. Species Observed in Native Prairie.

FIGURE

Figure 1. Native Prairie and Potential Dakota Skipper Habitat

1.0 INTRODUCTION

CPV Ashley Renewable Energy Company, LLC (CPV) is planning to develop a wind energy conversion facility in McIntosh County, North Dakota. The Ashley Wind Energy Project (WEP) encompasses land that consists of a mix of agricultural crops, rangeland, and native prairie. Much of the native prairie is currently being used for grazing or hay production by private landowners. CPV contracted Tetra Tech EC, Inc. (Tetra Tech) to conduct a native prairie survey of the area currently under agreement for development of the WEP. The purpose of this study was to assess the extent of native prairie in the WEP and identify the potential presence of suitable habitat for the Dakota skipper (*Hesperia dacotae*) which is a candidate species for listing by the United States Fish and Wildlife Service (USFWS). It is important to note that the USFWS has indicated that the Dakota skipper has not been recorded in McIntosh County, North Dakota (http://www.fws.gov/northdakotafieldoffice/county_list.htm); the Dakota skipper has been recorded in 16 counties in North Dakota, the closest being Stutsman County (approximately 30 miles north from its nearest point to McIntosh County).

It is generally understood that the widespread loss of native prairie makes it an ecosystem of conservation concern. Native prairie serves as an important ecological resource by providing habitat for a diverse population of plants and animals, including wildlife species that rely on native prairie plant species. However, due to the prairie's fertile soils and predominantly flat topography, large portions have been converted to agricultural lands over the past 200 years. Additional factors that have altered the ecology of native prairie ecosystems include invasion of non-native plant species, loss of native grazers (e.g., bison [*Bison bison*]), altered fire regimes, and habitat fragmentation. The lack of fire coupled with overgrazing can lead to the conversion of prairie to shrubland or woodland, thereby reducing the value of the converted habitat to wildlife (Belsky and Blumenthal 1997; Johnson 1997; Grant et al. 2003; Reinking 2006).

Native prairie can also provide suitable stopover habitat during migration and upland nesting cover for waterfowl species. The prairie region of the northern Great Plains is one of the most important areas for duck reproduction in North America (Samson et al. 1998, Jones-Farrand et al. 2007). Twelve of the 34 species of North American ducks are common breeders in the region (Samson et al. 1998, Jones-Farrand et al. 2007). The region is also a major migration corridor during fall and spring for other ducks, geese, shorebirds and other waterbirds (Skagen and Knopf 1994, Samson et al. 1998, Jones-Farrand et al. 2007). Although construction of a wind energy facility differs greatly from wholesale conversion of grassland to agricultural croplands (e.g., smaller disturbance footprint than grazing or industrial-scale crops), as is the case on the property being proposed for the WEP, disturbances of native prairies, particularly those that surround permanent or semi-permanent wetlands (prairie potholes), have the potential to affect these breeding and migratory stopover areas.

Native prairie within the Midwest region of the United States is utilized in a few ways. Most native prairie in private holdings is used for cattle ranching and managed as rangelands. On rangelands, the soil has not been tilled and fire is often used to suppress the growth of woody species (Hagen et al. 2005). Other forms of rangeland management, such as seeding, fertilizing, and invasive species control, are less common but both serve to promote the growth of prairie species over woody species. Native prairie may also be placed in conservation easements, held privately or publicly as preserves, or wildlife refuges. Preserves and refuges can be difficult to distinguish visually from rangelands because the same types of management (i.e., fire and grazing) are often applied; however, both forms of utilization or management can promote healthy prairie.

2.0 STUDY AREA AND METHODS

2.1 Ashley Wind Energy Project Study Area

The proposed WEP is located in south-central North Dakota in McIntosh County, 6 miles north of the City of Ashley. The WEP area is characteristic of the upland portion of this region, with the majority of the land surface currently covered by agriculture, rangelands, and native prairie. CPV currently has over 17,400 acres of land under lease agreement with private land owners for development of the WEP. The WEP is planned to generate approximately 200 megawatts (MW) of renewable energy that will be sold to the Tennessee Valley Authority (TVA) through a Power Purchase Agreement (PPA). The study area for this effort is defined by the area under agreement with CPV which is also being considered as part of the 200 MW PPA with TVA.

North Dakota is broken up into four distinct ecoregions. The WEP resides in the Northwestern Glaciated Plain ecoregion. Native prairie, an ecological system dominated by grasses where there is not enough rainfall to support trees, is found throughout North Dakota. The WEP falls within a mixed-grass prairie. Native prairie still persists in areas but they have been largely replaced by wheat, alfalfa and other commercial crops over most of the ecoregion (Bryce et al. 1998, Samson et al. 1998). Other types of grasslands found in North Dakota include tame grasslands (i.e., pasturelands mostly used for cattle grazing), which are comprised primarily of non-native species. Native prairie differs from tame grasslands in that native prairie is found on unbroken soil whereas tame grasslands occur on tilled soil and have been planted. There is a USFWS grassland easement covering 169 acres within the WEP but no known prairie preserves or wildlife refuges.

2.2 Prairie Assessment Methodology

Prior to field surveys, Tetra Tech Geographic Information System (GIS) specialists performed a desktop analysis of prairie and crop land cover within the study area for the WEP. A range biologist conducted field surveys from July 27 to August 14, 2009 to verify the desktop-generated land cover estimates within the WEP. Summer is an appropriate time to conduct these surveys because many native grassland plants are in bloom and easy to identify. In order to identify areas of native prairie, the biologist systematically assessed the habitat by making roadside stops and verifying the habitats identified on the field maps. In many areas, one square-mile sections of land were bordered by county roads and were easily evaluated. For most sections of land, each habitat patch was viewed from several points to better estimate patch boundaries.

Identification or elimination of the potential of native prairie was based on several visual cues: 1) the presence of native grassland grass species, including big bluestem, switchgrass, and little bluestem; 2) the presence of non-native species in core areas away from fence lines, including smooth brome and wheatgrass; 3) rolling topography that renders land less feasible for tilling; 4) the presence of rock piles which indicate clearing of rock from an area in preparation for cultivation; and 5) crop vegetation growing in obvious rows. Details and scientific names for the species encountered in tame grasslands and native prairie areas can be found in Table 3 and 4, respectively.

In addition to identifying native prairie, the range biologist also made determinations as to the suitability of the native prairie for the Dakota skipper. The Dakota skipper is a butterfly species that is currently a candidate species for listing under the Endangered Species Act (ESA). The Dakota skipper is classified as a candidate species because, although its historic range once consisted of vast unbroken native prairies in north-central United States and south-central Canada, its current range is now limited to scattered remnants of high quality native prairies in Minnesota, North and South Dakota, and southern Manitoba (USFWS 2002). The Dakota skipper population has declined due to sensitivity to disturbance and the loss of native prairie habitat. The Dakota skipper's classification as a federal candidate species does not entitle it to legal protection under the ESA; however, if a candidate species becomes listed as threatened or endangered, then protection for that species becomes mandated under the ESA. Further reduction of

native prairie habitat within the range of the Dakota skipper could impact existing populations of this candidate species, which may result in its listing as threatened or endangered. According the USFWS, the Dakota skipper has not been recorded in McIntosh County.

The range biologist also evaluated grasslands to determine their suitability as habitat for the Dakota skipper. The criteria used during classification were the current grazing intensity, the overall quality and diversity of the native prairie within the grassland, and the presence of key plant species which the Dakota skipper depends upon (e.g., bluestem, coneflower). Based on information contained within the USFWS status assessment for this species (USFWS 2002), three categories of habitat quality were developed. Excellent habitat was defined as areas of native prairie where only light grazing had occurred and at least 1 key plant species was observed to be present. Good habitat was defined as areas of native prairie with low to moderate grazing where the range biologist inferred from landscape characteristics that key plant species were likely to be present. Poor habitat was defined as areas where heavy grazing had occurred and key plant species were unlikely to be present. The methodology did not include an exhaustive inventory and delineation of all potential habitat; hence, the presence or absence of key species could not be verified in all locations. In addition, the field biologist recorded grazing intensity by estimating the percentage of vegetation grazed in broad classes: 0-25 percent (light), 25-50 percent (moderate), 50-75 percent (heavy), and 75-100 percent (overgrazed).

3.0 RESULTS

The field survey identified 8,520 acres (50 percent of WEP) of native prairie, 1,662 acres (10 percent) of tame grassland, and the remainder of the WEP (6,836 acres; 40 percent) is comprised of crops, hay, and other non-prairie land cover types (Tables 1-2; Figure 1). The largest parcels of non-invaded prairie occur in the northwestern section of the WEP (Figure 1). Within the WEP, four noxious weeds (absinthe wormwood, Canada thistle, leafy spurge, butter-and-eggs [yellow toadflax]; Tables 3 and 4) were located in native prairie and tame grasslands

Of the land classified as native prairie, 2,586 acres (30 percent of native prairie; 15 percent of WEP) were classified as potentially excellent Dakota skipper habitat and 1,919 acres (22 percent of native prairie; 11 percent of WEP) were classified as potentially good habitat (Figure 1). The remainder of the WEP is likely unsuitable for Dakota skippers.

4.0 CONCLUSIONS

Native prairie is an ecosystem of conservation concern (Samson et al. 2004). Native prairie comprises 50 percent of the WEP. Maintaining unfragmented areas of native prairie of the largest practicable size in the WEP may be of benefit to wildlife. Areas of native prairie that also contain prairie potholes within the WEP could provide important breeding and stopover habitat for various waterfowl and shorebird species (Klett et al. 1988). Approximately 26 percent of the WEP is potential Dakota skipper habitat. There is one area of contiguous, excellent potential skipper habitat in the northwest portion of the WEP. Although no legal protection is currently provided to the Dakota skipper as a candidate species under the ESA and the species has not been recorded within McIntosh County to date, efforts should be made to minimize impacts to this species.

North Dakota law (NDCC § 63-01.1-01) requires North Dakota landowners and other persons in charge of or in possession of land to eradicate or control the spread of noxious weeds. County and city weed boards enforce the existing statute through inspections, issuance of notice to control and follow-up re-inspections. If unhandled by the landowner or other persons in charge of or in possession of infested land, the weed boards have the authority to control weeds on the land in question (North Dakota Weed Control Association 2008). Depending upon their management goals, landowners are responsible for invasive species management. Compliance with preventative best management practices during construction will minimize the potential for the spread of weeds within the WEP.

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TABLES

Table 1. Distribution of habitat types surveyed during native prairie assessment at the Ashley WEP. Total area assessed is less than total WEP as wetlands and waterways were not surveyed.

Land Cover Class	Total Acres	Percent Cover
Native Prairie	8,520	50
Excellent skipper habitat	*2,586**	*15 (30 of prairie)*
Good skipper habitat	*1,919**	*11 (22 of prairie)*
Tame Grassland	1,662	10
Crop	3,209	19
Crop and Hay	2,408	14
Hay	1,160	7
Other	59	1
Total	17,018	100

* Skipper habitat is a subset of native prairie

Table 2. Patch characteristics for native prairie, tame grassland, and potential Dakota skipper habitat at the Ashley WEP.

	Native Prairie	Tame Grassland	Excellent Potential Skipper Habitat	Good Potential Skipper Habitat
Number of patches	10	10	10	10
Average patch size (mean acres ± SE*)	852 ± 590	155 ± 43	258 ± 133	191 ± 76
Largest patch (acres)	6,412	440	1,468	846

* SE = standard error; included as a measure of variability in patch size.

Table 3. Species Observed in Tame Grasslands.*

Scientific Name	English Name
Graminoids	
***Agropyron cristatum* (L.) Gaertn.**	**crested wheatgrass**
Agropyron dasystachyum (Hook.) Scribn.	thickspike wheatgrass
***Agropyron elongatum* (Host) Beauv.**	**tall wheatgrass**
***Agropyron intermedium* (Host) Beauv.**	**intermediate wheatgrass**
Andropogon scoparius Michx.	little bluestem
Bouteloua gracilis (H.B.K.) Lag. ex. Griffiths	blue grama
***Bromus inermis* Leyss.**	**smooth brome**
Koeleria pyramidata (Lam.) Beauv.	Junegrass
***Poa pratensis* L.**	**Kentucky bluegrass**
Stipa spartea Trin.	porcupine-grass
Stipa viridula Trin.	green needlegrass
Forbs	
Achillea millefolium L.	yarrow
Ambrosia psilostachya DC.	western ragweed
***Artemisia absinthium* L.**	**absinthe wormwood**
Artemisia frigida Willd.	fringed sagewort
Artemisia ludoviciana Nutt.	white sagewort
Chrysopsis villosa (Pursh) Nutt.	hairy gold aster
***Cirsium* sp.**	**thistle species**
***Cirsium arvense* (L.) Scop.**	**Canada thistle**
***Cirsium* cf. *vulgare* (Savi) Ten.**	**bull thistle**
Dalea candida Michx. ex Willd.	white prairie clover
Dalea purpurea Vent.	purple prairie clover
Echinacea angustifolia DC.	purple coneflower
Erigeron strigosis Muhl. Ex Willd.	daisy fleabane
Grindelia squarrosa (Pursh) Dun.	curly-top gumweed
Gutierrezia sarothrae (Pursh) Britt. & Rusby	broom snakeweed
Helianthus annuus L.	common sunflower
Helianthus rigidus (Cass.) Desf.	stiff sunflower
Liatris punctata Hook.	dotted blazing star
Lygodesmia juncea (Pursh) Hook.	skeleton weed
***Medicago lupulina* L.**	**black medic**
***Medicago sativa* L.**	**alfalfa**
***Melilotus alba* Medic.**	**white sweet clover**
***Melilotus officinalis* (L.) Pall.**	**yellow sweet clover**
Polygala alba Nutt.	white milkwort
Psoralea argophylla Pursh	silver-leaf scurf pea
Ratibida columnifera (Nutt.) Woot. & Standl.	prairie coneflower
Solidago mollis Bartl.	soft goldenrod
Solidago rigida L.	rigid goldenrod
***Sonchus arvensis* L.**	**field sow thistle**
***Tragopogon dubius* Scop.**	**goat's beard**

* Nomenclature follows Great Plains Flora Association. 1986. Flora of the Great Plains. University Press of Kansas, Lawrence, KS.
Bold – exotic species

Table 4. Species Observed in Native Prairie.*

Scientific Name	English Name
Graminoids	
Agropyron caninum (L.) Beauv. subsp. *majus* (Vasey) C.L.Hitchc.	slender wheatgrass
***Agropyron cristatum* (L.) Gaertn.**	**crested wheatgrass**
Agropyron dasystachyum (Hook.) Scribn.	thickspike wheatgrass
***Agropyron elongatum* (Host) Beauv.**	**tall wheatgrass**
Agropyron smithii Rydb.	western wheatgrass
Andropogon gerardii Vitman	big bluestem
Andropogon scoparius Michx.	little bluestem
***Avena fatua* L.**	**wild oats**
Bouteloua curtipendula (Michx.) Torr.	sideoats grama
Bouteloua gracilis (H.B.K.) Lag. ex. Griffiths	blue grama
***Bromus inermis* Leyss.**	**smooth brome**
Buchloe dactyloides (Nutt.) Engelm.	buffalo grass
Calamovilfa longifolia (Hook.) Scribn.	prairie sandreed
Dichanthelium cf. *oligosanthes* (Schult.) Gould var. *scribnerianum* (Nash) Gould	Scribner's rosette grass
Elymus canadensis L.	Canada wild rye
Eragrostis spectabilis (Pursh) Steud.	purple lovegrass
Koeleria pyramidata (Lam.) Beauv.	Junegrass
Muhlenbergia cuspidata (Torr.) Rydb.	plains muhly
Panicum virgatum L.	switchgrass
***Poa pratensis* L.**	**Kentucky bluegrass**
Stipa comata Trin. & Rupr.	needle-and-thread
Stipa spartea Trin.	porcupine-grass
Stipa viridula Trin.	green needlegrass
Forbs	
Achillea millefolium L.	yarrow
Agoseris glauca (Pursh) Dietr.	false dandelion
Allium sp. (likely *A. stellatum* or *A. textile*)	wild onion
Allium stellatum	pink wild onion
Ambrosia psilostachya DC.	western ragweed
Anemone cylindrica A. Gray	candle anemone
Anemone patens L.	pasque flower
Antennaria species	pussy-toes
Antennaria neglecta Green	field pussy-toes
Antennaria parviflora Nutt	pussy-toes
Arabis glabra (L.) Bernh.	tower mustard
***Artemisia absinthium* L.**	**absinthe wormwood**
Artemisia campestris L. subsp. *caudata* (Michx.) Hall & Clem.	western sagewort
Artemisia frigida Willd.	fringed sagewort
Artemisia ludoviciana Nutt.	white sagewort
Asclepias syriaca L.	common milkweed
Asclepias viridiflora Raf.	green milkweed
Aster ericoides L.	heath aster

Table 4. Species Observed in Native Prairie.*

Scientific Name	English Name
Astragalus crassicarpus Nutt.	groundplum
Astragalus gilviflorus Sheld.	plains orophaca
Calylophus serrulatus (Nutt.) Raven	plains yellow primrose
Chrysopsis villosa (Pursh) Nutt.	hairy gold aster
***Cirsium* spp.**	**thistle species**
***Cirsium arvense* (L.) Scop.**	**Canada thistle**
Cirsium flodmanii (Rydb.) Arthur	Flodman's thistle
Cirsium undulatum (Nutt.) Spreng.	wavy-leaf thistle
***Cirsium* cf. *vulgare* (Savi) Ten.**	**bull thistle**
Comandra umbellata (L.) Nutt.	bastard toadflax
***Conyza canadensis* (L.) Cronq.**	**horseweed**
Dalea candida Michx. ex Willd.	white prairie clover
Dalea purpurea Vent.	purple prairie clover
Echinacea angustifolia DC.	purple coneflower
Erigeron strigosis Muhl. Ex Willd.	daisy fleabane
Erysimum asperum (Nutt.) DC.	western wallflower
Gaillardia aristata Pursh	blanket flower
Galium boreale L.	northern bedstraw
Gaura coccinea Pursh	scarlet gaura
Glycyrrhiza lepidota Pursh.	wild licorice
Grindelia squarrosa (Pursh) Dun.	curly-top gumweed
Gutierrezia sarothrae (Pursh) Britt. & Rusby	broom snakeweed
Haplopappus spinulosus (Pursh) DC.	cutleaf ironplant
Helianthus grosseserratus Martens	sawtooth sunflower
Helianthus maximilianii Schrad.	Maximilian sunflower
Helianthus rigidus (Cass.) Desf.	stiff sunflower
Heuchera richardsonii R. Br.	alumroot
Kuhnia eupatorioides L.	false boneset
Lactuca oblongifolia Nutt.	blue lettuce
Liatris punctata Hook.	dotted blazing star
Linum rigidum Pursh.	stiffstem flax
Linum sulcatum Riddell	grooved flax
***Linaria vulgaris* Hill**	**butter-and-eggs**
Lobelia kalmia L.	Kalm's lobelia
Lotus purshianus (Benth.) Clem. & Clem.	deer vetch
Lygodesmia juncea (Pursh) Hook.	skeleton weed
***Medicago lupulina* L.**	**black medic**
***Medicago sativa* L.**	**alfalfa**
***Melilotus alba* Medic.**	**white sweet clover**
***Melilotus officinalis* (L.) Pall.**	**yellow sweet clover**
Mirabilis hirsuta (Pursh) MacM.	hairy four-o-clock
Oenothera nuttallii Sweet	white-stemmed evening primrose
Oenothera villosa Thunb.	common evening primrose
Onosmodium molle Michx.	false gromwell

Table 4. Species Observed in Native Prairie.*

Scientific Name	English Name
Orthocarpus luteus Nutt.	owl clover
Penstemon gracilis Nutt.	slender beardtongue
Physalis virginiana	groundcherry
Polygala alba Nutt.	white milkwort
Polygala verticillata L.	whorled milkwort
Polygonum pennsylvanicum L.	Pennsylvania smartweed
Potentilla arguta Pursh	tall cinquefoil
Potentilla pensylvanica L.	Pennsylvania cinquefoil
Psoralea argophylla Pursh	silver-leaf scurf pea
Psoralea esculenta Pursh	breadroot scurf pea
Ratibida columnifera (Nutt.) Woot. & Standl.	prairie coneflower
Rudbeckia hirta L.	black-eyed susan
Solidago canadensis L.	Canada goldenrod
Solidago missouriensis Nutt.	prairie goldenrod
Solidago mollis Bartl.	soft goldenrod
Solidago ptarmicoides (Nees) Boivin	sneezewort aster
Solidago rigida L.	rigid goldenrod
***Sonchus arvensis* L.**	**field sow thistle**
Sphaeralcea coccinea (Pursh) Rydb.	red false mallow
Teucrium candense L.	American germander
***Tragopogon dubius* Scop.**	**goat's beard**
Vernonia fasciculata Michx.	ironweed
Viola pedatifida G. Don	prairie violet
Trees & Shrubs	
Amorpha canescens Pursh	leadplant
Amorpha nana Nutt.	dwarf wild indigo
Artemisia cana Pursh	silver sagebrush
Rosa arkansana Porter	prairie wildrose
Symphoricarpos occidentalis L.	western snowberry

* Nomenclature follows Great Plains Flora Association. 1986. Flora of the Great Plains. University Press of Kansas, Lawrence, KS.

Bold – exotic species

FIGURE

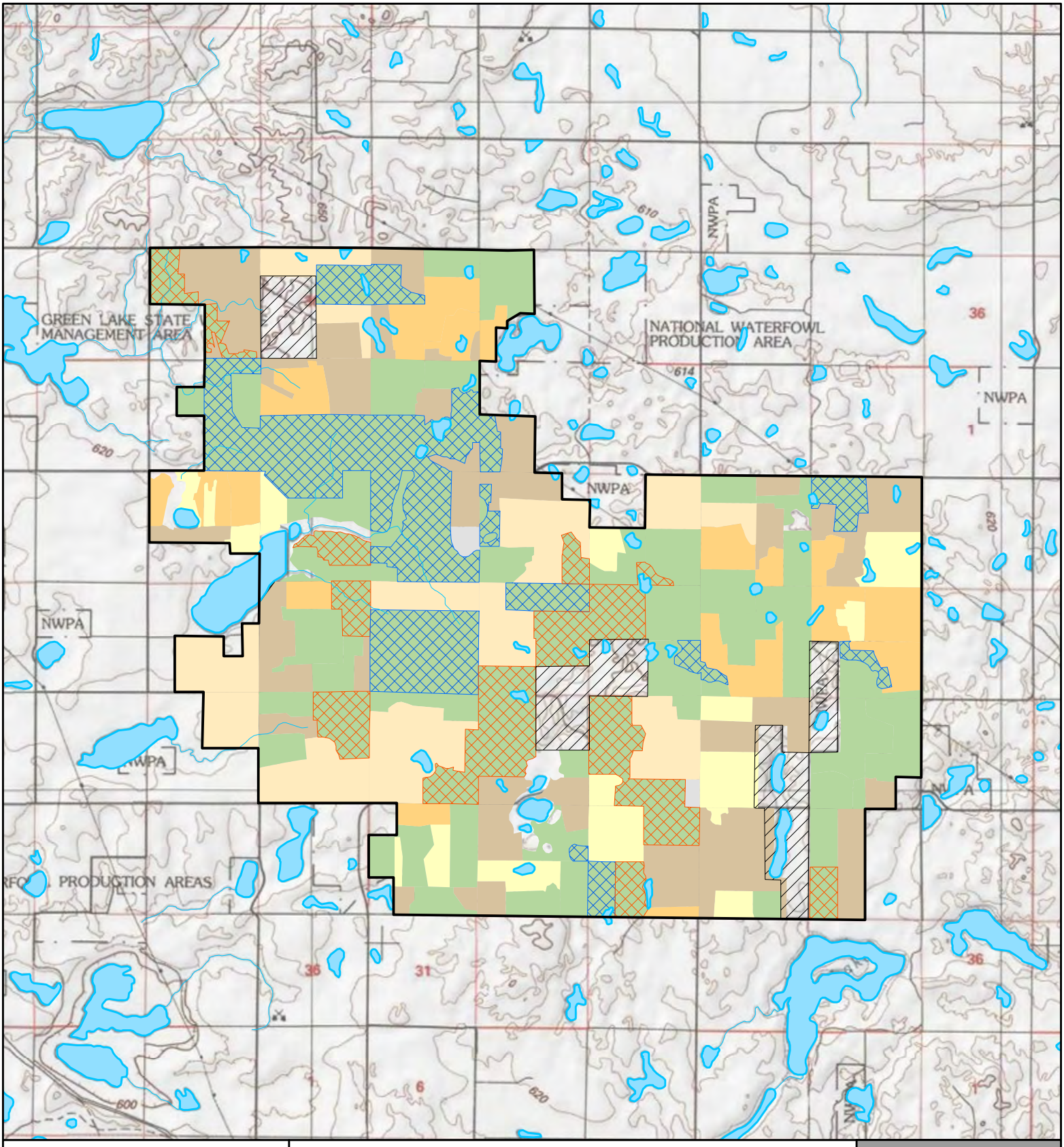


Figure 1
Native Prairie and
Potential Dakota Skipper Habitat

Ashley Wind Energy Project
McIntosh County, North Dakota

TETRA TECH EC, INC.

Project Area
Non-Leased Parcel
County Highway
Stream
Lake

Dakota Skipper Habitat Potential
Excellent
Good

Cover Type
Native Prairie
Tame Grassland
Hay
Crops
Crops and Hay
Other

Note: Not all parcels received complete walkthroughs and cover-type delineation. See report methods for details.

N

0 0.5 1 Miles

North Dakota
Project Location

Z:\Gdrive\Projects_2008\CPV_Ashley\maps\biological\Fig1_native_prairie_and_habitat.mxd

Bat Likelihood of Occurrence Report

Bat Likelihood of Occurrence Report

Ashley Wind Energy Project
McIntosh County, North Dakota

Prepared For:



CPV Ashley Renewable Energy Company, LLC
50 Braintree Hill Office Park, Suite 300
Braintree, Massachusetts 02184

Prepared By:



Tetra Tech EC, Inc.
160 Federal Street, 3rd Floor
Boston, Massachusetts 02110

May 2010

EXECUTIVE SUMMARY

Tetra Tech EC, Inc. (Tetra Tech) was contracted by CPV Ashley Renewable Energy Company, LLC (CPV) to assess the potential likelihood of occurrence of bats within the Ashley Wind Energy Project location (WEP) in McIntosh County, North Dakota. The objective of this likelihood of occurrence analysis was to evaluate the biological and landscape features of the WEP to determine the potential for bats to occur. Thus, Tetra Tech developed a likelihood index based on habitat-based variables and species-based variables. Habitat-based variables include the amount of suitable foraging and roosting habitat, the number of natural areas, number of perennial streams, and number of human developments. Species-based variables included bat species known to occur in the region and behavioral characteristics. The likelihood index does not predict how many bats will occur or the anticipated bat mortality level, rather it scores a site based on a suite of variables that are related to bats. Bat presence is more likely to occur over the life of a project at a project with a higher score, thus indicating higher likelihood of occurrence and, thus, potential for turbine-related fatalities given the patterns of bat fatalities at other wind farms in the United States.

Of the 46 bat species in the United States, 10 occur in North Dakota. Of these 10 species, 6 potentially occur within the Ashley WEP based on current known distribution ranges. None of these species are federally listed as threatened or endangered or listed as a Level I or II state species of conservation concern. When viewed on a regional scale, the Ashley WEP contains less suitable bat habitat than the surrounding landscape. Overall, Tetra Tech calculates a low likelihood of occurrence for bat species for the entire Ashley WEP.

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Table 3. Ranked scoring system used to develop species risk index for bat species found in south-central North Dakota.

Table 4. Summary statistics for each variable used in the analysis.

FIGURES

Figure 1. Ashley Wind Energy Project Vicinity Map

Figure 2. Representation of elements used to calculate FAP

Figure 3. Ashley WEP Bat Habitat Map

1.0 INTRODUCTION

CPV Ashley Wind Energy Company, LLC (CPV) is currently developing plans for a wind energy facility in McIntosh County, North Dakota (Figure 1). Recent monitoring studies indicate that utility-scale wind energy facilities have had greater bat mortality than was expected based on early monitoring studies where birds were the primary focus of attention (NRC 2007). The potential for bat collisions with turbines is highest in the forested regions of the eastern part of the United States (NWCC 2004); however, relatively high numbers of bat fatalities have been documented in the mixed-grass plains and agricultural regions of Iowa (Jain 2005), Oklahoma (Piorkowski 2006), and Minnesota (Johnson et al. 2004).

CPV contracted Tetra Tech EC, Inc. (Tetra Tech) to conduct an in-depth literature review and landscape scale analysis to assess the potential occurrence and risk for bat species that may occur within the Ashley Wind Energy Project (WEP). Although, to date, there is no clear relationship between pre-construction occurrence and post-construction mortality, certain features of a project may make it more or less attractive to bats, thus increasing or decreasing the relative mortality risk. Tetra Tech developed a likelihood index to evaluate the Ashley WEP based on the number of species potentially occurring in the WEP, the amount of suitable foraging and roosting habitat within the WEP and the surrounding landscape, and several additional factors that were likely to increase the presence of bats including the presence of perennial streams, number of human developments, and the number of natural areas. The likelihood index does not predict bat occurrence or mortality. Rather, it scores the project based on a suite of variables that are related to occurrence and potential mortality. Bat presence is more likely to occur over the life of a project at a project with a higher score, thus indicating higher likelihood of occurrence and, thus, potential for turbine-related fatalities given the patterns of bat fatalities at other wind farms in the United States.

2.0 BATS AND WIND ENERGY

Wind energy generation facilities can help reduce dependence on non-renewable energy sources and have many environmental benefits including reduction in the generation of greenhouse gases, preserving open space habitat, and improving air quality. Wind farms do, however, have the potential to result in adverse environmental impacts, including the potential to impact bat species directly and indirectly. Historically, some wind energy generation facilities have experienced unexpected levels of bat mortality (Kunz et al. 2007). Several variables may contribute to the fatalities of bats at wind facilities including, but not limited to, biology of the bat species, season, region, and turbine design (Kunz et al. 2007). Species that have the highest risk of fatalities at wind facilities are tree, foliage, or cavity roosting migratory bats (Kunz et al. 2007; Arnett et al. 2008). Nearly 75 percent of all bat fatalities have been associated with migratory tree bats including the hoary bat, eastern red bat and silver-haired bat, all three of which occur within the range of the WEP. Migratory bats travel long distances at altitudes occupied by wind turbine blades, making them susceptible to collisions. The probability of mortality events increases during periods of poor weather, such as just before or after the passing of a storm front (Arnett et al. 2008).

There is a seasonal trend with bat fatalities at wind facilities, with spikes occurring in the late summer and early autumn which coincide with fall migration or dispersing juveniles that may be more prone to collisions with structures (Johnson 2004, 2005); however, Kunz et al. (2007) speculate this is a function of intensive carcass searches during this time and not due to seasonal factors. Many, if not most, of the bat species detected as fatalities at wind facilities in the United States (Arnett et al. 2008) are also resident during spring and summer months (Barbour and Davies 1969).

There are geographic differences in fatalities/megawatt (MW)/year among bat species, ranging from 0.2 to 53.3 bats/MW/year, with the highest fatalities being reported along forested ridges in the eastern United States (Arnett et al. 2008). However, bat fatalities have also been reported from the agricultural

regions of northern Iowa (8.9 bats/MW/year; Jain 2005) and the mixed-grass prairie of north-central Oklahoma (0.8 bats/MW/year; Piorkowski 2006). Therefore, caution must be taken in assuming that only facilities in the forested eastern United States have the potential of producing high bat fatalities because of the small number of studies to date and the possibility of other regions being underrepresented.

3.0 STATUS OF BATS IN NORTH DAKOTA

Of the 46 bat species in the United States, 10 occur in North Dakota (ASM 2007). Of these 10 species, six potentially occur within the Ashley WEP based on current known distribution ranges (ASM 2007, NatureServe 2008, BCI 2009; Table 1). None of the species that potentially occur within the WEP are federally listed as threatened or endangered or are listed as Level I or II state species of concern. Three of the species that could potentially occur within the WEP–hoary bat, silver-haired bat, and eastern red bat–are highly migratory and are found in the greatest abundance in North Dakota during late May through early September (Cryan 2003).

Bats rank among North America's least studied wildlife, yet declines in population numbers among all species have been documented since the 1960s (Tuttle 2004). Compared to bird species, there are relatively few laws that protect bats. On federal lands such as National Forests, National Wildlife Refuges, and lands administered by the Bureau of Land Management, agencies have developed habitat management guidelines and other regulations to enhance or minimize disturbance to habitats; none of these apply at the Ashley WEP. Existing environmental laws primarily address the protection of caves and wanton destruction of wildlife. The protection and regulation of non-threatened bat species on private lands is typically left at the state wildlife agencies' discretion.

4.0 PROJECT AREA DESCRIPTION AND ENVIRONMENTAL SETTING

4.1 Project Area Description

The WEP is located on privately owned lands in south-central North Dakota, consists of approximately 17,400 acres under easement with CPV, and is located slightly more than 6 miles north of the town of Ashley in McIntosh County (Figure 1). The WEP area is characteristic of the upland portion of this region, with the majority of the land surface currently covered by agriculture, rangelands, and native prairie. The area contains numerous small wetlands that vary from shallow, vegetated depressions to deeper, open water communities. Residences and abandoned farmsteads are scattered throughout the WEP. Patches of trees and shrubs exist throughout the WEP, and are found primarily between agricultural fields, in drainages, and as shelter belts around homesteads and between agricultural fields.

4.2 Environmental Setting

The WEP is located within the Northwestern Glaciated Plain. This landscape is a transitional region between the generally more level, moister, more agricultural Northern Glaciated Plains to the east and the generally more irregular, dryer, Northwestern Great Plains to the west and southwest. The western and southwestern boundary roughly coincides with the limits of continental glaciation. Pocking this ecoregion is a moderately high concentration of semi-permanent and seasonal wetlands, locally referred to a Prairie Potholes.

5.0 GENERAL BAT BIOLOGY

5.1 Roosting Habitat

Bats depend on roosts for hibernation, mating, rearing of young, protection from predators, and protection from adverse weather conditions (Lacki et al. 2007). Due to bats' dependence on these structures during all stages of their life cycle, they have been identified as the key factor in the survival of bats in North America (Kunz 1982, Pierson 1998, Kunz and Lumsden 2003).

Generally, bats can be divided into three broad roosting categories: tree roosting, cave roosting, and species adapted to roosting in multiple habitats. Many bat species that are found in North Dakota exhibit a seasonal shift in habitat where they may use trees for roosting in the summer and then use rocky outcrops, caves, or other structures for hibernation during the winter; other species may utilize a single habitat year-round. Studies have examined variables that influence roost selection at local (Hutchinson and Lacki 2000) and larger spatial scales (Elmore et al. 2004); however, little information is available on the roosting preferences of bats at the landscape scale (Carter and Menzel 2003, Duff and Morrell 2007). In states such as North Dakota where roost habitat is limited due to the fragmentation of tree stands caused by agricultural activities; roost availability may be a limiting factor in bat species occurrence and distribution (Carter and Menzel 2003).

5.2 Foraging Ecology

The need for resources occurs during three general life-history periods: maternity, migration, and hibernation (Lacki et al. 2007). This section focuses on foraging behavior during the summer maternity season. All the bat species found in North Dakota are insectivorous and feed on a variety of prey including moths, beetles, flies, and mosquitoes – many of which are agricultural pests. Their importance for controlling these pests equates to millions of dollars in savings from loss of crops, and by minimizing the application of pesticides (BCI 2001).

Selection of resources is a hierarchical process of behavioral choices by bats that results in a differential use of habitats (Block and Brennan 1993). Resources such as type and size of foraging habitat and the selection of prey are species-specific and dependent of the species' energetic needs, sex and reproductive status. The availability and suitability of resources in a landscape may affect the size of the foraging areas and commuting distances to them (Lacki et al. 2007). Species typically choose areas high in prey concentrations in a number of diverse habitats such as riparian areas (Waldien and Hayes 2001), water bodies (Henry et al. 2002), streetlights (Rydell 1992) or forest edges; however, the commonality in most studies is the proximity to water (Carter et al. 2002).

5.3 Migration Behavior

Bat migration is defined as a seasonal, usually two-way, movement from one place or habitat to another to avoid unfavorable climatic conditions and to seek more favorable energetic conditions (Fleming and Eby 2003). This annual shift in distribution is generalized by individuals occupying northern latitudes during the summer and southern latitudes during the winter (Cryan 2003). Migratory tree-roosting species that travel long distances tend to form larger aggregations than species that exhibit partial migration or are year-round residents (Fleming and Eby 2003). How species form groups is unclear, yet there is evidence that the sexes separate during migration (BCI 2001, Cryan 2003). Typically, mating occurs in the fall, either during migration or prior to hibernation with the young being born the following spring.

6.0 ASSESSMENT OF BAT LIKELIHOOD OF OCCURRENCE

The primary threats of wind energy facilities to bats are fatalities associated with wind turbines and loss of roosting and foraging habitat. Because of the high levels of concern regarding bats, the ability to evaluate the risk to bats at an individual project is a critical component to understanding the environmental impacts of a proposed wind facility. There is no clear relationship between pre-construction occurrence and post-construction mortality; however, certain features of landscapes may make them more attractive to bats. Here, Tetra Tech presents a method used to evaluate the likelihood of bat occurrence at a given project. This evaluation method includes the use of both habitat- and species-based variables. Identifying the habitat-based variables essential to the species' requirements during roosting and foraging is key in determining the suitability of the habitat (Duchamp et al. 2004), whereas understanding the species' ecology and behavior is key in developing a model that leads to understanding the relative risk from wind energy development. Habitat-based variables include the amount of suitable foraging and roosting habitat, the number of natural areas, the number of perennial streams, and the number of human developments. Species-based variables included using bat species known to occur in the region and behavioral characteristics. Specific details about each variable and how they were used to estimate likelihood are presented below.

6.1 Forest-Aquatic Matrix

Biological Justification

Landscapes that contain a greater amount of roosting and foraging habitat are expected to be more attractive to bats. Specifically, research shows there is a strong relationship between the number of individuals and species composition with the presence of water and forests or small tree stands (Everette et al. 2001). In North Dakota, roosting habitat includes trees found in forested patches, along riparian corridors, and around homesteads. Water features are typically used for foraging and include ephemeral and perennial wetlands, streams, rivers, ponds and lakes (Carter et al. 2002). For the purposes of this analysis, the foraging distance was defined as a radius of 0.8 mile, which corresponds to the average maximum foraging distance of the bat species found in North Dakota (Hutchinson and Lacki 2000). In addition, habitats associated with North Dakota bats that are within 3.0 miles of the WEP were evaluated to determine the attractiveness of the project to bats on a landscape scale and account for bat species' movement into and out of the WEP. Three miles was selected as an appropriate analysis distance because it was approximately triple the maximum foraging distance; therefore, 3 miles should provide a conservative estimate of bat use into and out of the WEP. Furthermore, this 3-mile buffer accommodates the foraging distances recorded for the bat species potentially occurring within the WEP (Table 1).

Scoring

To quantify the amount of roosting and foraging habitat in the WEP, Geographic Information Systems (GIS) land-cover data was obtained for North Dakota. The degree of resolution incorporated in the datasets accurately depicted shelterbelts, field windbreaks and other planted woodlands represented on United States Geological Survey (USGS) 7.5-minute maps (USGS 2007). The accuracy and spatial extent of waters was verified with National Wetlands Inventory (NWI; USFWS 2006) data and hydrologic features represented on USGS topographic maps. However, it is possible that agricultural conversion and long term drought have substantially reduced the extent of hydrologic features on the site, and thereby reduced the amount of available bat habitat.

Using these datasets, minimum thresholds for habitat sizes were generated. The minimum area for forest features was set at one acre whereas the minimum area for water features was set at 0.004 acre. All wetlands within 0.8 mile of a forested area represent a forest aquatic patch (FAP). Each habitat type (forest and wetland) included an additional 75-foot area beyond the habitat to account for foraging and flight behavior immediately adjacent to each habitat (i.e., a buffer area; Figure 2). The total area of the

FAP includes the bat habitat, the buffer area around the habitats, and the area between them. The model is nonrestrictive and includes FAPs if they are within 0.8 mile of another FAP, provided an additional forested area is within the WEP. When multiple FAPs are combined, they are referred to as a forest-aquatic matrix (FAM). Based on Tetra Tech's professional judgment and experience, areas that contained 1 to 25,000 acres received a ranking of low, areas that contained 25,001 to 50,000 acres received a ranking of moderate, and more than 50,001 acres received a ranking of high. The greater amount of FAM in a particular area, the higher the likelihood bats would occur.

FAM Assumptions

- The maximum foraging area includes the estimated foraging range expected by bat species found in North Dakota regardless of sex, reproductive condition, age, energetic requirements or other life history traits.
- Each woodland feature in the dataset is considered available and suitable, regardless of plant species composition, age, density, or patch size. Similarly, each water feature in the dataset is considered available and suitable, regardless of type or size.
- Those habitats not classified as forest or water are considered of neutral value to bats.
- The GIS datasets used in this analysis accurately reflect current land cover conditions.

Field Verification

In October 2009, a Tetra Tech field biologist visited the WEP to confirm the presence of desktop-identified forest patches. Any areas deemed to be unfit to support foraging or roosting bats (e.g., insufficient vertical complexity) were removed from the analysis. The field visit resulted in the removal of 855 acres of wetland and 17.4 acres of forest from the analysis; no acreage of either type was added.

6.2 Natural Areas

Biological Justification

Wildlife management areas, wildlife refuges, state parks and recreation sites, hereafter natural areas, typically have woodland and water habitats that are attractive to bats (Everette et al. 2001, Swier 2003, Jain 2005). Swier (2003) selectively sampled in these natural areas due to the increased possibility of detections, whereas a study in Iowa found higher bat activity at a natural area than in the adjacent project (Jain 2005). In contrast, Jain's study did not find a significant relationship between distance to the nearest natural area and bat activity in the study area. In order to provide a conservative estimate of potential bat use and activity, Tetra Tech has assumed that natural areas may play a role in the habitat selection process by providing suitable roosting and foraging habitat.

Scoring

The total number of natural areas in and within 3 miles of the WEP were counted using readily accessible landownership data. Three miles was chosen as a distance from the WEP to account for species movement during foraging activity and to match the buffer used in FAM calculations. Information on lands in the WEP enrolled in the Conservation Reserve Program (CRP) have not been made available to CPV and, therefore, not included in the evaluation. The total number of natural areas were counted in the WEP and assigned to a category with a corresponding score based on the total number of natural areas found. Based on Tetra Tech's professional judgment and experience, assigned rankings were low for 1 to 10 natural areas, moderate for 11 to 30 natural areas, and high for 31 or more natural areas.

Natural Area Assumptions

- Each natural area provides an equal value to bat species regardless of size, current habitat and management objective.
- Data obtained from the North Dakota Game and Fish Department represents the most current data available.

6.3 Perennial Streams

Biological Justification

There is a lack of studies investigating bat foraging requirements in North Dakota. However, inferences can be made from other studies, typically those involving forest-dwelling bats. One common theme among studies of foraging bats is the importance of perennial streams, rivers, riparian areas, ponds or other forms of open water. From arid habitats (Bell 1980) to forested habitats (Wilhide et al. 1998), studies suggest that the proximity of water (suitable foraging habitat) to suitable roosting habitat is a critical variable in determining species occurrence (Carter et al. 2002). Bats have been documented to travel longer distances to reach these types of foraging areas that provide higher concentrations of prey and water quality (Hayes and Loeb 2007).

Scoring

The presence of perennial streams in the WEP was evaluated using hydrological data from the NWI data (USFWS 2006), NLCD data (USGS 2007), and existing resource reports produced for the WEP. Based on Tetra Tech's professional judgment and experience, each area was given a score based on the presence or absence of this type of water feature. If there were no perennial streams within the WEP, it received a ranking of low. If there was one perennial stream within the WEP, it received a ranking of moderate. If there was more than one perennial stream within the WRA, it received a ranking of high.

Perennial Stream Assumptions

- All perennial streams are used equally, regardless of size, length and characteristics of riparian habitat.
- Water qualities of all perennial streams are similar and produce the same type of density of prey items.
- Perennial streams depicted in utilized databases have not been altered (diverted, dewatered, drought) to produce ephemeral conditions.

6.4 Human Development

Biological Justification

Planted vegetation and human structures can serve as suitable roost habitat for some bat species due to the overall increased availability of natural (trees, caves, outcrops) and human-made (houses, barns, bridges) roosts across the landscape (Everette et al. 2001, Swier 2003). This availability of suitable roosting habitat may lead to a higher abundance of species that are adapted to multiple roosting substrates, provided there is also suitable foraging habitat available nearby (Evelyn et al. 2004).

Scoring

All communities in and within 3 miles of the WEP were identified using the National Land Cover Database (NLCD) data (USGS 2007) for North Dakota. Communities with populations greater then 50 (as of the 2000 census) were tallied, and a corresponding ranking was assigned. The WEP received a ranking of low if there 0-2 towns within 3 miles, a ranking of moderate for 3-4 towns, and a ranking of high for 5 or more towns.

Structure and Human Development Assumptions

- The housing/population density of developments within a community has no affect on the suitability for bats.
- Habitat availability and suitability is similar between towns regardless of surrounding habitat features.
- Smaller communities or isolated residences such as farms and structures such as bridges, overpasses and culverts are assumed to be uniformly distributed over the area.

6.5 Species Ranking Index

Biological Justification

The defining characteristic that differentiates mortality rates among bat species at operating wind facilities appears to be correlated with species life-history traits. Migratory tree-roosting bats are known to have a higher risk of mortality at wind facilities then resident bat species (Kunz et al. 2007), although large numbers of resident bat species have also been reported during post-construction mortality searches (Kerns and Kerlinger 2004, Jain 2005). In order to reflect this differential risk, a species-based index was calculated to reflect the relative risk to all bats found at a project based on individual species' life history traits and documented mortality at other existing wind energy facilities.

Scoring

A species ranking index was developed by Tetra Tech to provide a single score that incorporates the species diversity and the relative morality risk for each species found within the WEP. Species occurrence was estimated using range maps, historic occurrences, and habitat characteristics from landcover data. Because mortality events are not uniform among species, species were assigned a score that reflected their mortality risk. Higher scores were assigned to common, migratory tree bats and lower scores were assigned to less abundant species or to those species that are not common mortalities at wind farms. For each area, the scores of all species likely to occur within the project boundary were summed and then divided by the number of species to provide a relative index of occurrence and risk. A ranking index of less than 0.75 was considered low, 0.75-1.00 moderate, and greater than 1.00 high.

Species Ranking Index Assumptions

- Risk of mortality is equal for a given species across its range. *Example:* For a hoary bat, the risk of collision with a wind turbine in North Dakota is equal to that in West Virginia.
- Data on distribution and occurrence accurately reflects current species distribution.

6.6 Species Landscape Index

Biological Justification

Landscapes that provide greater amounts of available and suitable roosting and foraging habitat have a greater probability for bats to occur (Duchamp et al. 2004, Lacki et al. 2007). However, the threshold at which landscapes become more attractive to bats remains unclear and makes predicting species occurrence difficult (Jaberg and Guisan 2001, Duchamp et al. 2004). Therefore, some assumptions about attractiveness were necessary. First, we assumed that attractiveness was based on the presence of the FAM. Second, we assumed that bats make landscape-based decisions based on an area within 3 miles of the WEP (Table 1).

Scoring

The objective of this index was to recognize the attractiveness of habitat within a landscape. Areas that have a greater amount of suitable foraging and roosting habitat, expressed as FAM, than that of their surrounding areas may have a greater potential for species to occur. First, the amount of FAM in the WEP was compared to the amount of FAM within 3 miles outside of the project. Those values were divided by the total size of their respective areas, in acres, and a habitat index (HI) was produced, using:

$$HI = \left(\frac{FAMI / PA}{FAMO / BA} \right)$$

Where FAMI is the amount of FAM inside the WEP, PA is the total area of the project, FAMO is the amount of FAM outside the WEP and BA is the total area of the 3-mile buffer surrounding the project. This index provided a habitat index value where values:

> 1.0 indicate that the total acres of FAM inside the WEP is greater then the surrounding area; hence, more unique and potentially more attractive to bats; and,

< 1.0 indicate that the total acres of FAM inside the WEP is less then the surrounding area; hence, less unique and potentially less attractive to bats.

This value was multiplied by the potential number of species (P) occurring in the WEP and a species landscape index (SL) was calculated as:

$$SL = \sum P * HI$$

A landscape index of less than 5 was considered low, 5-10 moderate, and greater than 10 high

Species Landscape Index Assumptions

- The suitability and availability of FAM habitat is restricted to distinct project and buffer boundaries.
- The spatial distribution of bat species and the scale of their decision making coincide with the boundaries of the WEP and 3-mile buffer.
- Patch dynamics are not influencing bat behavior.
- The increasing uniqueness of habitat in the landscape increases the attractiveness to bats.

7.0 ASHLEY WEP ASSESSMENT AND SUMMARY

Overall, there is a low likelihood of occurrence for bats at the Ashley WEP; five of the six assessed variables received a ranking of low (Table 4). The Ashley WEP contains 887 acres of FAM (5.2% of WEP; Table 2: Figure 3) and the 3-mile buffer contains 9,058 acres (13.6% of buffer). The total FAM within the WEP and the 3-mile buffer equals 9,945 acres which equates to a FAM ranking of low. Four natural areas occur within 3 miles of the Ashley WEP: Ashley Wildlife Management Area (WMA), Clear Lake WMA, Green Lake WMA, and Macintosh Waterfowl Production Area; therefore, the ranking the natural areas variable is low. There are no perennial streams within the Ashley WEP; therefore, the ranking for this variable is low. The closest perennial stream is 12 miles from the WEP. There are no communities with more than 50 people within 3 miles of the Ashley WEP; therefore, the ranking for the human development variable is low. The closest community with more than 50 people is the City of Lehr, ND located 4.4 miles north of the WEP. The Ashley WEP has a moderate species ranking index of 0.92 (5.5/6), based on the likelihood of encounter for the six species whose ranges overlap with the WEP (Table 3). The Ashley WEP contains less suitable bat habitat than the surrounding landscape (Figure 3); therefore, the habitat index (HI) is calculated to be 0.38. As there are six species of bats that could potentially occur within the WEP, the species landscape index (SL) is 2.28 and is ranked as low (Table 4).

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TABLES

Table 1. Life history, behavior and habitat preferences of bat species for the Ashley WEP, North Dakota*.

English Name	Scientific Name	Listing Status	Abundance and ND Distribution	Maximum Foraging Area	Habitat/Foraging Habits	Summer Maternity Colony Size	Bachelor Summer Roosts	Winter Hibernacula Colony Size	Winter Roosts or Hibernacula
big brown bat	*Eptesicus fuscus*	None	Common year - round resident. Statewide	1.2 square miles	A generalist, more common in deciduous forests. Adapted to human development. Forages over land and water, open areas and forests. Aerial hawking.	25–75 individuals	Roosts in hollow trees, crevices in cliffs, buildings, bridges and bat houses.	Rarely more than a few hundred individuals.	Winters in caves, mines, and man-made structures.
eastern red bat	*Lasiurus borealis*	None	Common migratory species. Statewide (except southwest corner)	3.5 square miles	Conifer and deciduous trees in floodplain preferred. Aerial hawking.	Small family groups of 2-3 individuals	Solitary. Roosts on foliage.	Solitary; groups up prior to migration	Not believed to winter in the Dakotas
hoary bat	*Lasiurus cinereus*	None	Common migratory species. Statewide	0.03 square mile	Conifer and deciduous trees in floodplain preferred. Found near water. Aerial hawking.	Small family groups of 2-3 individuals	Solitary. Roosts on foliage.	Solitary; groups up prior to migration	Not believed to winter in the Dakotas
little brown bat	*Myotis lucifugus*	None	Common year - round resident. Statewide	0.11 square mile	Found commonly in cottonwood floodplains, typically near water. In arid parts of state found in riparian woodlands. Often hunts over water. Aerial hawking.	Solitary or small colonies.	Diverse range of roost substrates: buildings, caves, hollow trees, piles of stacked lumber	NA	Winters in caves, tunnels and abandoned mines. Winter roosts have high humidity.
northern myotis	*Myotis septentrionalis*	None	Uncommon year-round resident. Southwest part of the state.	0.85 square mile	Associated with large forest galleries in floodplains in plains and badland habitat. Forages in the area of the tree canopy. Aerial hawking and gleaning insects.	Typically small numbers (5 individuals) but has been documented as up to 75 individuals in the Black Hills, SD.	Diverse range of roost substrates: tree cavities, under loose bark, in buildings, caves, mines. Seeks cooler temperatures.	Not found in large aggregations-known from a single cave in the Black Hills	Winters in caves and mines.
silver-haired bat	*Lasionycteris noctivagans*	None	Uncommon migratory species. Erratic statewide distribution	2.8 square miles	Found in forested areas, most abundant in Oregon in older Douglas-fir/western hemlock forests. Forages over ponds and streams in woods. Aerial hawking.	6-65 individuals	Roosts on tree foliage, tree cavities and under loose bark.	Usually solitary	Winters in small tree hollows, underneath bark, in woodpiles and cliff faces.

* *Sources*: ASM 2007, Lacki et al. 2007, NatureServe 2008, Swier 2003, WBWG 2009

Table 2. Total amount of forest-aquatic matrix (FAM) habitat and percent composition within the Ashley WEP and the respective 3-mile buffer.

Area	Size of Area (acres)	Acres of FAM	% FAM in Area
Ashley WEP	17,204	887	5.2
Ashley WEP buffer	66,435	9,058	13.6

Table 3. Ranked scoring system used to develop species risk index for bat species found in south-central North Dakota.

English Name	Score (*P*)	Justification
hoary bat	1.25	Migratory tree bat. Commonly documented mortality at wind facilities (Johnson et al. 2004, Kunz et al. 2007, Arnett et al. 2008).
eastern red bat	1.25	Migratory tree bat. Commonly documented mortality at wind facilities (Johnson et al. 2004, Kunz et al. 2007, Arnett et al. 2008).
silver-haired bat	1.25	Migratory tree bat. Commonly documented mortality at wind facilities (Johnson et al. 2004, Kunz et al. 2007, Arnett et al. 2008).
little brown myotis	0.75	Prefer riparian habitat near water. Low levels of mortality at wind facilities (Arnett et al. 2008).
big brown bat	0.75	Local breeder but low levels of mortality documented at wind facilities (Arnett et al. 2008).
northern myotis	0.25	Project located on the margin of the know distribution range of this species. No documented fatalities at wind facilities (Arnett et al. 2008).
Total	**5.50**	

Table 4. Summary statistics for each variable used in the analysis for the Ashley WEP.

Element	Value	Ranking
Forest-Aquatic Matrix (FAM)	9,945 acres	Low
Number of natural areas within 3 miles	4	Low
Perennial streams present	0	Low
Number of residential communities within 3 miles	0	Low
Species ranking index	0.92	Moderate
Species landscape index	2.28	Low

FIGURES

P:\CPV Renewable\Ashley - ND\GIS\Spatial\MXD\Fig 1_Ashley_Overview.mxd

TETRA TECH EC, INC.

LOCATION MAP



LEGEND

- WEP Boundary
- 3-Mile Buffer
- Highway
- County Boundary
- State Boundary

0 0.45 0.9 1.8 2.7 3.6
Miles

Scale 1:500000
(when printed on tabloid size paper)

Data Sources:
ESRI Streetmap 9.3

Figure 1.
Project Area for
Bat Likelihood of
Occurrence Analysis
Ashley Wind Energy Project

McIntosh County
North Dakota

Competitive Power Ventures, Inc.

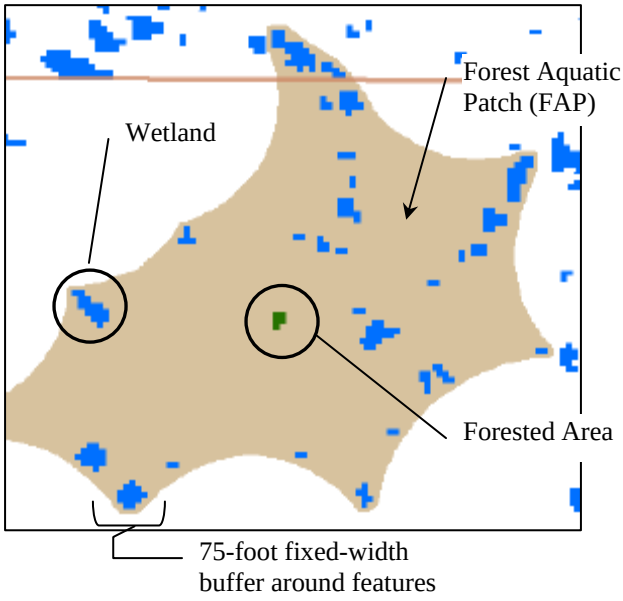


Figure 2. Representation of elements used to calculate FAP. Distance from the forested area is 0.8 mile. Multiple FAPs constitute the FAM.

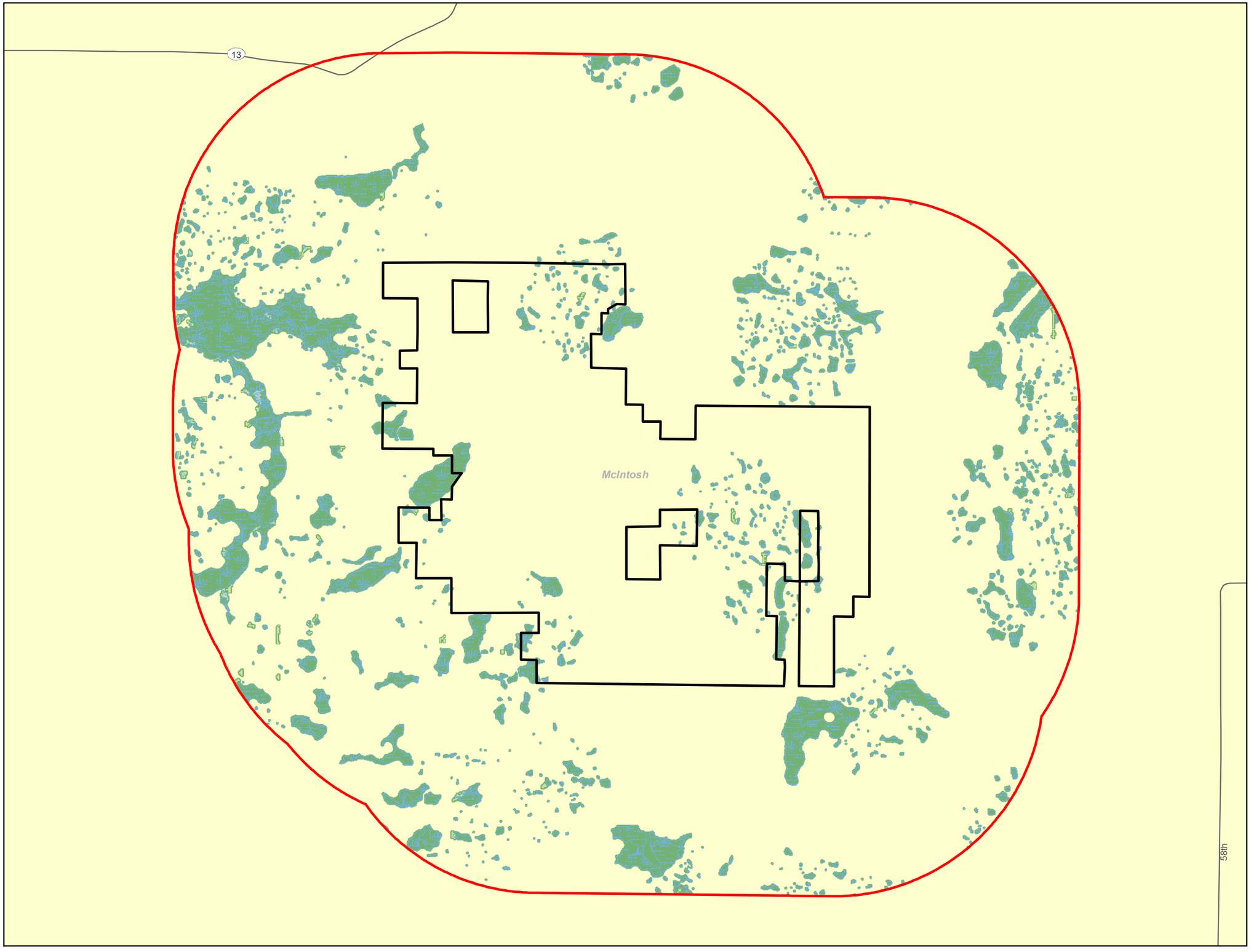


Figure 3.
Ashley Wind Energy Project
Bat Habitat Map

McIntosh County
North Dakota

Competitive Power Ventures, Inc.

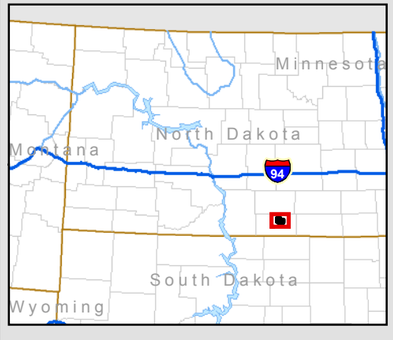
L E G E N D

- WEP Boundary
- 3-Mile Buffer
- Wetland
- Forest
- Forest/Aquatic Matrix
- Highway
- Major Road
- Local Road

Data Sources:
NLCD Data
NWI Wetlands
ESRI Streetmap 9.3

0 0.2 0.4 0.8 1.2 1.6
Miles

L O C A T I O N M A P



File: P:\CPV Renewable\Ashley - ND\GIS\Spatial\MXD\Figure3_BatHabitat_Map.mxd
Prepared By: william.scales
Coordinate System: NAD 1983 UTM Zone 14N

Whooping Crane Likelihood of Occurrence Report

Whooping Crane Likelihood of Occurrence Report

Ashley Wind Energy Project
McIntosh County, North Dakota

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1.0 INTRODUCTION

CPV Ashley Renewable Energy Company, LLC (CPV) is currently developing plans for a wind energy facility in McIntosh County, North Dakota (Figure 1). One environmental element that is investigated when developing wind energy facilities in parts of the Great Plains is the likelihood of the federally endangered whooping crane (*Grus americana*) to be present in or migrate through a project area. The whooping crane migrates through portions of North Dakota during spring and fall. Whooping cranes have been killed by collisions with power lines, and the International Whooping Crane Recovery Plan (hereafter, Recovery Plan) lists construction of power lines, fences, and other structures in the migration corridor as a threat to the species (Canadian Wildlife Service [CWS] and United States Fish and Wildlife Service [USFWS] 2007). Thus, prior to the construction of wind turbines an investigation of whooping crane likelihood should be conducted.

CPV contracted Tetra Tech EC, Inc. (Tetra Tech) to conduct a landscape-scale analysis to assess the potential occurrence of whooping cranes within the Ashley Wind Energy Project (WEP). The objective of this likelihood of occurrence analysis is to evaluate the biological and landscape features within the WEP to determine the potential for whooping cranes to occur. Certain landscape features may increase the likelihood of whooping crane occurrence during migration. Thus, Tetra Tech developed a likelihood index to evaluate the WEP based on its location in the migration corridor, the availability of habitat within the WEP compared to the surrounding landscape and the presence of feeding and roosting sites. The likelihood index does not predict how many whooping cranes will occur in the WEP; rather it scores the site based on a suite of variables that are related to whooping crane occurrence. Higher scores denote higher potential likelihood of occurrence. This assessment tool is not intended to replace field surveys. However, given the low probability of detecting a whooping crane during field surveys, thereby minimizing their utility to document presence or absence from a given area, this assessment tool was designed to take advantage of available data.

2.0 LEGAL STATUS OF THE WHOOPING CRANE IN THE UNITED STATES

The whooping crane is protected by both federal and state laws in the United States. It was considered endangered in the United States in 1970 and the endangered listing was ‘grandfathered’ into the Endangered Species Act (ESA) of 1973, which prohibits “take” (CWS and USFWS 2007). “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct (16 U.S.C. §1532(19)). “Incidental take” occurs when take of an ESA-listed species occurs as an unintended consequence of an otherwise legal activity, as would the case in the unlikely event of a fatality occurring at a wind farm. To Tetra Tech’s knowledge, no whooping crane fatality has occurred at a wind energy facility and no utility has been prosecuted for crane collisions with transmission lines, despite at least 46 known fatalities or serious injuries.

If the potential for take exists, the first step is to consult with the USFWS to further assess the potential risk and discuss strategies to minimize the risk. If it is determined that project development may affect whooping cranes, formal consultation may need to be initiated with the USFWS under Section 7 of the ESA if the Project has a federal nexus or under Section 10 of the ESA if there is no federal nexus. Under a Section 7 consultation, the USFWS must have a finding of no jeopardy in order to concur with the ESA. Under a Section 10 consultation, the applicant develops mitigation and conservation plans to offset losses due to the proposed project by way of a habitat conservation plan (HCP), at which point the USFWS will issue an incidental take permit if they are in agreement. The USFWS is working with the American Wind Energy Association and a group of wind developers, including CPV, to develop a bi-regional HCP.

The whooping crane is also considered a level III Species of Conservation Priority by the North Dakota Game and Fish Department (Hagen et al. 2005). Under the North Dakota comprehensive wildlife conservation strategy guide, a level III species of conservation priority is a species of moderate priority

but is believed to be peripheral or non-breeding in North Dakota (Hagen et al. 2005). Inclusion as a Species of Conservation Priority carries no regulatory weight; as such, North Dakota does not provide any protections for the whooping crane.

The whooping crane population in North America has experienced sharp declines and disappearance from most of its historic range, with the population reaching its lowest point in the late 1930s and early 1940s (CWS and USFWS 2007). The number of whooping cranes in North America prior to 1870 is estimated to have been between 500 and 1,400 individuals (Allen 1952; Banks 1978), but some biologists suggest that the population may have numbered as many as 10,000 individuals (CWS and USFWS 2007). Activities such as habitat destruction, hunting, and displacement due to anthropogenic activities likely lead to widespread population declines (CWS and USFWS 2007). One self-sustaining wild population of whooping cranes currently exists in the world. Members of this population breed primarily within the boundaries of Wood Buffalo National Park in Canada and migrate through the central United States in route to the wintering grounds at Aransas National Wildlife Refuge along the Gulf Coast of Texas. This flock is referred to as the Aransas-Wood Buffalo National Park Population. Due to intensive management, this population has increased from 15 birds in 1941 to 263 as of the start of spring migration in 2010 (WCCA 2010).

3.0 PROJECT AREA DESCRIPTION AND ENVIRONMENTAL SETTING

3.1 Project Area Description

The WEP is located on privately owned lands in south-central North Dakota, consists of approximately 17,400 acres under easement with CPV, and is located slightly more than 6 miles north of the town of Ashley in McIntosh County (Figure 1). The WEP area is characteristic of the upland portion of this region, with the majority of the land surface currently covered by agriculture, rangelands, and native prairie. The area contains numerous small wetlands that vary from shallow, vegetated depressions to deeper, open water communities. Residences and abandoned farmsteads are scattered throughout the WEP. Patches of trees and shrubs exist throughout the WEP, and are found primarily between agricultural fields, in drainages, and as shelter belts around homesteads and between agricultural fields.

3.2 Environmental Setting

The WEP is located within the Northwestern Glaciated Plain. This ecoregion is a transitional region between the generally more level, moister, more agricultural Northern Glaciated Plains to the east and the generally more irregular, dryer, Northwestern Great Plains to the west and southwest. The western and southwestern boundary roughly coincides with the limits of continental glaciation. Pocking this ecoregion is a moderately high concentration of semi-permanent and seasonal wetlands, locally referred to a Prairie Potholes. Native prairie persists in areas of steep or broken topography, but they have been largely replaced by spring wheat and alfalfa over most of the ecoregion. Land use is predominantly dry-land farming of spring and winter wheat, barley, sunflowers and corn, interspersed with cattle grazing.

4.0 WHOOPING CRANE BIOLOGY

The whooping crane is a long-lived species that may reach 28 years old in the wild (Binkley and Miller 1983). Individuals reach sexual maturity at 3 to 5 years of age and form life-long breeding pairs while on the wintering grounds or during spring migration (Stehn 1997; CWS and USFWS 2007). Whooping cranes have low annual reproductive output. Females typically lay 2 eggs, but only 10 percent of families arrive on the winter grounds with 2 chicks because the smaller chick usually dies within the first two weeks after hatching (CWS and USFWS 2007). The juveniles become independent of the parents on the wintering ground prior to spring migration. Sexually immature individuals (i.e., subadults) return to the breeding grounds where they may remain solitary or congregate in small groups on the periphery of breeding pairs (CWS and USFWS 2007).

4.1 Reasons for the Population Decline

Populations of long-lived species with low annual reproductive output such as the whooping crane are sensitive to changes in adult survival (Stahl and Oli 2006). Hunting, especially during spring migration, from 1870 to 1930 resulted in 274 documented whooping crane fatalities (Allen 1952). In addition, Hahn (1963) tallied 309 mounts and 9 skeletons in museum collections throughout the world. Because many of these specimens do not contain information regarding the date and location of collection, it is unlikely that the majority were collected by museum personnel. It is possible that mortality from shooting exceeded annual production of juveniles during the early 1900s (CWS and USFWS 2007).

Degradation and loss of breeding habitat eliminated the whooping crane from much of its core breeding range in North America (CWS and USFWS 2007). Whooping cranes once bred from the southern edge of Lake Michigan north through southern Minnesota to northeastern North Dakota through Manitoba, Saskatchewan, and Alberta (Allen 1952). Conversion of prairie and pothole ecosystems to agriculture and ranching made much of the breeding habitat unsuitable (CWS and USFWS 2007). Due to their high degree of site fidelity (i.e., the tendency to use the same geographic locations and routes over time), members of the Aransas-Wood Buffalo Population are unlikely to recolonize the historic whooping crane range in North America naturally.

4.2 Threats to Whooping Cranes

Due to its small population size and concentration of all members of the Aransas-Wood Buffalo National Park population at breeding and wintering locations, there are several factors which may threaten the whooping crane (CWS and USFWS 2007). These include human settlement and development, habitat loss, shooting, disturbance, disease, and predation. Threats to the whooping crane that are related to wind power development include collision with power lines, fences, and other structures, and loss and degradation of stopover and wintering habitat (CWS and USFWS 2007; USFWS 2009).

Power lines pose a threat to whooping cranes when they are located in the vicinity of foraging or roosting habitat because individuals often fly at low altitudes (33 to 49 feet above the ground) when moving among sites (CWS and USFWS 2007; Stehn and Wassenich 2008). The majority of documented fatalities during migration are due to collision with power lines. Since 1956, 46 whooping cranes have been killed (91% of collisions) or seriously injured (9% of collisions) as a result of collisions with power lines (Stehn and Wassenich 2008). The majority of confirmed power-line fatalities have occurred within the experimental populations that are maintained by the introduction of captive-reared young; power-line fatalities have also been reported for the Aransas-Wood Buffalo National Park population (at least 7 fatalities and 2 serious injuries since 1956).

Although whooping crane mortality has not been attributed to wind turbines, the Recovery Plan considers wind power development within the whooping crane migration corridor a threat because of the construction of power lines and associated structures (CWS and USFWS 2007). It is unknown how whooping cranes will respond to the presence of wind turbines. The USFWS (2009) holds the opinion that whooping cranes will avoid stopping at areas with operational wind turbines; thus, behavioral avoidance of wind farms by whooping cranes may reduce the probability of collision, but may amount to loss of stopover habitat.

5.0 WHOOPING CRANE MIGRATION

Whooping cranes undertake a 5,000-mile round-trip migration from the breeding area in Canada to the wintering area in Texas every year. Individuals depart the breeding ground in Canada and travel south through Alberta, Montana, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and reach the wintering ground on the Texas coast. The migration route is well defined and 94 percent of all observations occur within a 200-mile wide corridor during spring and fall migration (CWS and USFWS 2007, Figure 2). Whooping cranes may occasionally travel with sandhill cranes during migration, and stopover sites used by sandhill cranes may indicate potential whooping crane stopover areas (CWS and USFWS 2007). The absence of sandhill crane sightings on the ground within a project area does not mean that cranes of either species will never be observed there, but inferences can be drawn about the relative unsuitability of the location.

During migration, whooping cranes can occur where suitable habitat is available. Some sites in the migration corridor are used consistently and have high annual use. Four traditional stopover sites are found in Nebraska (Platte River), Kansas (Cheyenne Bottoms Wildlife Management Area, Quivira National Wildlife Refuge), and Oklahoma (Salt Plains National Wildlife Refuge). These sites are designated as critical habitat under the ESA (CWS and USFWS 2007).

5.1 Fall Migration

Whooping cranes depart the breeding grounds at Wood Buffalo National Park in mid-September. Birds may travel alone, in pairs, in family groups, or in small flocks (Johns 1992). Individuals travel southeast about 300 miles to the major staging area in Saskatchewan, where they may remain for 2 to 4 weeks before resuming migration. During fall migration, birds may stay at traditional stopover sites for 7 to 10 days, but stays as long as 6 weeks have been documented at Quivira National Wildlife Refuge (CWS and USFWS 2007). The majority of whooping cranes reach the wintering grounds by mid-November. In North Dakota most sightings occur from early October to early November and peak migration occurs around October 18 (Austin and Richert 2001).

5.2 Spring Migration

Whooping cranes depart the wintering ground at Aransas National Wildlife Refuge in late March; the last birds depart in May. Breeding pairs are typically first to depart and migration is facilitated by winds from the southeast. There is no known staging area in spring as there is in fall, and migration is completed in 2 to 4 weeks. Traditional stopover sites that are used in fall are also used in spring. However, individuals spend fewer days at stopover sites during spring migration. Whooping cranes travel through North Dakota from early April to late April and peak migration occurs around April 19 (Austin and Richert 2001).

5.3 Migration Flight Behavior

Whooping cranes are diurnal migrants and primarily fly by using static soaring, but low-level flapping flight may be used when conditions dictate. Migration is initiated after the air has warmed and thermal updrafts are present. Individuals spiral upwards on thermals of warm air to heights of 1,000 to 6,000 feet (Kyut 1992), then enter into long, descending glides. This process is repeated throughout the day until suitable habitat is reached. Static soaring is energy efficient as birds seldom flap after they are airborne. Whooping cranes may travel up to 500 miles per day in ideal conditions; during average conditions they may travel 250 miles per day (Stehn and Wassenich 2008). During the end of the diurnal migration flight, individuals will enter long descending glides and use flapping flight at lower altitudes until they reach suitable roosting and feeding habitat. Whooping cranes do not regularly migrate during unfavorable weather conditions such as a strong headwind, rain or other precipitation, or overcast conditions. When visibility is poor, individuals use flapping flight at lower altitudes until they reach suitable roosting or feeding habitat. Poor weather conditions can lengthen stopover duration in a given location (USFWS 2009).

5.4 Stopover Habitat Characteristics

Whooping cranes require roosting habitat when they stop during migration. They often select sites with unobstructed visibility (Austin and Richert 2001). Palustrine wetlands (freshwater wetlands characterized by emergent vegetation) are most often used as roosting sites, but individuals have been found roosting at lacustrine wetlands (wetlands around a lake), and riverine wetlands (wetlands along a river). The size of wetlands used during spring and fall migration ranges from 0.4 hectare (ha) to over 500 ha (1 to 1200 acres), and no seasonal use patterns are evident (Austin and Richert 2001). It is noted that 75 percent of recorded roost wetlands were smaller than 4 ha (10 acres). Cranes have been observed using wetlands as deep as 10 feet; however, they generally restrict their usage of these wetlands to areas where the water depth is less than 2 feet (Austin and Richert 2005).

Whooping cranes forage in wetlands and agricultural fields during migration and may travel between roosting and feeding areas. Palustrine wetlands are used most often when whooping cranes forage in wetlands, but lacustrine and riverine have also been used as feeding sites (Austin and Richert 2001). Among agricultural crops used as feeding sites, use of winter wheat was higher than other crop types in fall and use of row-crop stubble (comprised mostly of corn) was higher in spring than other crop types (Austin and Richert 2001). Whooping cranes have also been observed feeding in sorghum, sunflower, and soybean stubble (Austin and Richert 2001). Feeding sites are often found adjacent to roosting sites. For example, 94.9 percent and 72.9 percent of roosting sites were within 0.62 mile of feeding sites in spring and fall, respectively (Johns et al. 1997; USFWS 2009).

6.0 ASSESSMENT OF WHOOPING CRANES LIKELIHOOD OF OCCURRENCE

The USFWS (2009) holds the opinion that whooping cranes will avoid stopping at areas with operational wind turbines. The primary threats of wind energy development to whooping cranes are loss of habitat and mortality due to collision with transmission lines and associated structures. Because of the high levels of concern regarding whooping cranes, the ability to evaluate the risk to whooping cranes at individual wind project areas is a critical component to understanding the environmental impacts of a proposed wind facility. If avoidance by the whooping crane of a previously utilized area occurs, the area occupied by the wind facility would constitute stopover habitat loss. Here, Tetra Tech presents a method (one that has been used in multiple ESA-related consultations) to evaluate the likelihood of whooping cranes to occur at the WEP located in southeast North Dakota. This evaluation method incorporates the location of the project in the migration corridor, the availability of habitat within the WEP area compared to the surrounding landscape and the presence of feeding and roosting sites (Table 1). Tetra Tech expects whooping cranes to be more likely to occur over the life of a project at projects with high scores. For the purposes of this report, Tetra Tech calculated scores for each parameter and, based on desktop modeling of variable weights, assigned the following likelihood of occurrence rankings: Low (0-3); Moderate (4-8); High (8+). This assessment tool is not intended to replace field surveys. However, given the low probability of detecting a whooping crane during field surveys, thereby minimizing their utility to document presence or absence from a given area, this assessment tool was designed to take advantage of available data.

6.1 Location of a WEP in the Migration Corridor (L)

Biological Justification

The United States Geological Survey (USGS) has compiled a report documenting the locations and habitat of whooping cranes during migration from 1943-1999 (Austin and Richert 2001). These observations indicate that a whooping crane, or group of whooping cranes, was seen at some point between 1943 and 1999. The USFWS has produced an updated map showing the location of whooping crane observations though 2008 (Figure 2). It is important to note that while these are the best data available, they are largely non-standardized and incidental; as such these data are not suitable for assessing habitat preferences or shifts in migration patterns.

The location of a potential wind facility influences the likelihood of whooping crane occurrence due to the well-defined migratory pattern of the cranes. The median location of all crane observations was statistically derived and was used to describe the migration route from the breeding grounds to the wintering grounds (CWS and USFWS 2007). Buffers were then calculated based on the percentage of observations (Figure 2). For example, 75 percent of all observations occurred within the 75-percent buffer. If two sites are compared, whooping cranes are more likely to stop over at a site within the 75-percent buffer than at a site outside the 95-percent buffer.

Scoring

Tetra Tech developed scores for the location of a project based on the percent of observations within each buffer. If a project fell within the 75-percent buffer, it was scored 7.5. If a project fell between the 75-percent and 95-percent buffers, it was scored 2.0 because 20 percent of all observations occur between these buffers. If a project fell outside of the 95-percent buffer, it was scored 0.5 because 5 percent of all observations occur outside the 95-percent buffer.

Assumptions

The likelihood of whooping crane occurrence in the future will not deviate from the patterns observed through 2008.

If a portion of the project fell on the boundary of a buffer or in two buffers, the project was assumed to be within the buffer closer to the middle of the migratory corridor.

6.2 Attractiveness on the Landscape (A)

Biological Justification

Wetlands are used by whooping cranes for feeding and roosting. The amount of wetlands within a given area compared to the surrounding landscape may influence whooping crane use of a site during migration. After whooping cranes have descended from migration flight altitudes, they may travel up to 35 miles in search of suitable roosting habitat (USFWS 2008). Therefore, Tetra Tech used a ranking criteria based on the idea that if a project area contained a higher proportion of suitable wetlands than was found within the 35 miles surrounding the project area then the WEP is more attractive than the surrounding area.

Scoring

Tetra Tech used GAP data for North American (Strong et al. 2005) in conjunction with National Wetlands Inventory (NWI) data (USFWS 2006) and National Land Cover Database data (USGS 2007) to determine the total acreage of wetlands within the WEP and within 35 miles of the WEP. The use of multiple data sources will help avoid the limitations of any one data source (e.g., Stahlecker 1992). Tetra Tech then calculated the proportion of the total acreage of the project that was comprised of wetlands and the proportion of the total acreage of a 35-mile area around the WEP that was wetlands (excluding the WEP). Tetra Tech divided the proportion of the WEP that was suitable wetlands by the proportion of the 35-mile buffer that was suitable wetlands to determine if the project contained more suitable wetlands than the surrounding area. Tetra Tech used the ratio as the score in the likelihood index equation. If the ratio was greater than 1, the project contained a greater proportion of suitable wetlands and is more attractive than the surrounding 35-mile buffer. If the ratio was equal to 1, the project contained a similar proportion of wetlands and is as attractive as the surrounding 35-mile buffer. If the ratio was less than 1, the project contained less wetlands and is less attractive than the surrounding 35-mile buffer.

Assumptions

The distribution of wetlands in the Geographic Information System (GIS) data is an accurate representation of the location of wetlands in the project area.

35 miles is an appropriate scale to examine whooping crane habitat use.

6.3 Presence of Foraging and Roosting Sites (W)

Biological Justification

Whooping cranes often make low altitude flights between roosting and foraging habitat and are thus at risk of collision with power lines and other structures (CWS and USFWS 2007; Stehn and Wassenich 2008; USFWS 2009). Austin and Richert (2001) found that agricultural crops, especially corn, sorghum, and winter wheat were the habitat most often contiguous to roosting areas and that most cranes traveled 0.62 mile from a roosting site to a foraging site. Therefore, wetlands located within 0.62 mile of agricultural crops form a wetland-agricultural matrix that is often used by whooping cranes during migration (Austin and Richert 2001). Tetra Tech determined the proportion of the project area that was comprised of wetland-agricultural matrix. Tetra Tech included water bodies of any type (hereafter wetlands), but restricted the analysis to wetlands greater than 1 acre to eliminate inclusion of unusable wetland (e.g., borrow pits). Tetra Tech limited the analysis to crop agriculture because it is most often used for feeding habitat and restricted the analysis to agriculture greater than 1 acre because most observations of cranes occurred in agriculture greater than 1.0 acre (Austin and Richert 2001).

Scoring

To quantify the amount of roosting and foraging habitat in a project area, GIS landcover data (GAP data) was obtained for North Dakota (Strong et al. 2005). Water features and the spatial extent of waters were verified with NWI data (USGS 2007). The GIS analysis was designed to calculate the total area of wetland-agricultural matrix, which may include other habitat types between patches of wetlands and agriculture. Thus, based on the size restrictions and spatial configuration, the total acres of wetland-agricultural matrix could be greater or less than the sum of the acres of wetland and agriculture. Tetra Tech calculated the proportion of the project area that was wetland-agricultural matrix by dividing the total acres of wetland-agricultural matrix by the total acres of the project. Tetra Tech used the proportion as the score in the likelihood index; therefore, scores may range from 0 to 1.

Field Verification

Tetra Tech verified the presence of suitable roosting locations during a site visit in October timed to coincide with the fall migratory period for whooping cranes in North Dakota. Any desktop-identified wetlands that were found to (a) either not exist or (b) exist in a form that might render then unusable by cranes were removed from the analysis. The field visit resulted in the removal of 855 acres of wetland from the analysis; no suitable wetlands were added.

Assumptions

The optimal distance of foraging habitat from roosting habitat is 0.62 mile.

Habitats not classified as suitable wetlands or agriculture are of neutral value and do not influence the availability of suitable wetlands or agriculture on the landscape.

6.4 Likelihood Index Formula (LI)

The likelihood index of whooping cranes occurring at the WEP was calculated by evaluating the landscape features in and around the project. Tetra Tech used the following formula to calculate the likelihood index:

$$LI_i = (L_i \times A_i) + W_i$$

Where:

L_i = location of project in relation to the migration corridor score;

A_i = attractiveness score, or the ratio of suitable wetlands in a project to suitable wetlands in a 35-mile area around a project; and

W_i = wetland-agricultural matrix score.

The equation places the most weight on the location in the migration corridor because of the wide range of scores. Thus, a project within the 75-percent corridor will tend to score higher than a project within the 95-percent corridor unless the attractiveness score for the project within the 75-percent corridor is low (e.g., <0.50) or the attractiveness score for the project within the 95-percent corridor is high (>4.0), when other values are equal. Projects located outside of the 95-percent corridor will tend to score low unless the attractiveness score is high because the location score is less than 1.0.

7.0 ASHLEY WEP ASSESSMENT

The likelihood index score was 2.99 for the entire WEP (Table 2) implying a low likelihood of occurrence. The WEP is located within the 89-percent buffer (Figure 3); therefore, the Location (L) parameter was 2.0. A total of 7 observations of 26 individuals have been reported within the 35-mile buffer around the WEP (Figure 4). The percentage of available and suitable wetlands within the WEP is higher than the surrounding 35-mile buffer area, with a calculated Attractiveness on the Landscape (A) value of 1.39. Twenty-one percent of the WEP consists of suitable wetland-agriculture matrix habitat, making the Presence of Feeding and Roosting Sites (W) value 0.21 (Figure 4).

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TABLES

Table 1. Parameters used in the likelihood index calculation.

Parameter	Score	Justification
Location in the Migration Corridor (L)		
Within the 75-percent buffer	7.5	75% of all whooping crane observations occur within the 75-percent buffer
Between the 75-percent and 95-percent buffers	2.0	20% of all observations occur between 75-percent and 95-percent buffers
Outside the 95-percent buffer	0.5	5% of observations occurred outside the 95-percent buffer
Attractiveness on the Landscape (A)		
Ratio of wetlands per total acreage for the WEP/ wetland per total acreage for 35-mile area not including the WEP	Actual ratio	Indicates if the WEP is similar (=), less (<), or more (>) attractive than the surrounding landscape to migrating cranes searching for roosting habitat
Presence of Foraging and Roosting Habitat (W)		
Proportion of the WEP that is a wetland-agricultural matrix	Actual proportion	Indicates the proportion of the WEP that is favored by cranes for foraging and roosting habitat

Table 2. Likelihood index score for the Ashley WEP.

Location in the Migration Corridor (*L*)	Attractiveness on the Landscape (*A*)	Presence of Foraging and Roosting Habitat (*W*)	Likelihood Index Score (*LI*)
2.0	1.39	0.21	2.99

FIGURES

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TETRA TECH EC, INC.

LOCATION MAP



LEGEND

- WEP Project Boundary
- Highway
- State Boundary
- County Boundary

Data Sources:
USGS National GAP Analysis Program
ESRI Streetmap 9.3

0 0.45 0.9 1.8 2.7 3.6
Miles

Scale 1:500000
(when printed on tabloid size paper)

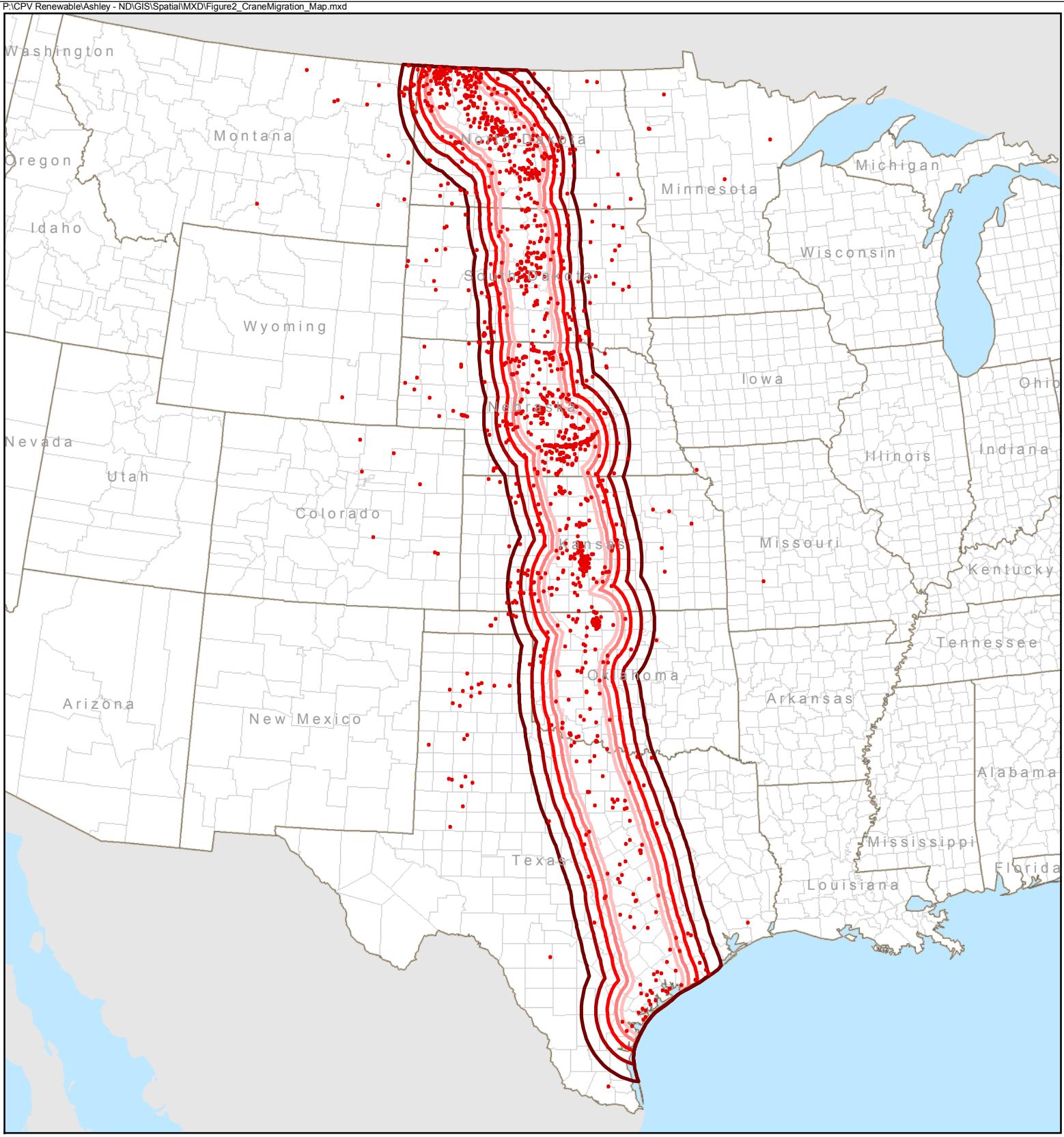
Figure 1.
Vicinity Map of Ashley WEP

North Dakota

McIntosh County
North Dakota

Competitive Power Ventures, Inc.

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L E G E N D

State Boundary

County Boundary

Whooping Crane Sighting (1942-2007)

Percentage of Sightings

- 75.08%
- 79.44%
- 85.04%
- 89.83%
- 94.83%

N
W
E
S

0 40 80 160 240 320

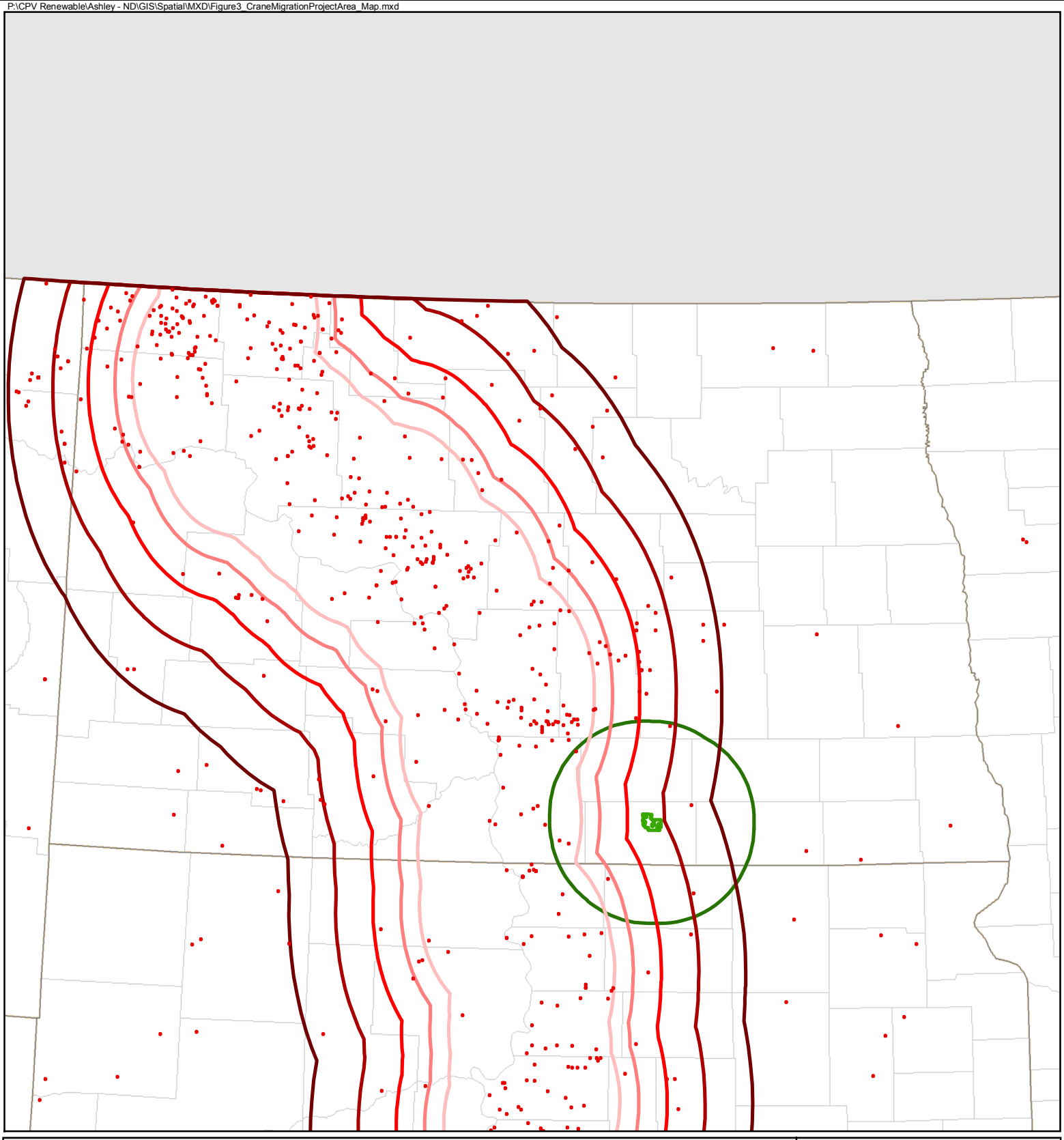
Miles

Data Sources:
USGS National GAP Analysis Program
ESRI Streetmap 9.2

Figure 2.
Whooping Crane Migration Route in the United States

Competitive Power Ventures, Inc.

P:\CPV Renewable\Ashley - ND\GIS\Spatial\MXD\Figure3_CraneMigrationProjectArea_Map.mxd



L E G E N D

Whooping Crane Sighting (1942-2007)

Percentage of Sightings

- 75.08%
- 79.44%
- 85.04%
- 89.83%
- 94.83%

- Project Area
- 35-Mile Buffer
- State Boundary
- County Boundary

N
W E
S

0 10 20 40 60 80

Miles

Data Sources:
USGS National GAP Analysis Program
ESRI Streetmap 9.2

Figure 3.
Whooping Crane Migration
Map: North Dakota

Competitive Power Ventures, Inc.

ID	Adults	Juveniles	Total	Start Date	Site	Distance (miles)
82B-25	2	1	3	10/29/82	LAND,WATER,AIR	31.94
92B-1	4	0	4	10/08/92	LAND,AIR	12.71
02A-15	7	0	7	05/02/02	AIR	34.32
03B-3	2	0	2	10/12/03	WATER,AIR	28.61
04B-23	4	0	4	10/24/04	LAND,WATER,AIR	33.85
96B-19	3	0	3	10/27/96	AIR	21.25
82B-26	2	1	3	10/29/82	LAND,WATER,AIR	20.02

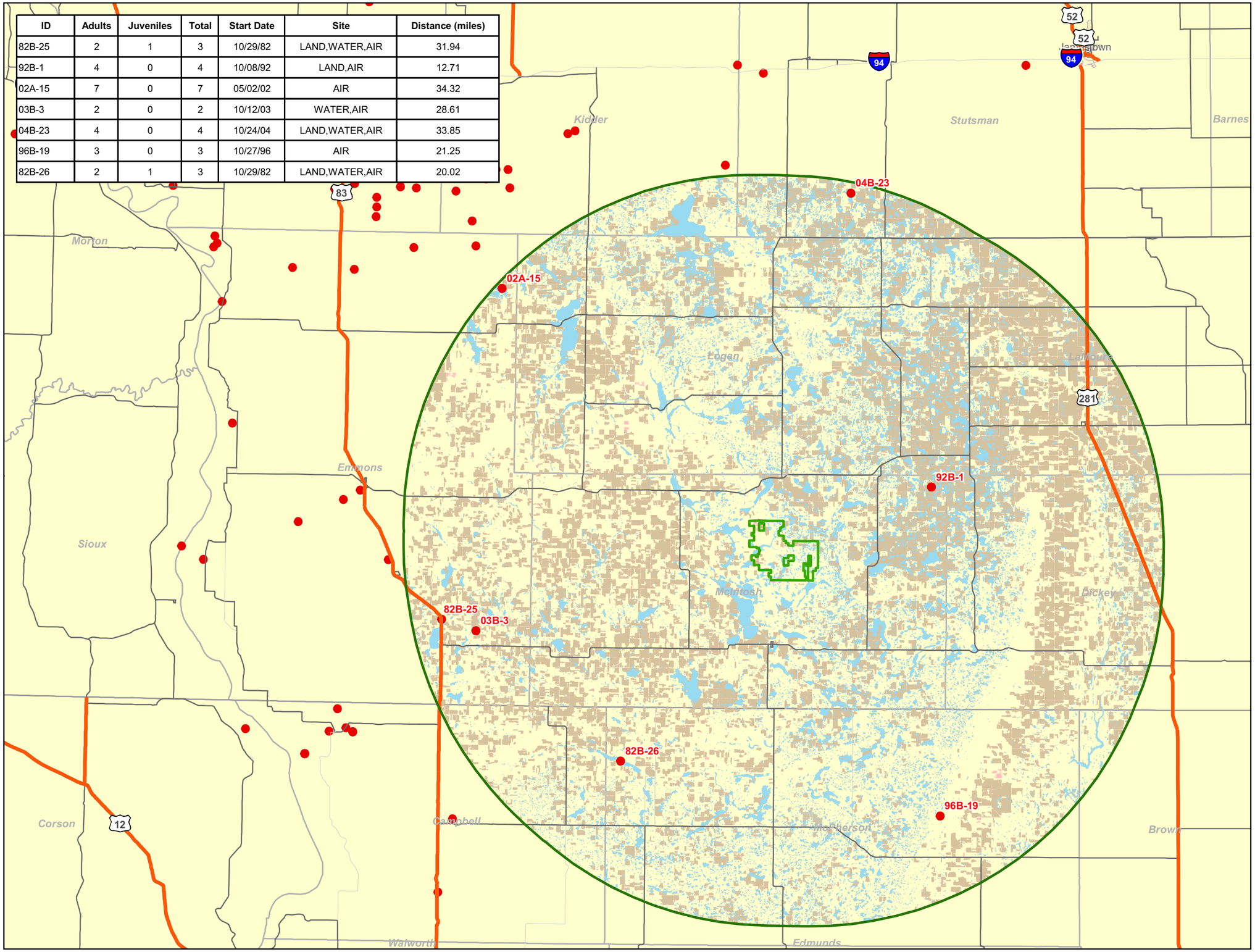


Figure 4. Ashley Wind Energy Project Whooping Crane Habitat Map

McIntosh County
North Dakota

Competitive Power Ventures, Inc.

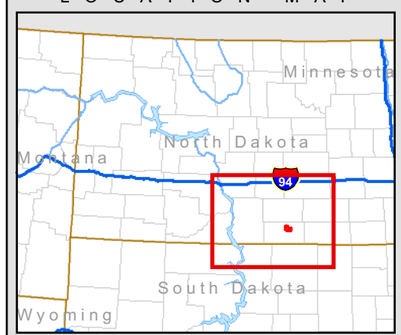
L E G E N D

- Wetland/Agricultural Matrix
- Wetland
- Agricultural Land
- 35 Mile Buffer
- Whooping Crane Sighting (1942-2007)
- Highway
- Major Road
- Local Road

Data Sources:
NLCD Data
USFWS Whooping Crane Data
ESRI Streetmap 9.3

0 1.252.5 5 7.5 10
Miles

L O C A T I O N M A P



File: P:\CPV Renewable\Ashley - ND\GIS\Spatial\MXD\Figure4_CraneHabitat_Map.mxd
Prepared By: william.scales
Coordinate System: NAD 1983 UTM Zone 14N

2009 Fall Avian Survey

2009 Fall Avian Survey

Ashley Wind Energy Project
McIntosh County, North Dakota



Prepared For:

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March 2010

TETRA TECH EC, INC.

EXECUTIVE SUMMARY

Tetra Tech EC, Inc. was contracted by CPV Ashley Renewable Energy Company, LLC to undertake fall avian use surveys for the proposed Ashley Wind Energy Project (WEP) in McIntosh County, North Dakota. A qualified field biologist conducted the surveys to identify potential avian impacts associated with building and operating the wind conversion facility. The biologist performed weekly surveys at the WEP from August 11 to October 31, 2009, which included the fall season, at 7 points distributed throughout the WEP.

A field biologist observed 14,950 birds within the WEP, 14,741 birds from 79 species and 209 birds that could not be identified to species. Overall mean bird use within the Ashley WEP was 177.98 birds/ 20 minutes (min) and ranged from 0 to 1,692 birds/20 min.

The species with the highest mean use included the red-winged blackbird (38.42 birds/20 min), snow goose (24.52 birds/20 min), sandhill crane (19.11 birds/20 min), American coot (13.06 birds/20 min) and yellow-headed blackbird (9.80 birds/20 min). These five species accounted for 58.9 percent of all birds observed. Red-winged blackbird, snow goose, and sandhill crane had very high encounter rates (> 10.0 birds flying at rotor swept area [RSA] height/20 min). All are common migratory species during the fall in North Dakota and have relatively stable and large populations in central North America. As a result, any mortality of these species, should it occur, is unlikely to have population-level consequences. The field biologist observed all of the sandhill cranes on a single day (October 31).

Northern harriers and red-tailed hawks were the most common raptors observed at the WEP but in very low numbers (0.44 and 0.43 birds/20 min, respectively) and with very low encounter rates at the WEP (0.05 and 0.25 birds flying at RSA height/20 min, respectively). Red-tailed hawk and northern harrier fatalities have occurred at wind farms; however, the very low mean use and encounter rates at this site suggest a low probability of negative interactions with turbines. Additional raptor observations within the WEP included Swainson's hawk, rough-legged hawk, broad-winged hawk, ferruginous hawk, merlin, sharp-shinned hawk, and prairie falcon.; all had low mean use values (<0.25 birds/20min) and low encounter rates (<0.23 birds flying at RSA height/20min) indicating a low probability of negative interactions with turbines.

Listed and Sensitive Species

The biologists did not record any species listed on the Endangered Species Act or any federal candidate species. The bald eagle, detected as an incidental observation, is protected by the Bald and Golden Eagle Protection Act (BGEPA). The biologist observed three bald eagles flying at 400 meters (m) (above the RSA) approximately 1 mile to the southwest of the WEP on August 22. Although the biologist did not observe any of these individuals within the WEP, the observation does confirm the potential utilization of the area by bald eagles, although the probability of negative interaction is low. The BGEPA prohibits the take or disturbance of any bald eagle, alive or dead, including any part, nest, or egg. "Take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" a bald or golden eagle. "Disturb" means to agitate or bother an eagle to a degree that causes, or is likely to cause, 1) injury to an eagle, 2) a decrease in its productivity, or 3) nest abandonment. The United States Fish and Wildlife Service (USFWS) has implemented a permitting process to allow take of bald and golden eagles on a limited basis under certain conditions.

State-listed species observed during avian surveys or as incidental observations included 10 Level I Species of Conservation Priority: American bittern, American white pelican, black tern, ferruginous hawk, Franklin's gull, grasshopper sparrow, Swainson's hawk, upland sandpiper, willet, and Wilson's phalarope. Additionally, 7 Level II Species of Conservation Priority were observed: bald eagle, canvasback, northern harrier, northern pintail, prairie falcon, redhead, and sharp-tailed grouse. Species that are listed as a Species of Conservation Priority in North Dakota are not afforded any formal protection by the state. Of the state-listed species, Franklin's gull, American white pelican, canvasback,

northern pintail Swainson's hawk, northern harrier, ferruginous hawk, prairie falcon, and black tern were observed flying at heights consistent with the anticipated RSA. Most of the state listed species had encounter rates of less than 1.00 birds flying at RSA height/20 min, mostly due to the low overall numbers of these species observed at the WEP; a low encounter rate suggests a low probability of negative interactions with turbines. Of the state-listed species, Franklin's gull and American white pelican had the highest encounter rates (3.27 and 6.78 birds flying at RSA height/20 min, respectively). Although no mortality of Franklin's gull or American white pelican has been reported at a wind farm, the high mean use and encounter rate at the WEP suggests the potential for negative turbine interactions. However, the North Dakota breeding populations of both species are stable. As a result, if any mortality were to occur at the WEP, it is unlikely to have any population-level impacts.

Table ES-1. Fall avian use summary.

Variable	Result	Details
Non-raptors		
Mean use	144.93 birds/ 20 min	
Number of species with high encounter rates (>2.0 birds at RSA height/20 min)	9	Table 5
Federally listed[1] species observed within the WEP	No	NA
State-listed species[2] within the WEP	Yes	8 Species of Level I Conservation Priority 4 Species of Level II Conservation Priority (Section 4.3)
State-listed species within RSA	Yes	5 Species (Section 4.3)
Raptors		
Mean use	1.50 birds/ 20 min	
Number of species with high encounter rates (>2.0 birds at RSA height/20 min)	None	NA
Eagles observed within the WEP	No	NA
Federally listed species observed within the WEP	No	NA
State-listed species within the WEP	Yes	2 Species of Level I Conservation Priority 3 Species of Level II Conservation Priority (Section 4.3)
State-listed species within the RSA	Yes	4 Species (Section 4.3)
Habitat		
Native habitat likely to be affected by development	Yes	Native prairie and wetlands
Lakes (waterfowl and waterbird attractant)	Yes	Numerous ponds within WEP and several large lakes outside WEP
Wetlands (attractant for cranes, waterfowl, and other water-based species)	Yes	Scattered throughout
Cliffs (raptor nesting and traveling)	No	NA
River (permanent water source, migration corridor)	No	NA
Known refuges or habitat features that may funnel migrants	Yes	Two Waterfowl Production Areas

[1] Federally listed species include species listed as endangered, threatened, or candidate species in the Endangered Species Act.
[2] The North Dakota Game and Fish Department maintains a list of Species of Conservation Priority (NDGFD 2008).

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APPENDIX

Appendix 1. Flight directions of birds observed during fall 2009 point count surveys at the Ashley Wind Energy Project

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1.0 INTRODUCTION

1.1 Wind Energy and Birds

Wind energy provides a clean, renewable energy source that is in high demand. As wind power has become more common, the need to address potential environmental impacts has increased. Birds have been identified as a group potentially at risk because of collisions with wind turbines and power lines and displacement due to the presence of the associated structures (Erickson et al. 2005, Drewitt and Langston 2006, Arnett et al. 2007). Specifically, migrant passerines (e.g., songbirds) are found more often in post-construction mortality monitoring compared to other groups of birds (Arnett et al. 2007), an observation that is consistent with overall patterns of avian abundance. In fact, at newer generation wind energy facilities outside of California, approximately 80 percent of documented mortalities have been songbirds, of which 50 percent are often nocturnal migrants (Erickson et al. 2001, Drewitt and Langston 2006, Johnson et al. 2007, Strickland and Morrison 2008). It is estimated that less than 0.01 percent of migrant songbirds that pass over wind farms are killed, based on radar data and mortality monitoring (Erickson 2007). Locally breeding songbirds may experience lower mortality rates than migrants because many of these species tend not fly at turbine heights during the breeding season. However, some breeding songbird species have behaviors that increase the risk of collisions with turbines. For example, horned larks have been commonly found as fatalities at wind farms (Erickson et al. 2002). Mortality may be partially attributed to the flight displays in which male horned lark fly to heights of 80 meters (m) to 250 m (Pickwell 1931).

Despite the observation that most wind farm fatalities are songbirds, raptor mortality historically has received the most attention. Raptor mortality at newer generation wind projects has been low relative to previous generation wind farms, although there is substantial regional variation (Erickson et al. 2002, 2004, Johnson et al. 2002, Kerns and Kerlinger 2004, Jain et al. 2007). Although raptor mortality is reduced at newer generation facilities, mortality may not be eliminated by advances in turbine technology (e.g., turbine height, tower structure) and local micro-siting and site evaluation efforts are still necessary to lessen potential impacts to these species.

In addition to mortality associated with wind farms, concerns have been raised that some bird species may avoid areas near turbines after the wind farm is in operation (Drewitt and Langston 2006). For example, at the Buffalo Ridge wind energy facility in Lincoln County, Minnesota, densities of male songbirds were significantly lower in Conservation Reserve Program (CRP) grasslands containing turbines than in CRP grasslands without turbines (Leddy et al. 1999). It was hypothesized that the reduced density may be due to avoidance of turbine noise and maintenance activities, and reduced habitat quality due to the presence of access roads and large gravel pads surrounding the turbines (Leddy et al. 1999). Reduced abundance of grassland songbirds was found within 50 m of a turbine pad for a wind farm in Washington and Oregon, but the investigators attributed displacement to the direct loss of habitat or reduced habitat quality and not the presence of the turbines, suggesting that both habitat loss and operational concerns can contribute to avian displacement (Erickson et al. 2004). Recent research at two wind farms in North and South Dakota (Shaffer and Johnson 2008) suggests that certain grassland songbird species (2 of 4 species studied) may avoid turbines by as much as 200 m but these results have not been finalized (i.e., more species are currently being analyzed) nor assessed at additional sites. No studies have addressed whether or not these avoidance effects are temporary (i.e., the birds may habituate to the presence of turbines over time) or permanent.

Finally, all native birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918. Under the MBTA it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product. Despite extensive liability provisions, the United States Fish and Wildlife Service (USFWS) have narrowly interpreted its permitting authority. “As

currently written, USFWS's regulations establish a permitting scheme for a variety of intentional activities, such as hunting, falconry, certain import and export activities, depredation control, and scientific research. But…there is no permitting scheme for the incidental take of migratory birds during otherwise lawful activities" (Beveridge 2005). There is no permitting framework (i.e., incidental take permits) that allow a wind company to protect itself from liability at wind facilities; however, the USFWS does not usually take action if good faith efforts have been made to minimize impacts. To date, no wind development company has been charged for violations of the MBTA; however, utilities have been prosecuted successfully.

1.2 Study Description

CPV Ashley Renewable Energy Company, LLC (CPV) is planning to develop a 200 megawatt (MW) wind energy conversion facility in south central North Dakota in McIntosh County (Figure 1). The Ashley Wind Energy Project (WEP) is located on private lands under easement with CPV. CPV is committed to environmental due diligence and has contracted Tetra Tech EC, Inc. (Tetra Tech) to conduct fall avian surveys at the WEP to quantify local avian use in the area and to identify potential avian impacts associated with building and/or operating the proposed facility.

The WEP is approximately 17,400 acres and is located in the Prairie Pothole Region. Although construction of a wind energy facility differs significantly from wholesale conversion of grassland to agricultural croplands (e.g., smaller disturbance footprint), disturbances of native prairies, particularly those that surround permanent or semi-permanent wetlands (prairie potholes), have the potential to affect important breeding and migratory stopover areas. The potholes are rich in aquatic life and support globally significant populations of breeding waterfowl (Bryce et al. 1998). Native prairie remnants do occur on unbroken rangelands and include western wheatgrass, bluestem, needle-and-thread, and needlegrass. Prairie cordgrass and northern reedgrass occur near wetlands (Bryce et al. 1998). In addition, several National Waterfowl Production Areas (WPA) exist within and adjacent to the WEP. WPAs are wetlands and grasslands set aside for the production of waterfowl and other wildlife species. These public lands, managed by the USFWS, were included in the National Wildlife Refuge System in 1966 through the National Wildlife Refuge Administration Act (USFWS 2007). Nearly 95 percent of WPAs are located in the prairie pothole areas of North and South Dakota, Minnesota, and Montana. North Dakota alone has 39 percent of the Nation's WPAs (USFWS 2007). By regulation, WPAs are open to hunting, fishing, and trapping in accordance with state laws. Other wildlife-dependent uses allowed include wildlife observation, photography, and environmental education (USFWS 2007).

North Dakota has 365 documented bird species (Faanes and Stewart 1982) and is situated within the Central Flyway, one of the main bird migratory routes (USFWS 2008). The Central Flyway runs through the central portion of the United States and, as a consequence, the WEP. Most birds that move along the Central Flyway travel from Canada through the central states, eventually reaching the tropics of South America via the Gulf of Mexico (USFWS 2008).

2.0 METHODS

To evaluate avian risk at wind energy facilities, standardized protocols for pre-construction point counts have been established and were used in this study. Data collected from these counts are used to identify species or species groups that may be at risk from project development and may provide additional information for micro-siting wind facilities to minimize impacts to birds. Results in this report are presented in terms of species groups, and highlight federal and state-listed species, and species of concern.

2.1 Avian Surveys

2.1.1 Fixed-point Surveys

Tetra Tech employed a standard, accepted methodology for the avian surveys at the WEP, designed to be responsive to the level of effort recommended in the National Wind Coordinating Committee (NWCC) Guidance Document and the USFWS Interim Guidelines. An experienced field biologist conducted 20-minute (min) point count surveys at 7 locations within the WEP to evaluate avian use, behavior, and species composition during fall migration (Figure 2). The biologist conducted weekly surveys from August 11 to October 31 (Table 1), thereby encompassing the fall to early winter seasons. Tetra Tech distributed the survey locations throughout the WEP and chose locations that maximized the 360-degree sight distance for the observer and covered a diversity of habitats.

The field biologist collected data on all birds observed within an 800-m radius of the point count location. Surveys at each point lasted for 20 min, during which time biologists continuously recorded any visual or auditory observations. The biologist recorded the following data: species, number of birds, time of observation, height aboveground, behavior, and flight direction. Data on flight direction can be found in Appendix 1. The biologist calibrated flight heights and distances with a laser rangefinder and used local transmission lines and topographic maps as additional references.

The survey protocol used in this study is designed to collect data on all bird species rather than to target specific taxa. The benefit of using this protocol is that it estimates avian use throughout the day and captures activity by a variety of bird species. During the breeding season, and to a lesser extent in the fall and winter, songbirds are most active in the morning and can be difficult to detect during the afternoon. In contrast, raptors become active as the sunlight heats the air and creates thermals, which individuals use for soaring (Ballam 1984). Thus, raptors are more readily detected several hours after sunrise. Therefore, this protocol is appropriate for characterizing the bird community using the WEP during this time of year.

Tetra Tech chose 20-min survey periods because they provide adequate time to detect both raptors and non-raptors. However, time periods of 20 min may lead to double-counting of songbirds (i.e., counting the same individual more than once) because individuals may appear and disappear from view. For example, if a horned lark is detected perched on a fence then disappears from view and, 6 minutes later, a horned lark is seen flying, these birds are recorded as separate observations because it is not possible to distinguish individuals. Double-counting of birds is not problematic for this type of survey because the objective is to document activity and use in terms of number of birds noted per 20-min survey, not number of distinct individual birds.

Detectability varies among species and potentially not all individuals within the 800-m radius were counted. This variation in detectability can result in an overestimate of mean use for conspicuous species and an underestimate of mean use for reclusive species (Thompson 2002). Birds not easily identifiable, such as those seen under low light conditions or small birds seen at a distance were identified to the lowest taxonomic level possible. Hence, unidentified birds are included in the results.

2.1.2 Incidental Observations

Incidental observations included observations in the vicinity (i.e. within approximately 1 mile) of the WEP that occurred 1) during travel between the 7 point count locations, 2) before or after the official 20-min survey period, and 3) outside of the 800-m radius circular plot. The biologist recorded these observations on separate data sheets and these data were not used in the formal analysis; however, a summary of incidental birds is presented to provide additional information about species found in the local area.

2.1.3 Listed Species Information

A list of species currently protected under the Endangered Species Act (ESA) can be found at http://www.fws.gov/endangered/wildlife.html. All native migratory species are protected by the MBTA.

The North Dakota Game and Fish Department (NDGFD) has identified 100 Species of Conservation Priority within North Dakota. These species are ranked in three priority levels based on such factors as known status, funding availability, and presence of breeding habitat within North Dakota (Hagen et al. 2005). The definitions of each rank are listed below:

> Level I: A species having a high level of conservation priority because of declining status either in North Dakota or across their range; or a high rate of occurrence in North Dakota constituting the core of the species' breeding range, but are at-risk range wide, and non- State Wildlife Grants funding is not readily available to them.
>
> Level II: Species having a moderate level of conservation priority; or a high level of conservation priority, but a substantial amount of non-State Wildlife Grant funding is available to them.
>
> Level III: North Dakota's species having a moderate level of conservation priority, but are believed to be peripheral or do not breed in North Dakota.

Species that are listed under the 100 Species of Conservation Priority are not afforded any formal protection by the state. NDGFD has plans to review and update the list of Species of Conservation Priority in 2010. Additional information on North Dakota Species of Conservation Priority can be found at: http://gf.nd.gov/conservation/toc.html.

2.1.4 Data Quality Assurance/Quality Control

Tetra Tech implemented quality assurance and quality control measures during all stages of data collection, analysis, and report preparation. To ensure legibility and completeness of data sheets, each biologist reviewed, and clarified if needed, all data sheets before data entry into a Filemaker™ relational database for data storage and analysis. Prior to analysis, an independent reviewer conducted a 100-percent quality review of the data entries. Any questions that arose at this time were directed toward and answered by the field biologists.

2.2 Analysis

2.2.1 Species Groupings

Tetra Tech considered two primary groups of interest: raptors and non-raptors. Tetra Tech defined raptors as vultures, hawks, eagles, falcons, and owls. As turkey vulture flight behavior is similar to raptors and as they are often included as raptors in other studies, Tetra Tech has included them with raptors for the purpose of our analyses. Non-raptors were defined as all other species groups.

2.2.2 Avian Use

Tetra Tech derived avian use (mean use) of the WEP by calculating the average number of birds observed per 20-min survey at each point. To evaluate the diversity and composition of avian species using the WEP, Tetra Tech first summarized the number of birds and species. Tetra Tech also calculated 90 percent confidence intervals for all mean use values to provide an estimate of both spatial and temporal variability in mean use for the WEP. In addition, the number of observations is also presented, where an observation can be either an individual bird or a discrete flock of birds. This information helps evaluate whether high mean use is driven by a single event (e.g., a large flock of birds moving through the WEP on migration). Because individual birds are not uniquely marked and identified, actual population size or abundance cannot be determined. One individual may be counted multiple times during a survey period or across survey periods. Therefore, avian mean use does not equate to abundance.

2.2.3 Flight Behavior

Tetra Tech evaluated flight behavior by calculating the proportion of flying birds observed below, within, or above the height of the anticipated turbine rotor swept area (RSA). At the time of this study, CPV has not selected a specific turbine type for the WEP. A likely turbine type to be used at the WEP has an 80-m hub height and up to a 101-m rotor diameter that was used to calculate the RSA. With these specifications, the estimated RSA was between 29.5 and 130.5 m above ground. Tetra Tech considered a bird to have flown within the height of the anticipated RSA if any of its recorded heights fell within the upper or lower limits of the anticipated RSA.

2.2.4 Encounter Rate

To estimate the rate at which a species flew at the height of the anticipated RSA, Tetra Tech applied the following equation to every species observed in the WEP:

$$Encounter\ Rate = A*P_f*P_t$$

A is the mean number of birds/20 min for a given species, P_f is the proportion of all activity observations for a given species that were flying; and P_t is the proportion flying observations that were at the height of a turbine RSA for a given species.

The encounter rate provides information on the rate at which a species may move at a height that is consistent with the RSA of the proposed turbines. This information is an important component in evaluating risk of collisions; however, this number alone does not indicate risk to a species. Species with a high encounter rate (i.e., > 2.0 birds at RSA height/20 min) are at a higher risk of collision than species with a low encounter rate (e.g., < 1.0 birds at RSA height/20min), but it does not mean that mortality is certain. Other factors such as turbine location and density or a species ability to detect turbine blades, flight maneuverability, and habitat selection also influence mortality (Orloff and Flannery 1992). Values are sensitive to large flocks of birds flying within the RSA; that is, a species will have a high encounter rate even if only seen a few times in large flying flocks. Encounter rate also does not account for migrating behavior of nocturnal migrants.

2.2.5 Mortality Risk

The relationship between pre-construction avian use and post-construction mortality is not yet completely defined due to a lack of pre- and post-construction data from sites with moderate to high avian use. Based on the available data collected at newer generation wind farms, although limited, it appears that low raptor use equates to low mortality and the few sites with very high raptor use also experience high raptor fatalities. Currently, there are no publicly available use and fatality data from sites with intermediate raptor use. Other factors that contribute to the uncertainty in predicting fatality rates is the highly regional nature of avian mean use across North America (Arnett et al. 2007) and the scarce data on avian mortality at wind farms in many parts of North America. The most comprehensive source of regional information on avian fatality rates is the Avian and Bat Fact Sheet (NWCC 2004) which is currently being revised. As a result of the uncertain relationship between avian use and avian mortality for most species groups, Tetra Tech did not attempt to derive mortality estimates from mean use data. Instead, Tetra Tech will highlight those species or groups that may experience mortality or displacement that could significantly affect local or regional populations, based on the data provided in this report and other information sources.

3.0 RESULTS

3.1 Avian Use and Frequency of Occurrence

The biologist surveyed 3,476 acres of the WEP during point count surveys, covering 20.0 percent of the WEP's total area. The biologist surveyed the 7 point count locations 12 times, resulting in a total of 84 20-min surveys. The biologist observed 14,950 birds within the WEP, 14,741 birds representing

79 species and 209 birds that could not be identified to species during (Table 2). Overall mean bird use within the Ashley WEP was 177.98 birds/20 min and ranged from 0 to 1,692 birds/20 min.

Overall mean use by non-raptors was 144.93 birds/20 min. Among non-raptor species groups, mean use was highest for songbirds (71.01 birds/20 min), followed by waterfowl (52.33 birds/20 min), waterbirds (25.57 birds/20 min), and cranes/rails (19.12 birds/20 min; Table 2). The remaining species groups have mean use values of less than 8.00 birds/20 min.

The non-raptor species with the highest mean included red-winged blackbird (38.42 birds/20 min), snow goose (24.52 birds/20 min), sandhill crane (19.11 birds/20 min), American coot (13.06 birds/20 min) and yellow-headed blackbird (9.80 birds/20 min). These five species accounted for 58.9 percent of all birds observed (Table 2).

The red-winged blackbird accounted for 54.1 percent of birds in the songbird species group (Table 2). The majority of red-winged blackbird observations were comprised of several large flocks (100-1,000 individuals) especially at point count locations 1, 2, and 4 (Table 3). Although 17 species of duck (i.e., most of the species that breed in the prairie region of North America) were observed at the WEP, snow goose and Canada goose observations accounted for 63.6 percent of the entire waterfowl species group (Table 2). Most of the snow geese and Canada geese were in large flying flocks (100-500 individuals) observed at point count locations 3, 4, and 6 for snow geese and point count locations 1, 3, and 7 for Canada geese (Table 3). American coots were one of the most widespread species at the WEP and comprised 51.1 percent of the waterbird group (Table 3). Sandhill cranes made up 99.99 percent of the entire crane/rail species group observed (Table 2). Most of the observations were of large migratory flocks (100-500 individuals) at a single point count location (7; Table 3) on a single day (October 31).

Non-raptor mean use was highest on October 31 (601.29 birds/20 min; primarily due to sandhill crane and snow goose), October 18 (405.86 birds/20 min; primarily due to red-winged blackbird), and September 21 (347.57 birds/20 min; primarily due to Franklin's gull, American white pelican, and yellow-headed blackbird) (Figure 3). Mean use for non-raptors was highest at point count location 4 (410.08 birds/20 min) and observations at this point included yellow-headed blackbird (820 birds), snow goose (785 birds), American coot (744 birds), and red-winged blackbird (530 birds) (Table 4; Figure 4). These species were detected at other points count locations. The habitat features near point count location 4 consist of several wetlands and soybean fields which are common features within the WEP.

Overall mean use for raptors was 1.50 birds/20 min. Although raptors only constituted 0.9 percent of all birds observed, as a group, raptors were the second most frequently observed of all the species groups during the fall surveys (73.8% of all surveys; Table 2). The raptors with the highest mean use were the northern harrier (0.44 birds/20 min; 35.7% of all surveys) and red-tailed hawk (0.43 birds/20 min; 27.4% of all surveys). Mean use for each other raptor species was 0.30 birds/20 min or less: Swainson's hawk, rough-legged hawk, broad-winged hawk, ferruginous hawk, merlin, sharp-shinned hawk, and prairie falcon.

Mean use by raptors was highest on August 11 (3.14 birds/20 min, primarily due to red-tailed hawk; Figure 5). Mean use by raptors was lower than 2.00 birds/20 min for all other survey dates. Mean use by raptors was highest at point count location 5 (Figure 6). A total of 10 Swainson's hawk, 7 red-tailed hawk, 5 unidentified hawk, 3 northern harrier, 3 rough-legged hawk, 1 ferruginous hawk, 1 broad-winged hawk, 1 prairie falcon, and 1 merlin were observed at this location (Table 3). Point count location 5 is close to a transmission line and several fence lines which could serve as perches for raptors, indicating potential for continued level of high raptor activity at this location.

3.2 Flight Height and Encounter Rate

During fall avian use surveys, the biologist collected behavioral data for 100 percent of all birds observed during point count surveys. The biologist observed 82.4 percent of birds flying and collected flight height

data for 100 percent and flight direction for 89.5 percent of flying observations. Of non-raptor species observed flying, 9.8 percent flew above RSA height, 56.7 percent flew at RSA height, and 33.5 percent flew below RSA height (Table 4). Of raptor species observed flying, 5.3 percent flew above RSA height, 53.5 percent flew at RSA height, and 41.2 percent flew below RSA height. Overall, 76.6 percent of all flight observations were heading directly south.

The sandhill crane had the highest encounter rate (19.11 birds flying at RSA height/20 min), followed by red-winged blackbird (17.63 birds flying at RSA height/20 min) and snow goose (14.70 birds flying at RSA height/20 min; Table 5). Other species with a high encounter rate (>2.00 birds flying at RSA height/20 min) included American white pelican, barn swallow, ring-billed gull, Franklin's gull, Lapland longspur, and Canada goose. All other species had encounter rates of less than 2.00 birds flying at RSA height/20 min.

3.3 Incidental Observations

The biologist documented 64 species as incidental observations (Table 6), 13 of which—Western grebe, cattle egret, black-crowned night heron, bald eagle, American kestrel, great-horned owl, upland sandpiper, tree swallow, bank swallow, cliff swallow, European starling, grasshopper sparrow, clay-colored sparrow—were not detected during the 20-min point count surveys. Blackbirds such as red-winged blackbirds, common grackles, and yellow-headed blackbirds were detected as incidentals numbering in the thousands. Large flocks (groups of 100 or larger) of sandhill cranes and lesser scaup were also observed as incidental observations. It is possible that some of these flocks were also observed during point counts. Biologists observed several raptor species both as incidentals and during the point count surveys including the red-tailed hawk, northern harrier, Swainson's hawk, rough-legged hawk, ferruginous hawk, prairie falcon, and merlin.

4.0 DISCUSSION

4.1 Non-Raptor Use and Encounter Rate

Songbirds had the highest mean use out of all groups, a value which was driven by red-winged blackbird, yellow-headed blackbird, and barn swallow. Of these species, only the red-winged blackbird and barn swallow had high encounter rates. Both red-winged blackbird (Kerlinger et al. 2006, Jain et al. 2007) and barn swallow (Johnson et al. 2002) mortality have been documented at other wind energy facilities. Given the high mean use and encounter rates of these species at the WEP, turbine-related fatalities may occur. However, if fatalities do occur at the Ashley WEP, they are unlikely to have population-level impacts because these species have large (i.e., estimated over 1 million birds; Rich et al. 2004) statewide populations that are relatively stable (Sauer et al. 2008). Red-winged blackbirds are attracted to agricultural crops (corn, soybean, and sunflower) and are often targeted by the agriculture industry as a nuisance species through permits issued by the USFWS under the MBTA.

The prairie region of the northern Great Plains is one of the most important areas for duck reproduction in North America (Samson et al. 1998, Jones-Farrand et al. 2007). The region produces, on average, 50 percent of the primary species of game ducks on the continent (USFWS 2009a). For seven species—mallard, gadwall, blue-winged teal, northern shoveler, northern pintail, redhead, and canvasback—the prairie region accounts for more than 60 percent of the breeding population (USFWS 2009a); all of these species were detected during the fall surveys. The region is also a major migration corridor during fall and spring for other ducks, geese, shorebirds and other waterbirds (Skagen and Knopf 1994, Samson et al. 1998, Jones-Farrand et al. 2007).

Waterfowl had the second highest mean use of all species groups at the WEP. Seventeen species of waterfowl were observed at the WEP, including most species that breed in the prairie region of North America. There are designated WPAs around the WEP, several large lakes to the west (Green and Pudwell Lakes) and the south (Salt Lake) of the WEP that appear to attract waterfowl to the area. The

majority of the waterfowl were snow geese and Canada geese and each of these species had a high encounter rate. Snow geese and Canada geese mortality has been documented at other wind energy facilities but the overall numbers of fatalities are very low (i.e., fewer than 10 individuals per species; Erickson et al. 2004, Anderson et al. 2005, Jain et al. 2007). Canada geese breed in North Dakota and populations from north-central Canada migrate through the central flyway (includes North Dakota) during early October to mid November (Mowbray et al. 2002). Snow geese breed in northern Canada and migrate through North Dakota during October to November to major staging areas in South Dakota and Missouri (Mowbray et al. 2000). Waterfowl Breeding Population and Habitat Surveys (WBPHS) carried out jointly by the USFWS and Canada Wildlife Service (CWS) show an increasing trend in the Great Plains population (which includes North Dakota) of Canada geese since 2000 (population estimate ~600,000; USFWS 2009a). WBPHS of the Mid-Continent snow geese population that breed in Canada and travel through North Dakota on fall migration have shown a slight increase since 2000 (population estimate ~2,000,000; USFWS 2009a). The combination of the high encounter rate and prior evidence of negative turbine interactions at other wind facilities suggest that some fatalities of Canada and snow geese could occur at the WEP. If fatalities do occur at the WEP, they are not expected to have population-level impacts given regional population dynamics discussed above.

Waterbirds were ranked third among species groups in mean use of the WEP, with American coot and American white pelican ranking the highest in this group. The American white pelican had a high encounter rate and is a Species of Conservation priority (see Section 4.3). The biologist observed all American coots swimming in or standing on the margins of wetlands but never observed them in flight. The timing of American coot fall migration varies greatly with weather as coots are nocturnal migrants that often follow behind cold fronts coming out of Canada (Brisbin et al. 2002). Migration in North Dakota is during October to early November (Brisbin et al. 2002). Flight altitudes of coots are poorly understood but incoming flights of coots in rainy/overcast weather have been observed at heights of 30-40 m (Brisbin et al. 2002). American coot mortality has been recorded at other wind energy facilities but in low numbers (i.e., < 30 individuals; Johnson et al. 2002, Anderson et al. 2005, Kerlinger et al. 2006). Given the high numbers of coots using the area, some fatalities could occur at the WEP. If fatalities of American coots do occur at the WEP, they are not expected to have impacts on the local population as North Dakota population trends show a slight increase (Sauer et al. 2008).

Cranes/rails as a group ranked fourth among species groups in mean use mostly due to sandhill cranes, a species that had the highest encounter rate of all birds observed. All sandhill cranes were observed in flight and 100 percent of these observations were at RSA height. All observations were made on one day (October 31, 2009). This coincides with the natural migration period of sandhill cranes that pass through North Dakota during September through November heading south to wintering areas in the south central United States (Tacha et al. 1992). Generally, sandhill cranes tend to migrate at heights of less than 1,600 m with 75 percent observed migrating at heights between 150 – 760 m (Tacha et al. 1992) putting migratory individuals above RSA height. Sandhill cranes are most at risk of collisions with turbines when individuals are either taking off from the ground or coming in to land within the WEP or the surrounding area. The flight height profile of the cranes observed in the WEP suggests that these birds had either recently taken off from a nearby location, or were searching for a place to land. Although no sandhill crane fatality has been reported at wind energy facilities, the large numbers of sandhill cranes observed and their observed flight patterns within the WEP, fatalities could still occur at the WEP. The central region of the North American population of sandhill cranes is large (~650,000 individuals according to the International Crane Foundation; http://www.savingcranes.org/sandhillcrane.html) and appears to be stable (Sauer et al. 2008). Thus, any fatalities at the WEP are not expected to have population-level impacts.

4.2 Raptor Use and Encounter Rate

High raptor use has been associated with high raptor mortality at new generation wind farms (Erickson 2007). Conversely, raptor mortality appears to be low when raptor use is low, as defined by Erickson (2007) as less than 1.0 bird/20 min. Based on mean use, the Ashley WEP would be considered a moderate risk site for raptor mortality with a group mean use of 1.50 birds/20 min. However, the observed flight behavior of the most commonly observed raptors suggests that the overall risk to raptors at the Ashley WEP is low.

Northern harriers and red-tailed hawks were the most commonly observed raptor species during avian surveys. Although both species have been reported as fatalities at existing wind farms (Johnson et al. 2002, Young et al. 2003, Erickson et al. 2004, Jain 2005), the very low encounter rates (0.05 and 0.25 birds flying at RSA height/20 min, respectively) observed at the WEP suggest that the probability of a turbine-related fatalities for northern harrier and red-tailed hawk at the WEP is low.

The biologist also observed Swainson's hawk, rough-legged hawk, ferruginous hawk, broad-winged hawk, American kestrel, prairie falcon, merlin, and sharp-shinned hawk within the WEP but with low mean use values, thereby minimizing the potential for negative turbine-related impacts to these species. Mean use by raptors was highest at point count location 5. Point count location 5 is close to a transmission line and several fence lines which could serve as perches for raptors, indicating the potential for continued raptor activity at this location.

4.3 Listed and Sensitive Species

4.3.1 Endangered Species Act

The biologist did not detect any species listed as candidate, threatened or endangered under the ESA.

4.3.2 Bald and Golden Eagle Protection Act

The bald eagle, detected as an incidental observation, is protected by the Bald and Golden Eagle Protection Act (BGEPA). The biologist observed three bald eagles flying at 400 m (above the RSA) approximately 1 mile to the southwest of the WEP on August 22. Although the biologist did not observe any of these individuals within the WEP, the observation does confirm the potential utilization of the area by bald eagles, although the probability of negative interaction is low. The BGEPA prohibits the take of any bald or golden eagle, alive or dead, including any part, nest, or egg. "Take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" a bald or golden eagle. "Disturb" means to agitate or bother an eagle to a degree that causes, or is likely to cause, 1) injury to an eagle, 2) a decrease in its productivity, or 3) nest abandonment. The USFWS (2009b) has implemented a permitting process to allow take of bald and golden eagles on a limited basis under certain conditions (i.e., if the USFWS determines that the take is compatible with the preservation of the eagles and cannot be practicably avoided). Preservation is defined as consistent with the goal for a stable or increasing breeding population based off of regional populations. Additionally, preservation is valid if the take is necessary to alleviate a safety hazard to the public or the eagles, ensures public health, nest prevents the use of a human engineered structure, or the activity or mitigation will provide a net benefit for the eagles. Permit applications can be found at www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BaldEagle. To Tetra Tech's knowledge, no wind developer has been prosecuted under the BGEPA; however, utility companies have been prosecuted successfully under the BGEPA for not taking appropriate steps to minimize the potential for eagle collisions with power lines.

4.3.3 North Dakota Species of Conservation Priority

State-listed species observed during avian surveys or as incidental observations included 10 Level I Species of Conservation Priority: American bittern, American white pelican, black tern, ferruginous hawk, Franklin's gull, grasshopper sparrow, Swainson's hawk, upland sandpiper, willet, and Wilson's

phalarope. Additionally, 7 Level II Species of Conservation Priority were observed: bald eagle, canvasback, northern harrier, northern pintail, prairie falcon, redhead, and sharp-tailed grouse. Of these state-listed species, Franklin's gull, American white pelican, canvasback, northern pintail, Swainson's hawk, northern harrier, ferruginous hawk, prairie falcon, and black tern were observed flying at the height of the anticipated RSA. However, most of the observed listed species had encounter rates of less than 1.0 birds flying at RSA height/20 min, mostly due to the low overall numbers observed; the low encounter rates suggests a low probability of negative interactions with turbines.

Franklin's gull and American white pelican had the highest encounter rates of the state-listed species. All of the Franklin's gulls observed were in flight, 95.2 percent were observed at RSA height, and all were observed flying south or southeast, suggesting migratory behavior. Franklin's gull breeds in the prairie pothole regions of the Dakotas and central Canada; in September to early October, they start to coalesce into large migratory flocks that migrate to wintering areas south of the equator (Burger and Gochfeld 2009). Although no mortality of Franklin's gull has been reported at a wind farm, the high mean use and encounter rate at the WEP suggests the potential for negative interactions. Trends in the overall North American population of Franklin's gull have shown a steady rate of increase while the regional North Dakota population trend has shown a slight increase (Sauer et al. 2008). As a result, if any mortality were to occur at the WEP, it is unlikely to have any population-level impacts.

Of the American white pelicans observed at the WEP, 100 percent were observed in flight with 97.8 percent flying at RSA height. All but 15 of the American white pelicans were observed flying south, indicating that most were migrating through the WEP. American white pelicans are known to breed in North Dakota (Knopf and Evans 2004). Migration of American white pelican is generally from September to November and is initiated when lakes start to freeze over (Knopf and Evans 2004). Although no mortality of American white pelicans has been reported at a wind farm, the high mean use and encounter rate at the WEP suggests the potential for negative interactions. Breeding population trends in North Dakota have shown a slight increase (Sauer et al. 2008). As a result, if any mortality were to occur at the WEP it is unlikely to have any population-level impacts.

4.4 Ashley WEP Conclusions

The biologist did not detect any species listed as candidate, threatened or endangered under the ESA. The point count surveys at the Ashley WEP suggest that the WEP is utilized by a wide number and diversity of bird species during the fall migratory period. However, the behavioral data (e.g., flight patterns) suggest that the probability of negative interactions between birds and turbines at the Ashley WEP is generally low for most species. The two species with the highest encounter rates (sandhill crane and red-winged blackbird) have stable regional populations (Sauer et al. 2008); therefore, if fatalities do occur they are unlikely to have population-level consequences. Nocturnal migrants (e.g., some songbirds) may pass through the WEP and would not be detected by the survey methods used in this study if the birds did not stop-over within the WEP. However, mortality of nocturnal migrants at the WEP is not expected to have population-level implications because less than 0.01 percent of nocturnal migrants that fly through wind farms are killed (Erickson 2007).

The level of raptor use at the Ashley WEP suggests that raptor mortality will be low. Northern harriers and red-tailed hawks were the most common raptors observed at the WEP and fatalities of both species have occurred at wind farms (Kerns and Kerlinger 2004, Anderson et al. 2005, Kerlinger et al. 2006). However, the overall numbers and encounter rates of northern harriers and red-tailed hawks detected at the Ashley WEP were low, thereby minimizing the probability of negative interactions with turbines.

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TABLES

Table 1. Fall 2009 point count survey dates at Ashley Wind Energy Project.

Survey number	Date(s)
1	8/11
2	8/15
3	8/22
4	8/30
5	9/6
6	9/14
7	9/21
8	9/27
9	10/4
10	10/11
11	10/18
12	10/31

Table 2. Avian species, by species grouping, observed during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species Grouping	Overall Rank[1]	Number of Birds	Number of Observations	Mean Use # birds per 20 min. (90% confidence interval)		Frequency % of surveys detected	Percent Composition	
							Group	Overall
Songbirds								
red-winged blackbird	1	3227	25	38.42	(13.74-63.10)	25.0	54.1%	21.6%
yellow-headed blackbird	5	823	4	9.80	(0.00-21.22)	4.8	13.8%	5.5%
barn swallow	6	811	34	9.65	(5.58-13.72)	35.7	13.6%	5.4%
Lapland longspur	10	405	4	4.82	(0.00-9.96)	4.8	6.8%	2.7%
northern rough-winged swallow	15	192	8	2.29	(0.68-3.90)	9.5	3.2%	1.3%
common grackle	16	148	5	1.76	(0.26-3.26)	6.0	2.5%	1.0%
horned lark	24	54	5	0.64	(0.00-1.43)	6.0	0.9%	0.4%
American goldfinch	26	51	7	0.61	(0.18-1.04)	8.3	0.9%	0.3%
western kingbird	28	47	14	0.56	(0.21-0.91)	13.1	0.8%	0.3%
unidentified songbird	29	45	1	0.54	(0.00-1.42)	1.2	0.8%	0.3%
western meadowlark	36	31	15	0.37	(0.18-0.56)	15.5	0.5%	0.2%
American robin	36	31	2	0.37	(0.00-0.80)	2.4	0.5%	0.2%
snow bunting	38	30	1	0.36	(0.00-0.95)	1.2	0.5%	0.2%
yellow-rumped warbler	47	13	1	0.15	(0.00-0.40)	1.2	0.2%	0.1%
savannah sparrow	47	13	4	0.15	(0.02-0.28)	4.8	0.2%	0.1%
eastern kingbird	47	13	5	0.15	(0.00-0.31)	3.6	0.2%	0.1%
brown-headed cowbird	47	13	3	0.15	(0.00-0.37)	3.6	0.2%	0.1%
vesper sparrow	55	8	5	0.10	(0.02-0.18)	6.0	0.1%	0.1%
Smith's longspur	63	5	1	0.06	(0.00-0.16)	1.2	0.1%	0.0%
blue jay	71	2	2	0.02	(0.00-0.05)	2.4	0.0%	0.0%
song sparrow	75	1	1	0.01	(0.00-0.03)	1.2	0.0%	0.0%
gray catbird	75	1	1	0.01	(0.00-0.03)	1.2	0.0%	0.0%
chipping sparrow	75	1	1	0.01	(0.00-0.03)	1.2	0.0%	0.0%
Group Total		**5965**	**149**	**71.01**	(42.45-99.57)	**76.2**		**39.9%**
Waterfowl								
snow goose	2	2060	9	24.52	(3.04-46.00)	7.1	46.9%	13.8%
Canada goose	7	732	34	8.71	(4.80-12.62)	32.1	16.7%	4.9%
mallard	9	407	31	4.85	(2.54-7.16)	34.5	9.3%	2.7%

Table 2. Avian species, by species grouping, observed during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species Grouping	Overall Rank[1]	Number of Birds	Number of Observations	Mean Use # birds per 20 min. (90% confidence interval)	Frequency % of surveys detected	Percent Composition	
						Group	Overall
blue-winged teal	11	383	20	4.56 (1.71-7.41)	21.4	8.7%	2.6%
redhead	14	282	9	3.36 (0.95-5.77)	9.5	6.4%	1.9%
green-winged teal	18	108	7	1.29 (0.20-2.38)	7.1	2.5%	0.7%
unidentified duck	19	88	5	1.05 (0.03-2.07)	6.0	2.0%	0.6%
lesser scaup	20	81	2	0.96 (0.00-2.53)	2.4	1.8%	0.5%
northern shoveler	21	78	7	0.93 (0.20-1.66)	8.3	1.8%	0.5%
northern pintail	23	66	6	0.79 (0.14-1.44)	6.0	1.5%	0.4%
canvasback	30	43	2	0.51 (0.00-1.29)	2.4	1.0%	0.3%
gadwall	40	23	3	0.27 (0.00-0.58)	3.6	0.5%	0.2%
ruddy duck	41	21	3	0.25 (0.00-0.54)	3.6	0.5%	0.1%
bufflehead	55	8	2	0.10 (0.00-0.21)	2.4	0.2%	0.1%
tundra swan	59	7	1	0.08 (0.00-0.22)	1.2	0.2%	0.0%
American wigeon	59	7	3	0.08 (0.00-0.16)	3.6	0.2%	0.0%
hooded merganser	75	1	1	0.01 (0.00-0.03)	1.2	0.0%	0.0%
common goldeneye	75	1	1	0.01 (0.00-0.03)	1.2	0.0%	0.0%
Group Total		**4396**	**146**	**52.33** (29.61-75.05)	**66.7**		**29.4%**
Waterbirds							
American coot	4	1097	35	13.06 (7.89-18.23)	36.9	51.1%	7.3%
American white pelican	8	582	12	6.93 (0.00-15.72)	11.9	27.1%	3.9%
pectoral sandpiper	17	141	11	1.68 (0.58-2.78)	13.1	6.6%	0.9%
double-crested cormorant	22	73	9	0.87 (0.11-1.63)	10.7	3.4%	0.5%
Wilson's phalarope	25	52	1	0.62 (0.00-1.64)	1.2	2.4%	0.3%
killdeer	26	51	15	0.61 (0.27-0.95)	17.9	2.4%	0.3%
unidentified sandpiper	30	43	1	0.51 (0.00-1.35)	1.2	2.0%	0.3%
lesser yellowlegs	32	37	8	0.44 (0.07-0.81)	9.5	1.7%	0.2%
great egret	44	15	4	0.18 (0.00-0.42)	4.8	0.7%	0.1%
pied-billed grebe	52	10	4	0.12 (0.01-0.23)	4.8	0.5%	0.1%
greater yellowlegs	53	9	1	0.11 (0.00-0.29)	1.2	0.4%	0.1%
great blue heron	53	9	8	0.11 (0.05-0.17)	9.5	0.4%	0.1%

Table 2. Avian species, by species grouping, observed during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species Grouping	Overall Rank[1]	Number of Birds	Number of Observations	Mean Use # birds per 20 min. (90% confidence interval)	Frequency % of surveys detected	Percent Composition	
						Group	Overall
Baird's sandpiper	55	8	1	0.10 (0.00-0.26)	1.2	0.4%	0.1%
short-billed dowitcher	61	6	3	0.07 (0.00-0.14)	3.6	0.3%	0.0%
long-billed dowitcher	61	6	1	0.07 (0.00-0.19)	1.2	0.3%	0.0%
least sandpiper	63	5	1	0.06 (0.00-0.16)	1.2	0.2%	0.0%
common snipe	71	2	1	0.02 (0.00-0.06)	1.2	0.1%	0.0%
willet	75	1	1	0.01 (0.00-0.03)	1.2	0.0%	0.0%
American bittern	75	1	1	0.01 (0.00-0.03)	1.2	0.0%	0.0%
Group Total		**2148**	**118**	**25.57** (15.27-35.87)	**70.2**		**14.4%**
Cranes/Rails							
sandhill crane	3	1605	4	19.11 (0.00-50.54)	1.2	99.9%	10.7%
sora	75	1	1	0.01 (0.00-0.03)	1.2	0.1%	0.0%
Group Total		**1606**	**5**	**19.12** (0.00-50.55)	**2.4**		**10.7%**
Gulls/Terns							
ring-billed gull	12	290	8	3.45 (0.00-8.95)	8.3	45.4%	1.9%
Franklin's gull	13	289	3	3.44 (0.00-7.41)	3.6	45.2%	1.9%
laughing gull	32	37	1	0.44 (0.00-1.16)	1.2	5.8%	0.2%
unidentified gull	43	18	2	0.21 (0.00-0.53)	2.4	2.8%	0.1%
herring gull	68	3	3	0.04 (0.01-0.07)	3.6	0.5%	0.0%
black tern	71	2	2	0.02 (0.00-0.05)	2.4	0.3%	0.0%
Group Total		**639**	**19**	**7.61** (0.00-16.84)	**17.9**		**4.3%**
Raptors							
northern harrier	32	37	33	0.44 (0.32-0.56)	35.7	29.4%	0.2%
red-tailed hawk	35	36	31	0.43 (0.29-0.57)	27.4	28.6%	0.2%
Swainson's hawk	42	19	11	0.23 (0.11-0.35)	13.1	15.1%	0.1%
unidentified hawk	44	15	12	0.18 (0.05-0.31)	9.5	11.9%	0.1%
rough-legged hawk	55	8	8	0.10 (0.05-0.15)	9.5	6.3%	0.1%
broad-winged hawk	66	4	3	0.05 (0.00-0.10)	3.6	3.2%	0.0%
ferruginous hawk	68	3	3	0.04 (0.01-0.07)	3.6	2.4%	0.0%
merlin	71	2	2	0.02 (0.00-0.05)	2.4	1.6%	0.0%

Table 2. Avian species, by species grouping, observed during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species Grouping	Overall Rank[1]	Number of Birds	Number of Observations	Mean Use # birds per 20 min. (90% confidence interval)	Frequency % of surveys detected	Percent Composition	
						Group	Overall
sharp-shinned hawk	75	1	1	0.01 (0.00-0.03)	1.2	0.8%	0.0%
prairie falcon	75	1	1	0.01 (0.00-0.03)	1.2	0.8%	0.0%
Group Total		**126**	**105**	**1.50** (1.24-1.76)	**73.8**		**0.8%**
Pigeons/Doves							
mourning dove	38	30	5	0.36 (0.00-0.78)	6.0	66.7%	0.2%
rock pigeon	44	15	3	0.18 (0.01-0.35)	3.6	33.3%	0.1%
Group Total		**45**	**8**	**0.54** (0.09-0.99)	**9.5**		**0.3%**
Gamebirds							
sharp-tailed grouse	47	13	1	0.15 (0.00-0.40)	1.2	65.0%	0.1%
wild turkey	66	4	1	0.05 (0.00-0.13)	1.2	20.0%	0.0%
ring-necked pheasant	68	3	3	0.04 (0.01-0.07)	3.6	15.0%	0.0%
Group Total		**20**	**5**	**0.24** (0.00-0.51)	**6.0**		**0.1%**
Woodpeckers							
northern flicker	63	5	2	0.06 (0.00-0.14)	2.4	100.0%	0.0%
Group Total		**5**	**2**	**0.06** (0.00-0.14)	**2.4**		**0.0%**
Grand Total		**14950**	**557**	**177.98** (124.17-231.78)			

[1] A ranking of 1 indicates highest mean use

Table 3. Avian species observed by point during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species	Number of Birds	Number of Obs.	Points						
			1	2	3	4	5	6	7
red-winged blackbird	3227	25	1214	791	254	530	225	211	2
snow goose	2060	9	0	45	705	785	85	440	0
sandhill crane	1605	4	0	0	0	0	0	0	1605
American coot	1097	35	0	0	124	744	155	0	74
yellow-headed blackbird	823	4	0	3	0	820	0	0	0
barn swallow	811	34	79	17	100	223	23	184	185
Canada goose	732	34	100	47	301	65	3	56	160
American white pelican	582	12	1	0	0	13	452	1	115
mallard	407	31	0	4	16	186	27	113	61
Lapland longspur	405	4	0	35	245	0	0	85	40
blue-winged teal	383	20	2	0	0	227	3	75	76
ring-billed gull	290	8	0	2	0	283	1	3	1
Franklin’s gull	289	3	0	0	0	194	95	0	0
redhead	282	9	0	0	0	194	12	0	76
northern rough-winged swallow	192	8	35	0	15	101	0	17	24
common grackle	148	5	38	6	0	25	0	19	60
pectoral sandpiper	141	11	0	0	0	70	0	71	0
green-winged teal	108	7	0	0	0	74	0	10	24
unidentified duck	88	5	0	3	6	16	63	0	0
lesser scaup	81	2	0	0	0	0	0	1	80
northern shoveler	78	7	0	0	0	72	0	0	6
double-crested cormorant	73	9	16	2	39	2	0	14	0
northern pintail	66	6	0	0	0	20	21	0	25
horned lark	54	5	40	9	2	0	3	0	0
Wilson's phalarope	52	1	0	0	0	52	0	0	0
killdeer	51	15	2	5	4	18	0	22	0
American goldfinch	51	7	0	0	6	8	8	29	0
western kingbird	47	14	3	12	3	18	3	0	8
unidentified songbird	45	1	0	0	0	45	0	0	0
unidentified sandpiper	43	1	0	0	0	43	0	0	0
canvasback	43	2	0	0	0	0	43	0	0
northern harrier	37	33	3	4	6	5	3	6	10
lesser yellowlegs	37	8	0	1	0	4	0	32	0
laughing gull	37	1	0	0	0	37	0	0	0
red-tailed hawk	36	31	7	7	1	3	7	6	5
western meadowlark	31	15	3	10	1	7	2	0	8
American robin	31	2	0	0	0	0	31	0	0
snow bunting	30	1	30	0	0	0	0	0	0
mourning dove	30	5	0	23	3	0	2	0	2
gadwall	23	3	0	0	0	15	0	4	4

Table 3. Avian species observed by point during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species	Number of Birds	Number of Obs.	Points						
			1	2	3	4	5	6	7
ruddy duck	21	3	0	0	0	3	18	0	0
Swainson's hawk	19	11	0	0	4	2	10	3	0
unidentified gull	18	2	0	18	0	0	0	0	0
unidentified hawk	15	12	5	2	1	0	5	1	1
rock pigeon	15	3	0	15	0	0	0	0	0
great egret	15	4	1	12	0	0	0	2	0
yellow-rumped warbler	13	1	0	0	0	0	13	0	0
sharp-tailed grouse	13	1	0	0	13	0	0	0	0
savannah sparrow	13	4	0	0	0	0	3	6	4
eastern kingbird	13	5	2	11	0	0	0	0	0
brown-headed cowbird	13	3	1	11	0	0	0	1	0
pied-billed grebe	10	4	0	0	5	5	0	0	0
greater yellowlegs	9	1	0	0	0	0	0	9	0
great blue heron	9	8	0	2	2	3	0	1	1
vesper sparrow	8	5	1	0	0	0	1	2	4
rough-legged hawk	8	8	1	0	0	1	3	1	2
bufflehead	8	2	0	0	0	0	8	0	0
Baird's sandpiper	8	1	0	0	0	0	0	8	0
tundra swan	7	1	0	0	0	7	0	0	0
American wigeon	7	3	0	0	2	0	0	0	5
short-billed dowitcher	6	3	0	0	0	0	0	6	0
long-billed dowitcher	6	1	0	0	0	0	0	6	0
Smith's longspur	5	1	0	5	0	0	0	0	0
northern flicker	5	2	0	5	0	0	0	0	0
least sandpiper	5	1	0	0	0	0	0	5	0
wild turkey	4	1	0	0	0	4	0	0	0
broad-winged hawk	4	3	0	0	0	0	1	0	3
ring-necked pheasant	3	3	0	0	0	1	1	1	0
herring gull	3	3	0	0	0	3	0	0	0
ferruginous hawk	3	3	0	1	0	1	1	0	0
merlin	2	2	0	0	0	1	1	0	0
common snipe	2	1	0	0	0	0	0	2	0
black tern	2	2	0	0	0	1	0	1	0
blue jay	2	2	0	1	0	0	1	0	0
willet	1	1	0	0	1	0	0	0	0
sharp-shinned hawk	1	1	0	0	0	0	0	1	0
song sparrow	1	1	0	0	0	0	0	1	0
sora	1	1	0	0	1	0	0	0	0
prairie falcon	1	1	0	0	0	0	1	0	0
hooded merganser	1	1	0	0	0	1	0	0	0

Table 3. Avian species observed by point during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species	Number of Birds	Number of Obs.	Points						
			1	2	3	4	5	6	7
gray catbird	1	1	0	0	0	0	1	0	0
common goldeneye	1	1	0	0	0	1	0	0	0
chipping sparrow	1	1	0	0	1	0	0	0	0
American bittern	1	1	0	0	0	1	0	0	0
Grand Total	**14950**	**557**	**1584**	**1109**	**1861**	**4934**	**1335**	**1456**	**2671**

Table 4. Summary of avian flight heights[1] in relation to the turbine rotor swept area (RSA)[2] during fall 2009 point count surveys at the Ashley Wind Energy Project.

		Birds	
		Number	**Percentage**
Non-raptors			
	Above RSA height (>130.5m)	1192	9.8%
	At RSA height (29.5m–130.5m)	6920	56.7%
	Below RSA height (<29.5m)	4087	33.5%
Raptors			
	Above RSA height (>130.5m)	6	5.3%
	At RSA height (29.5m–130.5m)	61	53.5%
	Below RSA height (<29.5m)	47	41.2%

[1] Includes only flying birds with flight height data

[2]These values assume a rotor diameter of 101 (m) and a hub height of 80 (m)

Table 5. Avian flight height characteristics in relation to the turbine rotor swept area (RSA)[1] during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species	Encounter Rate	Mean Use # birds/ 20 min. (90% confidence interval)	Percent Flying	Percent Above RSA Height	Percent At RSA Height	Percent Below RSA Height
sandhill crane	19.11	19.11 (0.00 - 50.54)	100.0	0.0	100.0	0.0
red-winged blackbird	17.63	38.42 (13.74 - 63.10)	99.7	6.8	46.0	47.1
snow goose	14.70	24.52 (3.04 - 46.00)	100.0	40.0	60.0	0.0
American white pelican	6.78	6.93 (0.00 - 15.72)	100.0	0.0	97.8	2.2
barn swallow	5.72	9.65 (5.58 - 13.72)	100.0	0.0	59.3	40.7
ring-billed gull	3.33	3.45 (0.00 - 8.95)	98.3	0.0	98.2	1.8
Franklin's gull	3.27	3.44 (0.00 - 7.41)	100.0	0.0	95.2	4.8
Lapland longspur	2.92	4.82 (0.00 - 9.96)	100.0	0.0	60.5	39.5
Canada goose	2.33	8.71 (4.80 - 12.62)	94.7	19.5	28.3	52.2
northern rough-winged swallow	1.32	2.29 (0.68 - 3.90)	100.0	0.0	57.8	42.2
blue-winged teal	0.89	4.56 (1.71 - 7.41)	49.9	0.0	39.3	60.7
northern pintail	0.55	0.79 (0.14 - 1.44)	69.7	0.0	100.0	0.0
unidentified songbird	0.54	0.54 (0.00 - 1.42)	100.0	0.0	100.0	0.0
unidentified sandpiper	0.51	0.51 (0.00 - 1.35)	100.0	0.0	100.0	0.0
double-crested cormorant	0.49	0.87 (0.11 - 1.63)	80.8	20.3	69.5	10.2
canvasback	0.47	0.51 (0.00 - 1.29)	93.0	0.0	100.0	0.0
mallard	0.46	4.85 (2.54 - 7.16)	10.1	0.0	95.1	4.9
common grackle	0.30	1.76 (0.26 - 3.26)	100.0	0.0	16.9	83.1
unidentified duck	0.26	1.05 (0.03 - 2.07)	28.4	0.0	88.0	12.0
mourning dove	0.25	0.36 (0.00 - 0.78)	86.7	0.0	80.8	19.2
red-tailed hawk	0.25	0.43 (0.29 - 0.57)	83.3	3.3	70.0	26.7
Swainson's hawk	0.22	0.23 (0.11 - 0.35)	100.0	0.0	94.7	5.3
unidentified gull	0.21	0.21 (0.00 - 0.53)	100.0	0.0	100.0	0.0
great egret	0.14	0.18 (0.00 - 0.42)	100.0	0.0	80.0	20.0
tundra swan	0.08	0.08 (0.00 - 0.22)	100.0	0.0	100.0	0.0
unidentified hawk	0.07	0.18 (0.05 - 0.31)	86.7	38.5	46.2	15.4

Table 5. Avian flight height characteristics in relation to the turbine rotor swept area (RSA)[1] during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species	Encounter Rate	Mean Use # birds/ 20 min. (90% confidence interval)	Percent Flying	Percent Above RSA Height	Percent At RSA Height	Percent Below RSA Height
green-winged teal	0.07	1.29 (0.20 - 2.38)	5.6	0.0	100.0	0.0
rough-legged hawk	0.05	0.10 (0.05 - 0.15)	75.0	0.0	66.7	33.3
broad-winged hawk	0.05	0.05 (0.00 - 0.10)	100.0	0.0	100.0	0.0
northern harrier	0.05	0.44 (0.32 - 0.56)	97.3	0.0	11.1	88.9
great blue heron	0.02	0.11 (0.05 - 0.17)	88.9	0.0	25.0	75.0
ferruginous hawk	0.01	0.04 (0.01 - 0.07)	66.7	0.0	50.0	50.0
sharp-shinned hawk	0.01	0.01 (0.00 - 0.03)	100.0	0.0	100.0	0.0
prairie falcon	0.01	0.01 (0.00 - 0.03)	100.0	0.0	100.0	0.0
merlin	0.01	0.02 (0.00 - 0.05)	100.0	0.0	50.0	50.0
yellow-rumped warbler	0.00	0.15 (0.00 - 0.40)	100.0	0.0	0.0	100.0
yellow-headed blackbird	0.00	9.80 (0.00 - 21.22)	100.0	0.0	0.0	100.0
wild turkey	0.00	0.05 (0.00 - 0.13)	0.0	0.0	0.0	0.0
Wilson's phalarope	0.00	0.62 (0.00 - 1.64)	0.0	0.0	0.0	0.0
willet	0.00	0.01 (0.00 - 0.03)	0.0	0.0	0.0	0.0
western meadowlark	0.00	0.37 (0.18 - 0.56)	64.5	0.0	0.0	100.0
western kingbird	0.00	0.56 (0.21 - 0.91)	93.6	0.0	0.0	100.0
vesper sparrow	0.00	0.10 (0.02 - 0.18)	75.0	0.0	0.0	100.0
sharp-tailed grouse	0.00	0.15 (0.00 - 0.40)	100.0	0.0	0.0	100.0
song sparrow	0.00	0.01 (0.00 - 0.03)	0.0	0.0	0.0	0.0
sora	0.00	0.01 (0.00 - 0.03)	0.0	0.0	0.0	0.0
snow bunting	0.00	0.36 (0.00 - 0.95)	100.0	0.0	0.0	100.0
Smith's longspur	0.00	0.06 (0.00 - 0.16)	100.0	0.0	0.0	100.0
short-billed dowitcher	0.00	0.07 (0.00 - 0.14)	0.0	0.0	0.0	0.0
savannah sparrow	0.00	0.15 (0.02 - 0.28)	76.9	0.0	0.0	100.0
ruddy duck	0.00	0.25 (0.00 - 0.54)	0.0	0.0	0.0	0.0
rock pigeon	0.00	0.18 (0.01 - 0.35)	60.0	0.0	0.0	100.0

Table 5. Avian flight height characteristics in relation to the turbine rotor swept area (RSA)[1] during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species	Encounter Rate	Mean Use # birds/ 20 min. (90% confidence interval)	Percent Flying	Percent Above RSA Height	Percent At RSA Height	Percent Below RSA Height
ring-necked pheasant	0.00	0.04 (0.01 - 0.07)	33.3	0.0	0.0	100.0
redhead	0.00	3.36 (0.95 - 5.77)	0.0	0.0	0.0	0.0
pectoral sandpiper	0.00	1.68 (0.58 - 2.78)	55.3	0.0	0.0	100.0
pied-billed grebe	0.00	0.12 (0.01 - 0.23)	0.0	0.0	0.0	0.0
northern shoveler	0.00	0.93 (0.20 - 1.66)	0.0	0.0	0.0	0.0
northern flicker	0.00	0.06 (0.00 - 0.14)	100.0	0.0	0.0	100.0
lesser yellowlegs	0.00	0.44 (0.07 - 0.81)	0.0	0.0	0.0	0.0
lesser scaup	0.00	0.96 (0.00 - 2.53)	98.8	0.0	0.0	100.0
least sandpiper	0.00	0.06 (0.00 - 0.16)	0.0	0.0	0.0	0.0
long-billed dowitcher	0.00	0.07 (0.00 - 0.19)	0.0	0.0	0.0	0.0
laughing gull	0.00	0.44 (0.00 - 1.16)	100.0	0.0	0.0	100.0
killdeer	0.00	0.61 (0.27 - 0.95)	45.1	0.0	0.0	100.0
hooded merganser	0.00	0.01 (0.00 - 0.03)	0.0	0.0	0.0	0.0
horned lark	0.00	0.64 (0.00 - 1.43)	94.4	0.0	0.0	100.0
herring gull	0.00	0.04 (0.01 - 0.07)	33.3	0.0	0.0	100.0
greater yellowlegs	0.00	0.11 (0.00 - 0.29)	0.0	0.0	0.0	0.0
gray catbird	0.00	0.01 (0.00 - 0.03)	0.0	0.0	0.0	0.0
gadwall	0.00	0.27 (0.00 - 0.58)	0.0	0.0	0.0	0.0
eastern kingbird	0.00	0.15 (0.00 - 0.31)	84.6	0.0	0.0	100.0
common snipe	0.00	0.02 (0.00 - 0.06)	0.0	0.0	0.0	0.0
common goldeneye	0.00	0.01 (0.00 - 0.03)	0.0	0.0	0.0	0.0
chipping sparrow	0.00	0.01 (0.00 - 0.03)	0.0	0.0	0.0	0.0
bufflehead	0.00	0.10 (0.00 - 0.21)	0.0	0.0	0.0	0.0
black tern	0.00	0.02 (0.00 - 0.05)	100.0	0.0	0.0	100.0
blue jay	0.00	0.02 (0.00 - 0.05)	0.0	0.0	0.0	0.0
brown-headed cowbird	0.00	0.15 (0.00 - 0.37)	7.7	0.0	0.0	100.0

Table 5. Avian flight height characteristics in relation to the turbine rotor swept area (RSA)[1] during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species	Encounter Rate	Mean Use # birds/ 20 min. (90% confidence interval)	Percent Flying	Percent Above RSA Height	Percent At RSA Height	Percent Below RSA Height
Baird's sandpiper	0.00	0.10 (0.00 - 0.26)	0.0	0.0	0.0	0.0
American wigeon	0.00	0.08 (0.00 - 0.16)	0.0	0.0	0.0	0.0
American robin	0.00	0.37 (0.00 - 0.80)	100.0	0.0	0.0	100.0
American goldfinch	0.00	0.61 (0.18 - 1.04)	90.2	0.0	0.0	100.0
American coot	0.00	13.06 (7.89 - 18.23)	0.0	0.0	0.0	0.0
American bittern	0.00	0.01 (0.00 - 0.03)	100.0	0.0	0.0	100.0

[1]These values assume a rotor diameter of 101 (m) and a hub height of 80 (m)

Table 6. Incidental observations of birds during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species
American bittern
American coot
American goldfinch
American kestrel
American wigeon
American white pelican
bald eagle
bank swallow
barn swallow
black-crowned night-heron
brown-headed cowbird
black tern
bufflehead
blue-winged teal
cattle egret
Canada goose
canvasback
clay-colored sparrow
cliff swallow
common grackle
double-crested cormorant
eastern kingbird
European starling
ferruginous hawk
Franklin's gull
great blue heron
great horned owl
great egret
grasshopper sparrow
herring gull
horned lark
hooded merganser
killdeer
Lapland longspur
lesser scaup
mallard
merlin
mourning dove
northern harrier
northern pintail
northern rough-winged swallow
northern shoveler

Table 6. Incidental observations of birds during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species
pied-billed grebe
pectoral sandpiper
prairie falcon
ring-billed gull
redhead
rough-legged hawk
red-tailed hawk
ruddy duck
red-winged blackbird
sandhill crane
savannah sparrow
snow goose
sora
song sparrow
Swainson's hawk
tree swallow
unidentified duck
unidentified falcon
unidentified gull
unidentified hawk
unidentified songbird
upland sandpiper
vesper sparrow
western grebe
western kingbird
western meadowlark
yellow-headed blackbird

FIGURES

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Burleigh County
Kidder County
Stutsman County
Barnes County
Dutton Slough
Long Lake
Pursian Lake
Lake George
Streeter Memorial State Park
Alkaline Lake
Buffalo Creek
Beaver Creek
James River
North Dakota
Amies Lake
Bone Hill Creek
Goose Lake
McKenna Lake
Long Lake Creek
Cottonwood Creek
LaMoure County
Logan County
Beaver Lake State Park
Beaver Lake
Doyles Lake
Maple Creek
Maple River
Emmons County
Mud Lake
Miller Lake
Walther Slough
Beaver Creek
South Branch Beaver Creek
Green Lake
Pudwill Lake
Baumgartner Lake
Schwan Lake
Senger Lake
McIntosh County
Goose Lake
South Fork Maple River
Dickey County
Rice Lake
Lake Hoskins
Kislingbury Lake
Elm River
Coldwater Lake
Pheasant Lake
1804
Spring Creek
Campbell County
Long Lake
Elm Lake
Dry Branch
Maple River
Willow Creek
Brown County
Dry Run Creek
South Dakota
McPherson County
Alkali Lake
Foot Creek
Columbia Road Reservoir
Corson County
Lake Oahe
Snake Creek
Elm River
James River
Salt Lake
Richmond Lake

Figure 1

Vicinity map.
Ashley Wind Energy Project
McIntosh County, ND

CPV

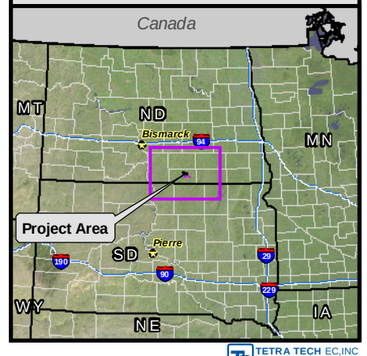
- 200-MW WEP
- Federal Highway
- State Highway
- State Boundary
- County Boundary
- River/Stream
- Perennial Lake
- Intermittent Lake

DATA SOURCES: ESRI Streetmap 2005

N W E S

1:500,000
NAD 1983 UTM 14

0 2 4 6 8 10
Miles



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Figure 2

Point count location map (fall 2009).

Ashley Wind Energy Project
McIntosh County, ND

CPV

- Avian Survey Point
- Avian Survey Point 800-m Radius
- PC# Point Count Number
- 200-MW WEP
- River/Stream
- Lake/Pond
- Other Road

DATA SOURCES: ESRI Streetmap 2005, National Geographic Society 2009

1:70,000
NAD 1983 UTM 14
Last Modified: 1/14/2010

0 0.5 1 1.5 2
Miles

Canada
MT ND SD MN WY NE IA
Bismarck
Pierre
Project Area

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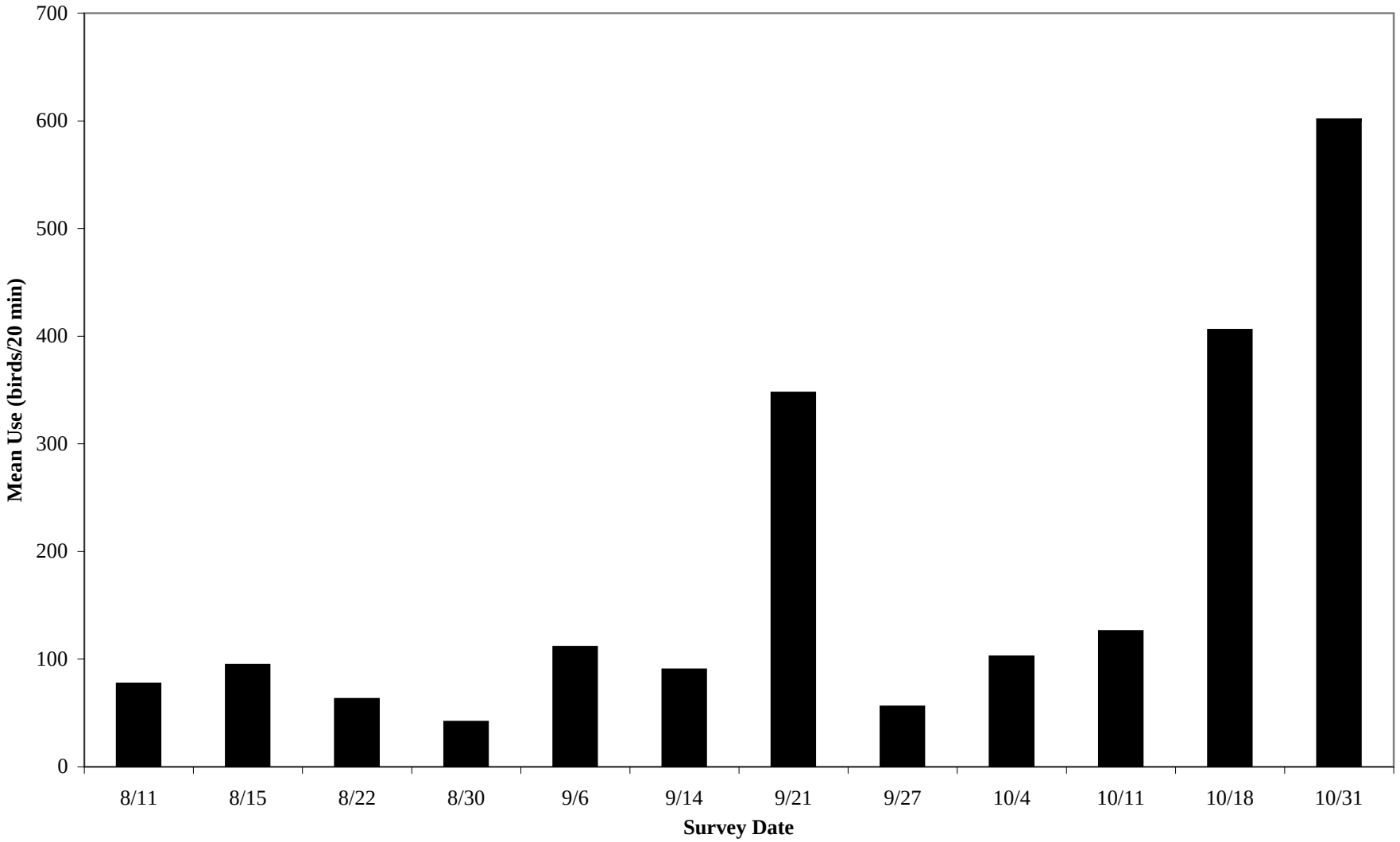


Figure 3. Mean non-raptor use by survey date (fall 2009).

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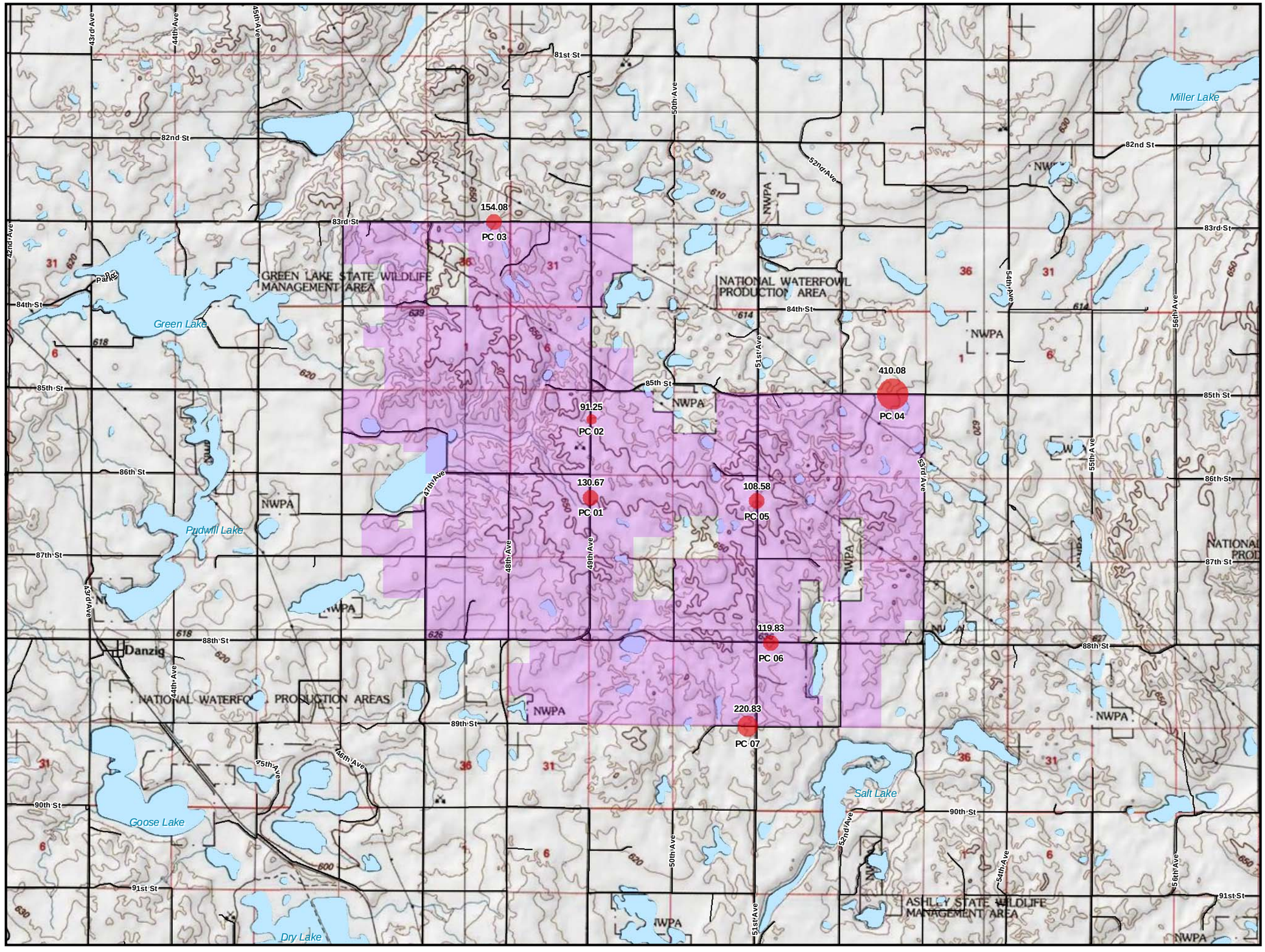


Figure 4

Non-raptor mean use by point count location (fall 2009). Ashley Wind Energy Project McIntosh County, ND

CPV

Non-raptors per 20 minutes

- 0.00 - 100.00
- 100.01 - 200.00
- 200.01 - 300.00
- 300.01 - 400.00
- 400.01 - 500.00

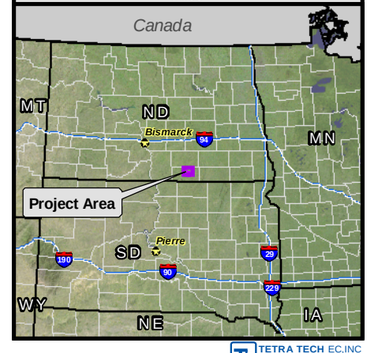
\# Mean Use Value
PC# Point Count Number

- 200-MW WEP
- River/Stream
- Lake/Pond
- Other Road

DATA SOURCES: ESRI Streetmap 2005, National Geographic Society 2009

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NAD 1983 UTM 14
Last Modified: 12/15/2009

0 0.5 1 1.5 2
Miles



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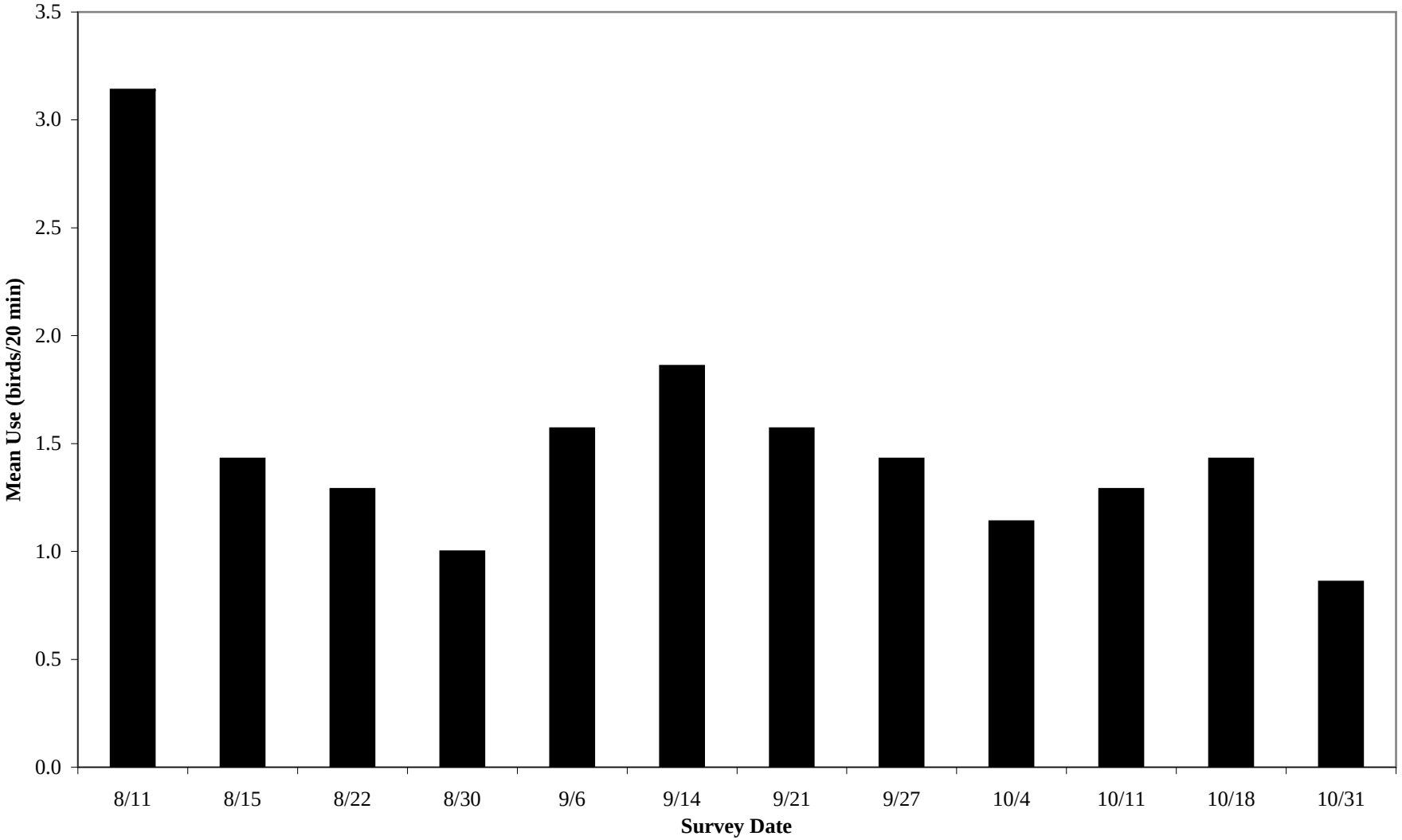


Figure 5. Mean raptor use by survey date (fall 2009).

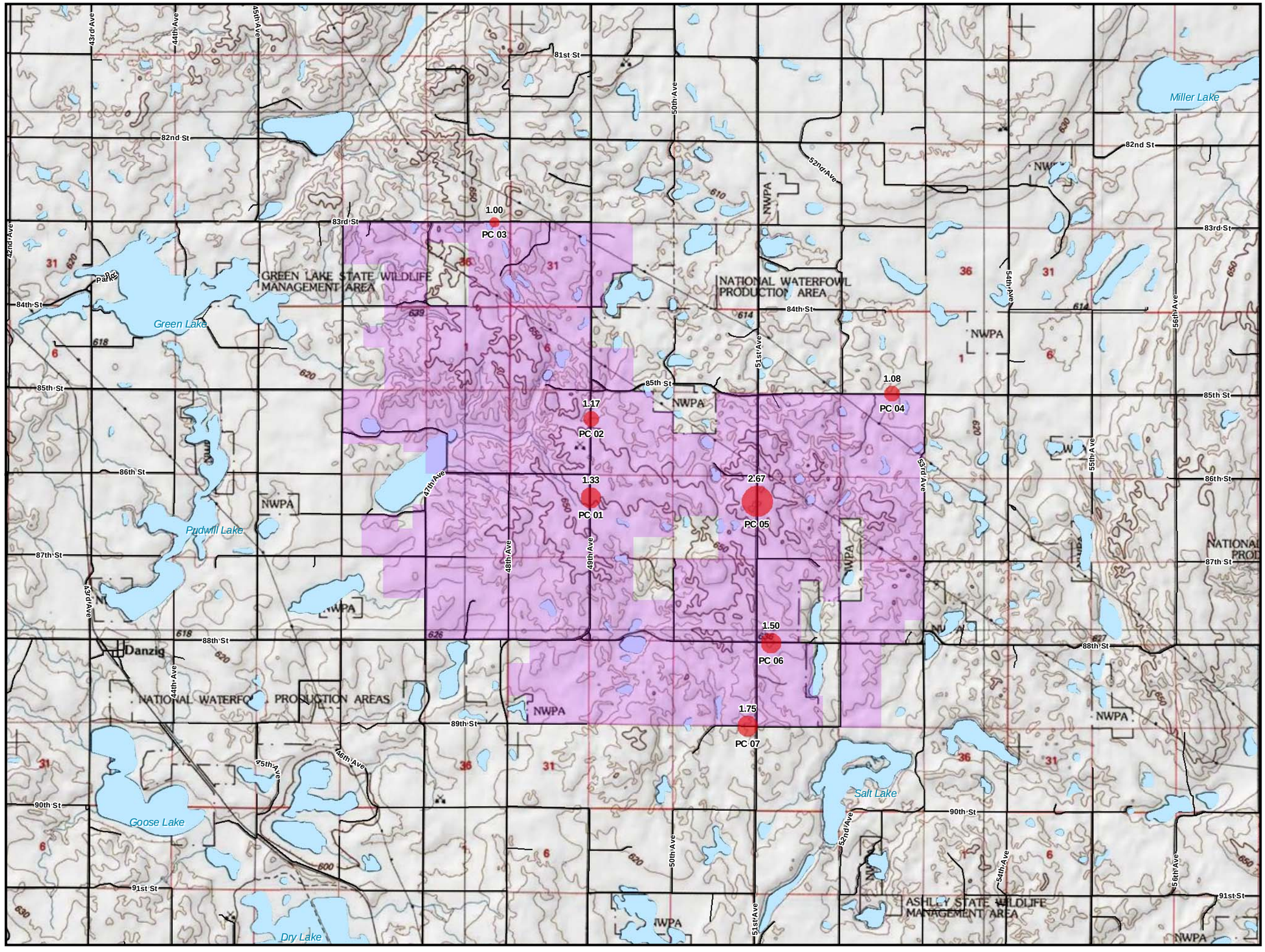


Figure 6

Raptor mean use by point count location (fall 2009).
Ashley Wind Energy Project
McIntosh County, ND

CPV

Raptors per 20 minutes

- 0.00 - 0.60
- 0.61 - 1.20
- 1.21 - 1.80
- 1.81 - 2.40
- 2.41 - 3.00

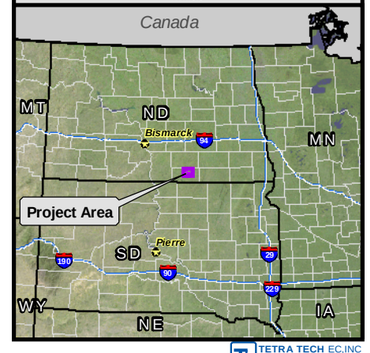
\# Mean Use Value
PC# Point Count Number

- 200-MW WEP
- Other Road
- River/Stream
- Lake/Pond

DATA SOURCES: ESRI Streetmap 2005, National Geographic Society 2009

1:70,000
NAD 1983 UTM 14
Last Modified: 12/15/2009

0 0.5 1 1.5 2
Miles



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APPENDIX

Appendix 1. Flight directions of birds observed during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species	Number of Birds[1]	Number of Observations	Percentage of Flights								
			N	NE	E	SE	S	SW	W	NW	Variable
red-winged blackbird	3012	19	0.1	0.0	0.0	0.0	82.5	0.0	17.5	0.0	0.0
snow goose	2060	9	3.9	40.0	0.0	2.2	53.9	0.0	0.0	0.0	0.0
sandhill crane	1605	4	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
yellow-headed blackbird	823	4	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Canada goose	611	29	21.8	0.0	12.8	0.8	44.4	0.0	9.5	10.8	0.0
American white pelican	576	9	0.7	0.2	0.0	0.0	97.4	0.0	1.7	0.0	0.0
barn swallow	531	15	15.6	0.0	0.0	0.0	79.5	3.4	1.5	0.0	0.0
Lapland longspur	405	4	60.5	0.0	0.0	0.0	30.9	8.6	0.0	0.0	0.0
ring-billed gull	282	2	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Franklin's gull	275	2	0.0	0.0	0.0	34.5	65.5	0.0	0.0	0.0	0.0
northern rough-winged swallow	113	5	15.0	0.0	0.0	0.0	85.0	0.0	0.0	0.0	0.0
common grackle	104	3	0.0	0.0	57.7	0.0	42.3	0.0	0.0	0.0	0.0
pectoral sandpiper	70	2	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
double-crested cormorant	57	5	0.0	0.0	0.0	63.2	33.3	3.5	0.0	0.0	0.0
blue-winged teal	47	6	34.0	6.4	0.0	0.0	59.6	0.0	0.0	0.0	0.0
unidentified songbird	45	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
unidentified sandpiper	43	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
horned lark	42	2	0.0	0.0	0.0	0.0	95.2	0.0	4.8	0.0	0.0
canvasback	40	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
northern pintail	33	3	0.0	0.0	0.0	0.0	81.8	18.2	0.0	0.0	0.0
American goldfinch	33	4	0.0	0.0	24.2	0.0	75.8	0.0	0.0	0.0	0.0
unidentified duck	25	3	0.0	0.0	0.0	12.0	88.0	0.0	0.0	0.0	0.0
mourning dove	23	2	91.3	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0
unidentified gull	18	2	11.1	0.0	0.0	0.0	88.9	0.0	0.0	0.0	0.0
northern harrier	15		0.0	0.0	13.3	6.7	46.7	6.7	20.0	6.7	0.0

Appendix 1. Flight directions of birds observed during fall 2009 point count surveys at the Ashley Wind Energy Project.

Species	Number of Birds[1]	Number of Observations	Percentage of Flights								
			N	NE	E	SE	S	SW	W	NW	Variable
great egret	15	4	6.7	0.0	0.0	6.7	6.7	80.0	0.0	0.0	0.0
American robin	15	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
sharp-tailed grouse	13	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
red-tailed hawk	11	9	18.2	9.1	0.0	0.0	54.5	0.0	18.2	0.0	0.0
western meadowlark	9	4	0.0	0.0	33.3	0.0	11.1	11.1	44.4	0.0	0.0
unidentified hawk	9	8	44.4	0.0	0.0	0.0	55.6	0.0	0.0	0.0	0.0
mallard	9	2	33.3	0.0	0.0	66.7	0.0	0.0	0.0	0.0	0.0
tundra swan	7	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
killdeer	7	2	0.0	0.0	0.0	0.0	57.1	0.0	0.0	42.9	0.0
great blue heron	7	6	28.6	0.0	0.0	0.0	28.6	14.3	14.3	14.3	0.0
Smith's longspur	5	1	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
northern flicker	5	2	0.0	0.0	80.0	0.0	0.0	0.0	20.0	0.0	0.0
broad-winged hawk	4	3	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
savannah sparrow	3	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Swainson’s hawk	2	2	0.0	0.0	0.0	0.0	50.0	0.0	50.0	0.0	0.0
rough-legged hawk	2	2	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
merlin	2	2	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0
ferruginous hawk	2	2	0.0	0.0	0.0	0.0	50.0	0.0	50.0	0.0	0.0
sharp-shinned hawk	1	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
prairie falcon	1	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
herring gull	1	1	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
black tern	1	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
brown-headed cowbird	1	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grand Total	**11020**	**210**	**5.7**	**7.5**	**1.4**	**1.8**	**76.6**	**0.7**	**5.6**	**0.6**	**0.0**

[1] Includes only flying birds with flight directions

Class I Cultural Resources Investigation

Executive Summary – Wind Power GeoPlanner™

Licensed Microwave Search & Worst Case Fresnel Zone

Comsearch performed an analysis to evaluate the potential effects of the planned Potential Wind Energy Project in McIntosh County, North Dakota on existing non-Federal Government microwave telecom systems.

Microwave Search Results: Comsearch's Wind Power GeoPlanner™ provides a graphical representation of affected microwave paths and provides supporting technical parameters. The microwave path data is overlaid on topographic basemaps. Comsearch identified one microwave path that intersects the project area (see Figure 1 and Table 1 below).

Comsearch then calculated a Worst Case Fresnel Zone (WCFZ) for each microwave path in the project area. The mid-point of a full microwave path is the location where the widest (or worst case) Fresnel zone occurs. Fresnel zones are calculated for each path using the following formula.

$$Rn \cong 17.3\sqrt{\frac{n}{F_{GHz}}\left(\frac{d1d2}{d1+d2}\right)}$$

Where,
R_n = First Fresnel Zone Radius, meters
n = The Number 1
F_{GHz} = Frequency of Microwave Link, GHz
d1 = Distance to Wind Turbine from Microwave Station 1, km
d2 = Distance to Wind Turbine from Microwave Station 2, km

note: For WCFZ calculation d1 = d2

The calculated WCFZ radius, giving the linear path an area or swath, buffers each microwave path in the project area. The distance unit is in meters and can be found in the column attribute "WCFZ." In general, this is the XY area where the planned wind turbines should be avoided, if possible. These areas are shown in Figure 2.

Please note that because the turbine locations were not provided, we could not determine if any potential obstruction cases exist between the planned wind turbines and the microwave systems. If the latitude and longitude values for turbine locations are provided, Comsearch can identify specific microwave telecom paths and turbines where a potential XY conflict exists. Additionally, when wind turbines need to be located inside a WCFZ, Comsearch can provide a detailed clearance study, which considers the vertical Z-height clearance objectives.

Map Projection: The ESRI® Shapefiles contained in the enclosed GeoPlanner CD are in NAD 83 UTM Zone 14 projected coordinate system.

Comsearch Contact:
Denise Finney, Account Manager
Phone: (703) 726-5650 Fax: (703) 726-5595
Email: dfinney@comsearch.com

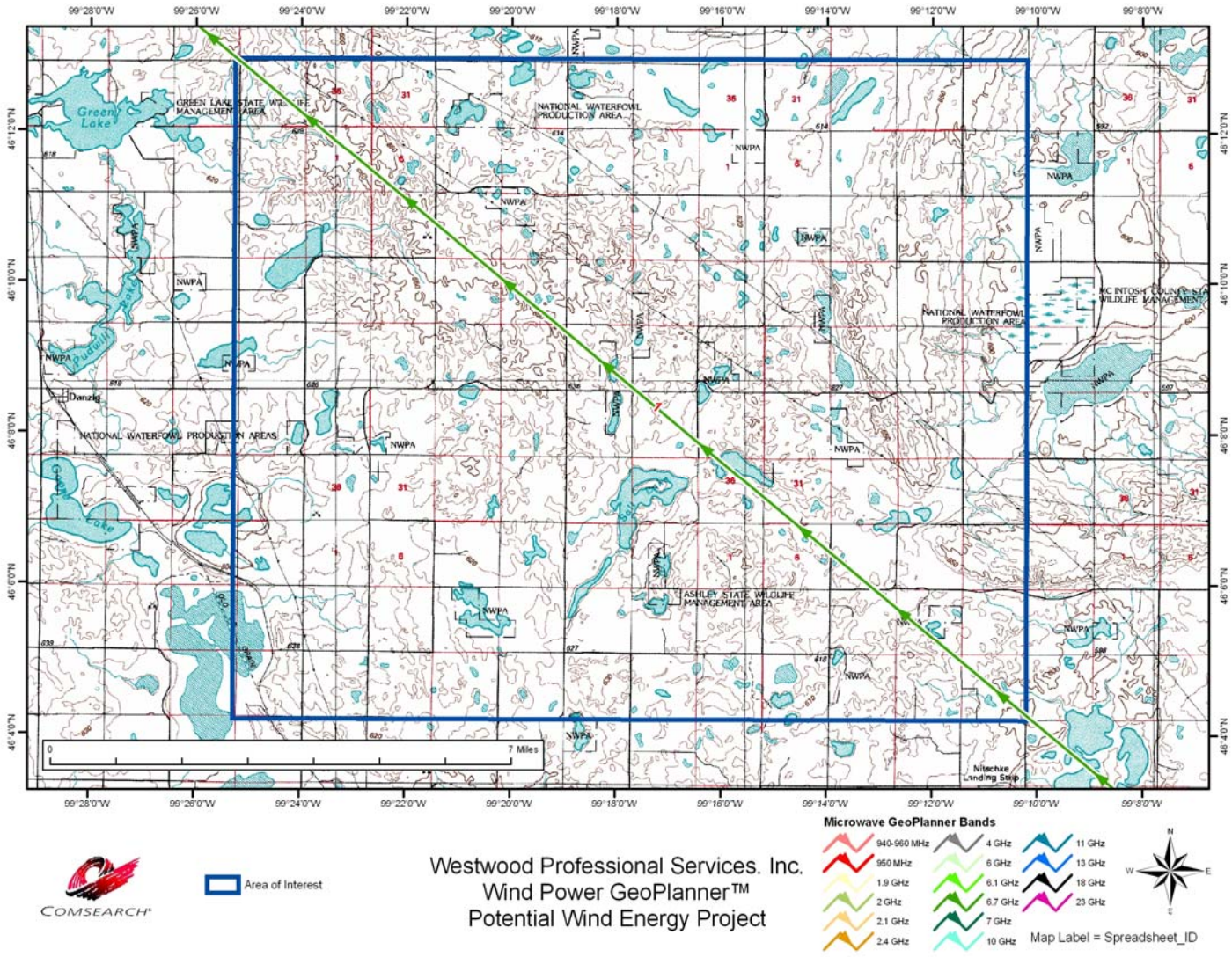


Figure 1 – Wind Power GeoPlanner™

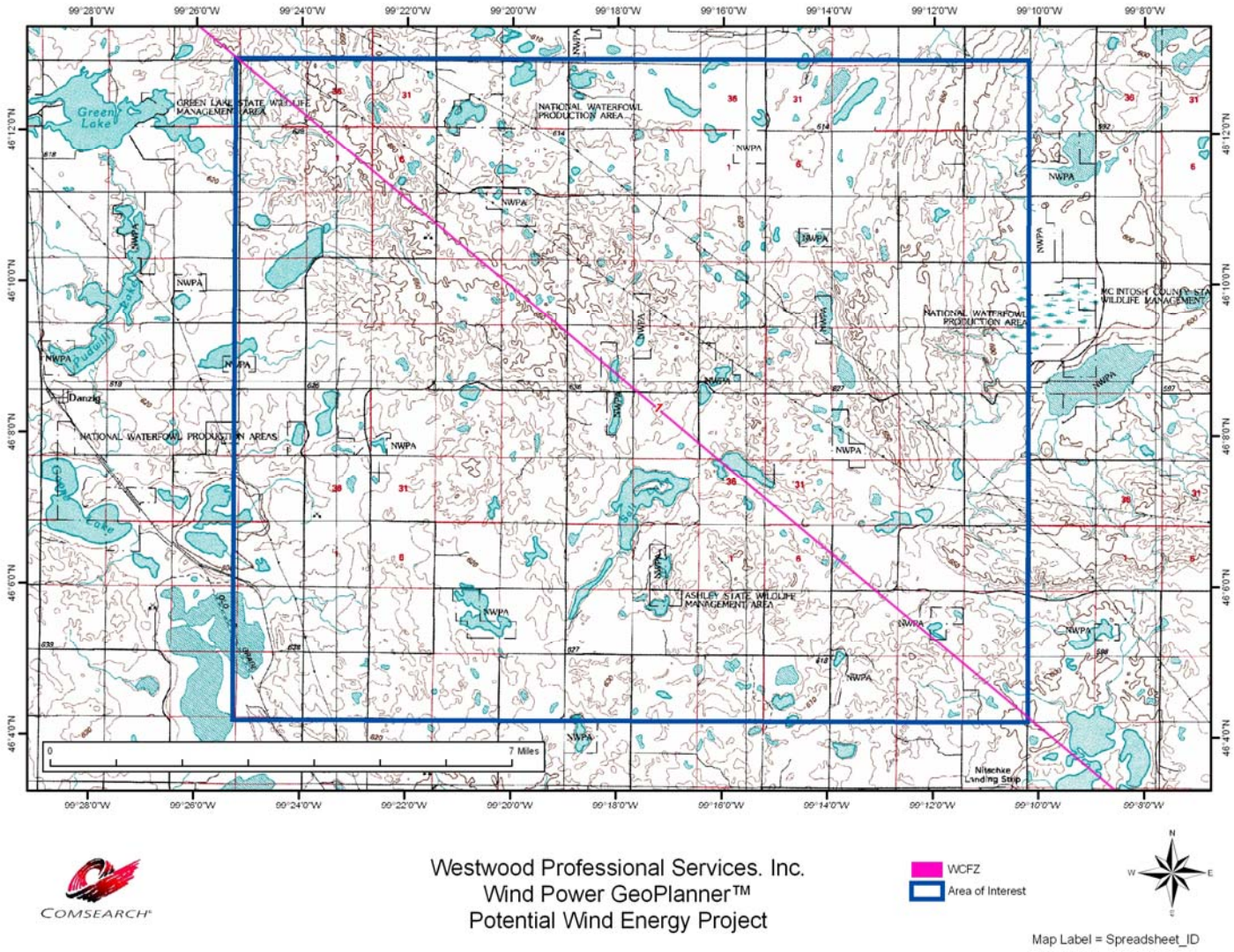


Figure 2 – Wind Power GeoPlanner™ & WCFZ

ID	Name Site 1	Name Site 2	Call Sign Site 1	Call Sign Site 2	Band Name	Licensee	WCFZ (m)
1	FORBES	WISHEK	WBD235	WBD236	Upper 6 GHz	BASIN ELECTRIC POWER COOPERATIVE	27.89

Table 1 – Microwave GeoPlanner Links Considered in Analysis (See enclosed mw_geopl.xls for more detailed information and GP_dict_matrix_description.xls for field description)

COMSEARCH

19700 Janelia Farms Blvd
Ashburn, VA 20147
703-726-5500

Land Mobile Radio (LMR) in the Vicinity of a Proposed Wind Project Located in McIntosh County, North Dakota

Comsearch was contracted by Westwood Professional Services, Inc. to identify and locate the Land Mobile Radio (LMR) operators in the vicinity of a proposed project (the Project) located in McIntosh County, North Dakota. Comsearch determined that there were 28 LMR systems registered in the Project area and within approximately 15 miles of the center of the Project site. Table 1 identifies the LMR systems and lists their pertinent parameters and owner/operator. Note that the majority of the LMR operators in the area are governmental agencies, i.e., the County of McIntosh, medical entities or utility companies in the area. Figure 1 shows the location of the LMR repeaters within the Project area of interest and in the adjacent areas around the proposed Project.

Table 1 - LMR Repeater Sites in the Vicinity of the Proposed Project

Location	State	Latitude	Longitude	Frequency - MHz	Owner - Operator
ASHLEY	ND	46.03497222220	-99.36983333330	155.37000000	MC INTOSH, COUNTY OF
ASHLEY	ND	46.03497222220	-99.36983333330	155.43000000	MC INTOSH, COUNTY OF
ASHLEY	ND	46.03497222220	-99.36983333330	155.50500000	MC INTOSH, COUNTY OF
GACKLE	ND	46.12636111110	-99.07205555560	158.85000000	GACKLE-STREETER PUBLIC SCHOOL
ASHLEY	ND	46.03386111110	-99.38122222220	155.22000000	ASHLEY PUBLIC SCHOOL
ASHLEY	ND	46.03386111110	-99.38122222220	153.86000000	MCINTOSH, COUNTY OF
WISHEK	ND	46.26052777780	-99.51816666670	155.04000000	MC INTOSH, COUNTY OF
WISHEK	ND	46.26108333330	-99.51816666670	155.04000000	MC INTOSH, COUNTY OF
KULM	ND	46.11136111110	-99.06038888890	461.52500000	JAMESTOWN COMMUNICATIONS INC
WISHEK	ND	46.25552777780	-99.55038888890	155.34000000	WISHEK COMMUNITY HOSPITAL
WISHEK	ND	46.25552777780	-99.55038888890	155.38500000	WISHEK COMMUNITY HOSPITAL
WISHEK	ND	46.25552777780	-99.55038888890	163.25000000	WISHEK COMMUNITY HOSPITAL
ASHLEY	ND	46.03913888890	-99.37233333330	152.00750000	ASHLEY MEDICAL CENTER
ASHLEY	ND	46.03913888890	-99.37233333330	155.34000000	ASHLEY MEDICAL CENTER
ASHLEY	ND	46.03913888890	-99.37233333330	155.40000000	ASHLEY MEDICAL CENTER
KULM	ND	46.11136111110	-99.06038888890	461.47500000	ROTT, ELLIOTT
ASHLEY	ND	46.04163888890	-99.37650000000	457.20000000	KEM ELECTRIC COOPERATIVE INC
WISHEK	ND	46.14358333330	-99.56622222220	457.20000000	KEM ELECTRIC COOPERATIVE INC
ASHLEY	ND	46.04163888890	-99.37650000000	457.20000000	KEM ELECTRIC COOPERATIVE INC

WISHEK	ND	46.14358333330	-99.56622222220	457.20000000	KEM ELECTRIC COOPERATIVE INC
LEHR	ND	46.32080555560	-99.28788888890	152.93000000	BADER, RICK
ASHLEY	ND	46.03913888890	-99.37233333330	158.95500000	NORTH DAKOTA, STATE OF
GACKLE	ND	46.12636111110	-99.07344444440	158.95500000	NORTH DAKOTA, STATE OF
KULM	ND	46.11136111110	-99.06038888890	857.83750000	Midwest Management Inc.
KULM	ND	46.11136111110	-99.06038888890	462.12500000	JAMESTOWN COMMUNICATIONS INC
FAULKTON	SD	46.10830555560	-99.31094444440	461.82500000	SCHILDER, STEVEN
ASHLEY	ND	45.93063888890	-99.34097222220	153.12500000	SCHAUER, RONALD
ASHLEY	ND	46.03497222220	-99.36983333330	154.08500000	NORTH DAKOTA, STATE OF

MHz=Megahertz

The frequencies of operation of the LMR repeaters are generally unaffected by the presence of wind turbines. Very little, if any, change in the coverage of the repeaters will occur when the wind turbines are installed. It is the intention of the wind energy site developers that their new facilities will not have an impact on existing telecommunication infra-structures including LMR. Although no impact is anticipated, the developer can be relied on to take steps to accommodate the LMR operators if a change in coverage of the LMR systems does occur after the wind turbines are installed. If there is a reported change in coverage it can be readily corrected by repositioning or adding repeaters that operate with the LMR system mobile units. This can be accomplished by adding or positioning the repeaters at locations within the wind facility. Repeater antennas can be installed on utility, meteorological or other structures in the wind facility if needed. The plans for the installation of these repeater antennas for this purpose should be given to the local government oversight authority for review and approval before actual installation is undertaken.

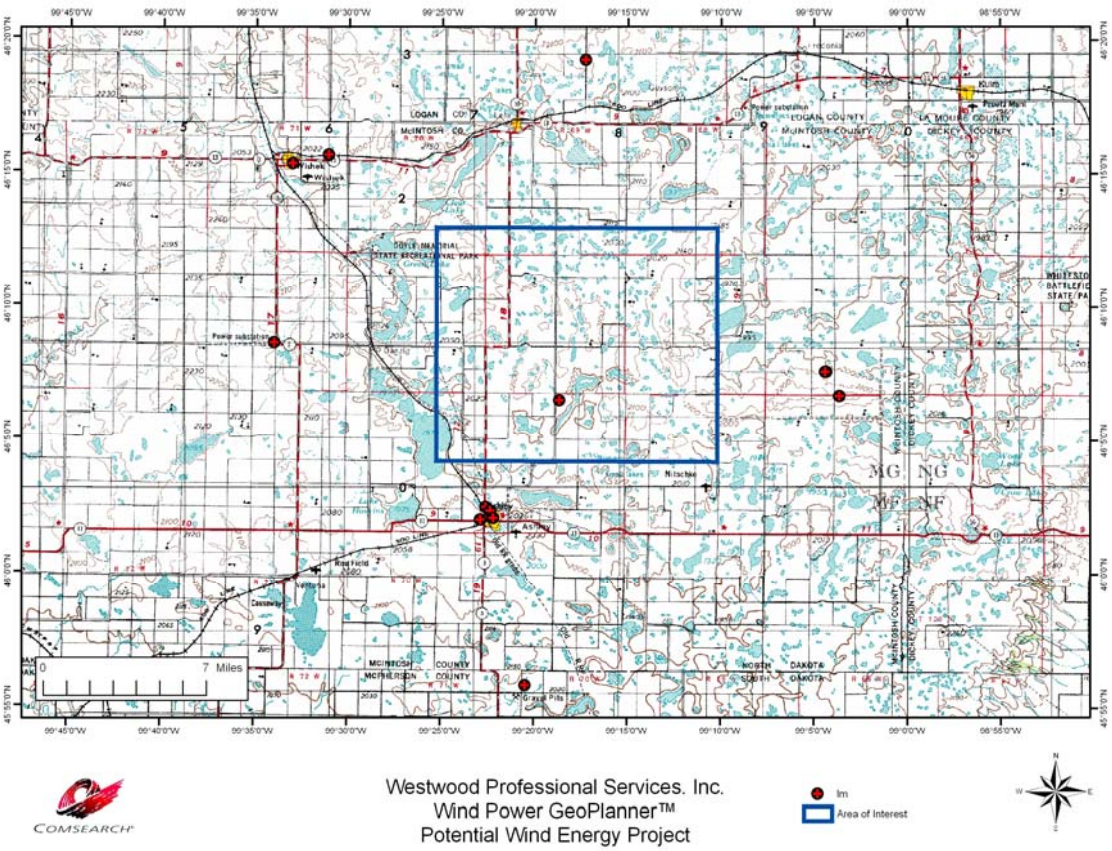


Figure 1 - Proposed Project LMR Repeater Sites

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Analysis of AM and FM Broadcast Station Operations in the Vicinity of the Proposed Wind Energy Project in McIntosh County, North Dakota

Comsearch was contracted by Westwood Professional Services Inc., to determine if there would be any degradation to the operational coverage of AM and FM Radio Broadcast Stations located in the vicinity of their proposed Wind Energy Project in McIntosh County, North Dakota.

Comsearch determined that there were no licensed operating AM stations within a 15 mile search radius of the McIntosh County Wind Energy Project. Therefore, there will be no problems with AM broadcast coverage in the area because wind turbines have to be within 2 miles of an AM broadcast antenna to pose a potential threat to the station's coverage.

There are also no license records for FM stations within 15 miles of the center of the McIntosh County Wind Energy Project. FM stations at distances greater than 3 miles from any of the wind turbines will have little or no affect on the FM Station coverage.

The results of the database search of AM and FM stations in the McIntosh County Wind Energy project area show that none of the stations, AM or FM, will be located close enough to the planned wind turbines to be negatively affected. Figure 1 is a map of the McIntosh County Wind Energy site.

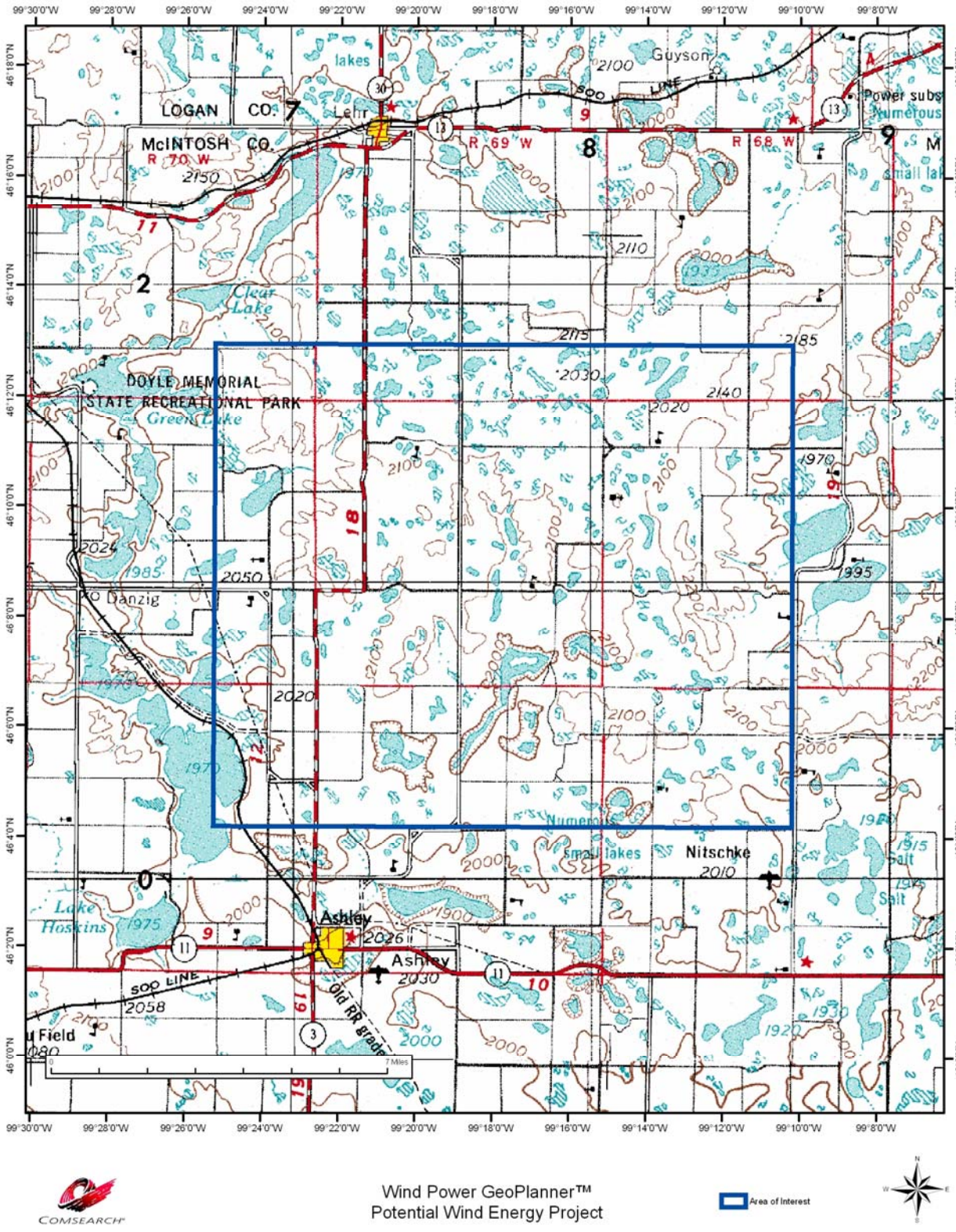


Figure 1 McIntosh County Wind Energy Project Site Map

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Off-Air TV Reception Analysis at a Proposed Project in McIntosh County, North Dakota

Comsearch was contracted by Westwood Professional Services. Inc. to identify all of the off-air television stations within 100-mile radius of a proposed Wind Energy Project in McIntosh, North Dakota. Off-air stations are television broadcasters that transmit signals that can be received directly on a television receiver from terrestrially located broadcast facilities. Comsearch examined the coverage of the off-air TV stations and the communities in the area that could potentially have degraded television reception because of the location of the wind turbines. The proposed wind energy facility boundaries and local communities are plotted in the map shown in Figure 1 of this memorandum. Table 1 lists the off-air television stations within 100 miles of the wind project. Figure 2 shows all of the television stations within 100 mile radius of the proposed wind facility.

Table 1 Off-Air TV Channels within 100 Miles of the Proposed Wind Energy Project

Location	State	Call Sign	Channel	Service	Status	Distance
JAMESTOWN	ND	K02DD	2	TX	LIC	58.70 mi
SENECA	SD	-	2	TA	-	75.40 mi
BISMARCK	ND	KBME-TV	3	TV	LIC	78.33 mi
BISMARCK	ND	KFYR-TV	5	TV	LIC	79.08 mi
LISBON	ND	K07NE	7	TX	LIC	80.15 mi
JAMESTOWN	ND	KJRR	7	TV	LIC	59.44 mi
JAMESTOWN	ND	KJRR	7	DT	CP	59.44 mi
JAMESTOWN	ND	KJRR	7	DT	APP	59.44 mi
ABERDEEN	SD	K07JD	7	TX	LIC	60.51 mi
ABERDEEN	SD	KABY-TV	9	TV	LIC	98.62 mi
ABERDEEN	SD	KABY-TV	9	DT	CP	98.50 mi
LOWRY	SD	KQSD-TV	11	TV	LIC	68.51 mi
LOWRY	SD	KQSD-TV	11	TV	APP	68.51 mi
LOWRY	SD	KQSD-TV	11	TV	APP	68.51 mi
LOWRY	SD	KQSD-TV	11	DT	CP MOD	68.51 mi
BISMARCK	ND	KXMB-TV	12	TV	LIC	78.57 mi
BISMARCK	ND	KXMB-TV	12	DT	CP	78.54 mi
ABERDEEN	SD	K13ZC-D	13	LD	CP	60.51 mi
LOWRY	SD	KQSD-TV	15	DT	LIC	68.51 mi
BISMARCK	ND	KBMY	16	DT	LIC	82.92 mi
BISMARCK	ND	KBMY	16	DT	CP	78.48 mi
ABERDEEN	SD	KDSD-TV	16	TV	LIC	90.05 mi

BISMARCK	ND	KBMY	17	TV	LIC	78.45 mi
BISMARCK	ND	KBMY-DR	17	DR	APP	78.45 mi
ABERDEEN	SD	KDSD-TV	17	DT	LIC	90.04 mi
ABERDEEN	SD	KDSD-TV	17	DT	APP	90.04 mi
ABERDEEN	SD	KDSD-TV	17	DT	APP	90.04 mi
JAMESTOWN	ND	KJRR-DR	18	DR	GRANT	59.44 mi
ELLENDALE	ND	KJRE	19	TV	LIC	23.24 mi
ELLENDALE	ND	KJRE	20	DS	STA	23.24 mi
ELLENDALE	ND	KJRE	20	DT	LIC	23.24 mi
ABERDEEN	SD	K35FJ	20	TX	LIC	60.99 mi
BISMARCK	ND	KBME-TV	22	DT	LIC	78.32 mi
BISMARCK	ND	KXMB-TV	23	DT	LIC	78.32 mi
ABERDEEN	SD	K24DT	24	TX	LIC	59.39 mi
BISMARCK	ND	KNDX	26	TV	LIC	78.04 mi
BISMARCK	ND	KNDX	26	DT	CP	78.04 mi
BISMARCK	ND	K28JP-D	28	LD	CP	88.31 mi
ABERDEEN	SD	KABY-TV	28	DT	LIC	98.50 mi
BISMARK	ND	KFYR-TV	31	DS	STA	78.99 mi
BISMARCK	ND	KFYR-TV	31	DT	LIC	78.99 mi
BISMARCK	ND	KIJC-LP	33	TX	CP	84.95 mi
ABERDEEN	SD	NEW	33	TX	APP	59.60 mi
ABERDEEN	SD	NEW	33	TX	APP	60.68 mi
ABERDEEN	SD	NEW	33	TX	APP	60.68 mi
ABERDEEN	SD	NEW	33	TX	APP	59.22 mi
ABERDEEN	SD	NEW	33	TX	APP	65.81 mi
BISMARCK	ND	K34IT-D	34	LD	CP	88.31 mi
JAMESTOWN	ND	K35HT	35	TX	CP	66.36 mi
ABERDEEN	SD	K35IG-D	35	LD	CP	59.22 mi
BISMARCK	ND	K36HY	36	TX	CP	84.95 mi
BISMARCK	ND	K39IF	39	TX	CP	84.94 mi
ABERDEEN	SD	K39CZ	39	TX	LIC	59.39 mi
BISMARCK	ND	K42HD	42	TX	CP	84.95 mi
BISMARCK	ND	K43JQ	43	TX	LIC	85.47 mi
ABERDEEN	SD	K43JW	43	TX	CP	60.68 mi
BISMARCK	ND	K44HU	44	TX	CP	78.04 mi
BISMARCK	ND	K46DY	46	TX	LIC	84.94 mi
BISMARCK	ND	K46DY	46	LD	CP	84.94 mi
ABERDEEN	SD	NEW	48	TX	APP	60.68 mi
BISMARCK	ND	NEW	49	TX	APP	84.95 mi
BISMARCK	ND	K50IX	50	TX	CP	86.02 mi
LOWRY	SD	K56AX	56	TX	LIC	68.53 mi
LOWRY	SD	K56AX	56	TA	-	66.13 mi
IPSWICH	SD	K59BL	59	TX	LIC	35.27 mi
LOWRY	SD	K62AV	62	TX	LIC	68.53 mi
LOWRY	SD	K62AV	62	TA	-	66.13 mi
BISMARCK	ND	K64GN	64	TX	CP	78.03 mi
LOWRY	SD	K68BM	68	TX	LIC	68.53 mi
LOWRY	SD	K68BM	68	TA	-	66.13 mi

TV –Normal Broadcast Station
DS-Digital Service Television, Temporary Operation, STA Operation
DT-Digital Television Broadcast Station
DR- Indicates Station has Applied for FCC Rule Making
DN-New Digital Application
GRA-Indicates Rule Making was granted by FCC
DC-Change Request to Digital from Analog
GRANT-Rule Making Granted
LP-Low Power Television Broadcast Station
TX-Translator Television Broadcast Station
LIC – Licensed and operational station
CP – License approved construction permit granted
MOD-Modification Requested
APP – License application, not yet operational
STA – Special transmit authorization, usually granted by FCC for temporary operation
CA – Class A Television, Low-power
LD - Digital Low power
TA – Vacant channel

The most likely TV stations that will produce off-air coverage to the McIntosh County area will be those stations at a distance of 40 miles or less. The stations within 40 miles are listed in Table 2 below. There are only 4 entries in Table 2, representing 2 individual operational TV Stations. The station in Ellendale is a full power station and the station located in Ipswich is a low power station with limited range and limited programming.

The off-air television available to the local communities is considered very limited since there are only two operational TV stations servicing the area. Therefore, off-air TV in the area must be supplemented with other means of TV reception of programming to a large portion of the residents in the area. It is expected that the off-air television stations available in the area are not the only source relied on by the local residents. It is likely that TV Cable service, where available, and/or direct satellite broadcast (DSB) TV service provides TV reception to the residents in the surrounding communities. These alternative TV services will be unaffected by the presence of the wind turbine facility and can provide TV programming to those area residents who do experience degraded off-air TV service after the wind turbines are installed and are operational.

Table 2 Off-Air TV Channels within 40 Miles of the Proposed Energy Project

Location	State	Call Sign	Channel	Service	Status	Distance
ELLENDALE	ND	KJRE	19	TV	LIC	23.24 mi
ELLENDALE	ND	KJRE	20	DS	STA	23.24 mi
ELLENDALE	ND	KJRE	20	DT	LIC	23.24 mi
IPSWICH	SD	K59BL	59	TX	LIC	35.27 mi

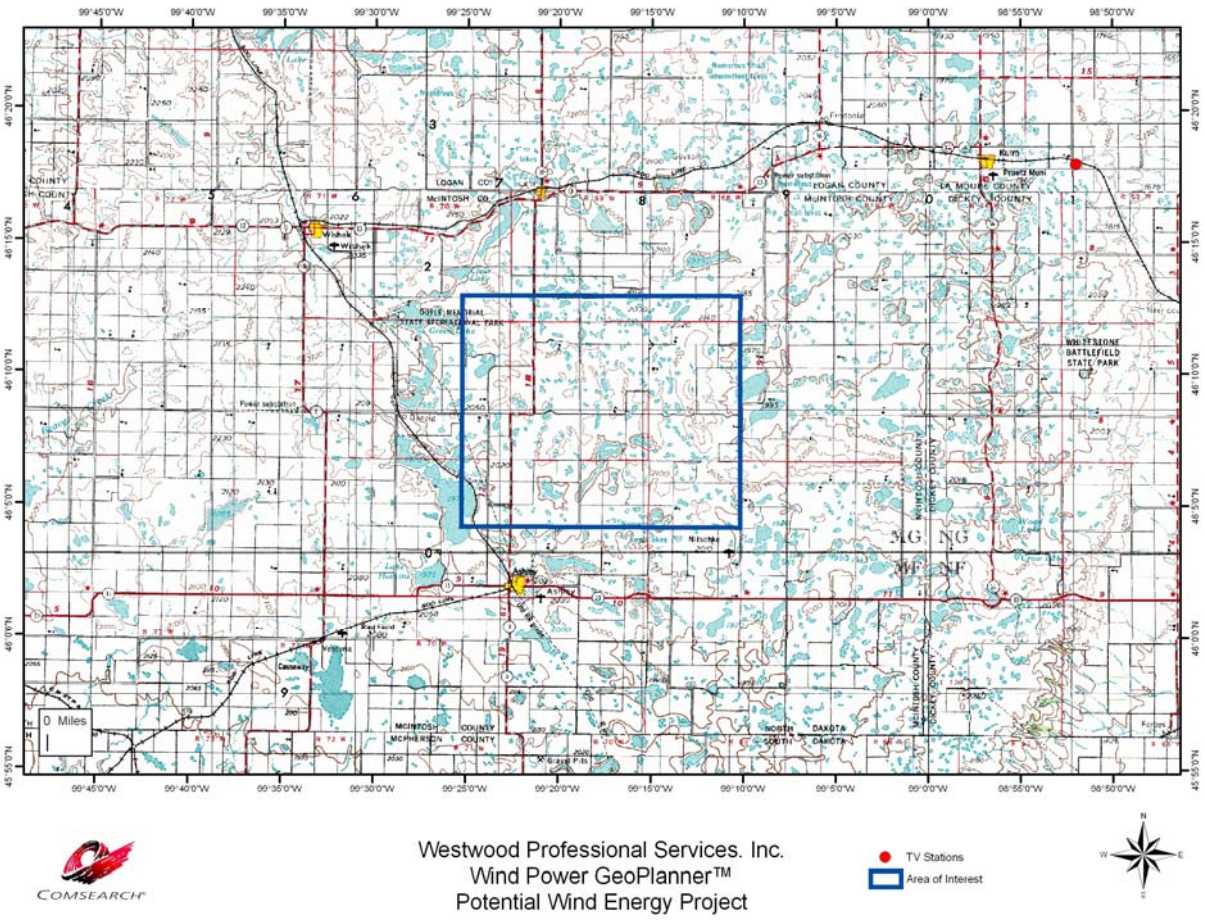


Figure 1 Proposed Wind Farm Project Boundaries and Local Communities

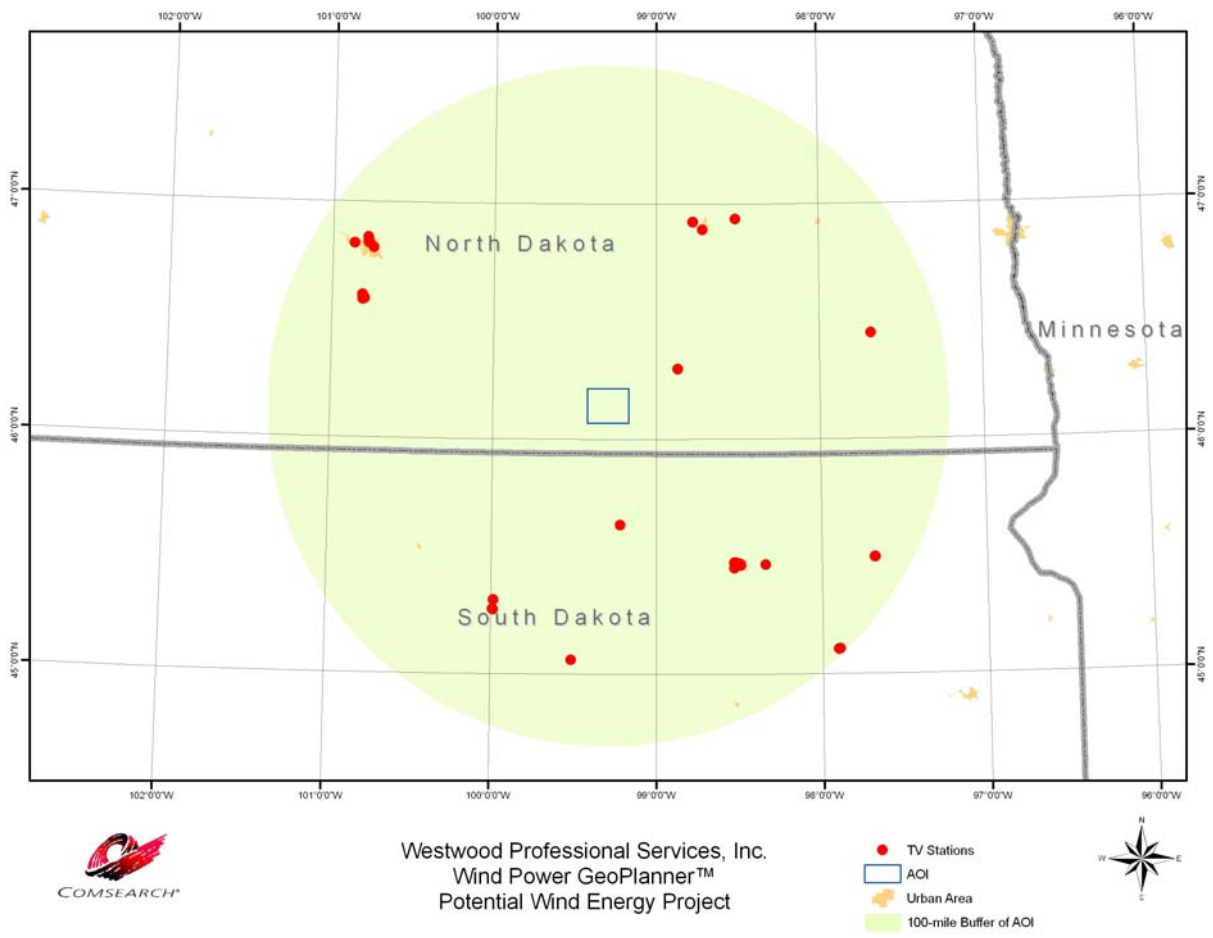


Figure 2 TV Stations within 100 Miles of the Proposed Wind Farm Project

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

JAN 7 2009

Mr. Kurt Oliver
COMSEARCH
Director, Field Services
19700 Janelia Farms Blvd
Ashburn, VA 21147

Re: Potential Wind Energy Project, in McIntosh County, ND

Dear Mr. Oliver:

In response to your request on November 11, 2008, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC) the plans for the Potential Wind Energy Project, in McIntosh County, North Dakota.

After a 45 day period of review, the agencies have not identified any concerns regarding blockage of their radio frequency transmissions.

While the IRAC agencies did not identify any concerns regarding radio frequency blockage, this does not eliminate the need for the wind energy facilities to meet any other requirements specified by law related to these agencies. For example, this review by the IRAC does not eliminate any need that may exist to coordinate with the Federal Aviation Administration concerning flight obstruction.

Thank you for the opportunity to review these proposals.

Sincerely,

Edward M. Davison
Deputy Associate Administrator
Office of Spectrum Management

19700 Janelia Farm Blvd
Ashburn, VA 20147
703-726-5500

November 11, 2008

Mr. Ed Davison
U. S. Department of Commerce
1401 Constitution Avenue N.W.
Washington DC 20230

RE: **Notification of the Potential Wind Energy Project in McIntosh County, North Dakota**

Dear Mr. Davison:

This letter and its attachments will serve as notification to the government that a confidential project developer plans to install a Wind Energy Facility in McIntosh County, North Dakota. The installation will be called Potential Wind Energy Project.

Enclosed are maps and tables that describe the location of the project and the configuration of the wind turbines.

- Table 1 is a list of the project boundaries.
- Figure 1 is a map of the general area showing the outline of the wind energy project boundaries in North Dakota.
- Figure 2 is a local map of the wind energy facility boundaries.

The dimensions of the Wind turbines to be installed at this facility are:

- Turbine Hub Heights AGL: 100 meters
- Turbine Blade Diameter: 100 meters
- Blade Tip Height AGL: 150 meters

If you have any questions with regard to this notification, please call Kurt Oliver at (703) 726-5675 or me at (703) 726-5860.

Sincerely,
COMSEARCH

Lester E. Polisky
Senior Principal Engineer
Field Services Department
Attachments

Table 1 - Corner Coordinates for Potential Wind Energy Project in NAD 83

	Latitude	Longitude
South East	46.070000 N	99.170000 W
South West	46.070000 N	99.421000 W
North West	46.216000 N	99.421000 W
North East	46.216000 N	99.170000 W

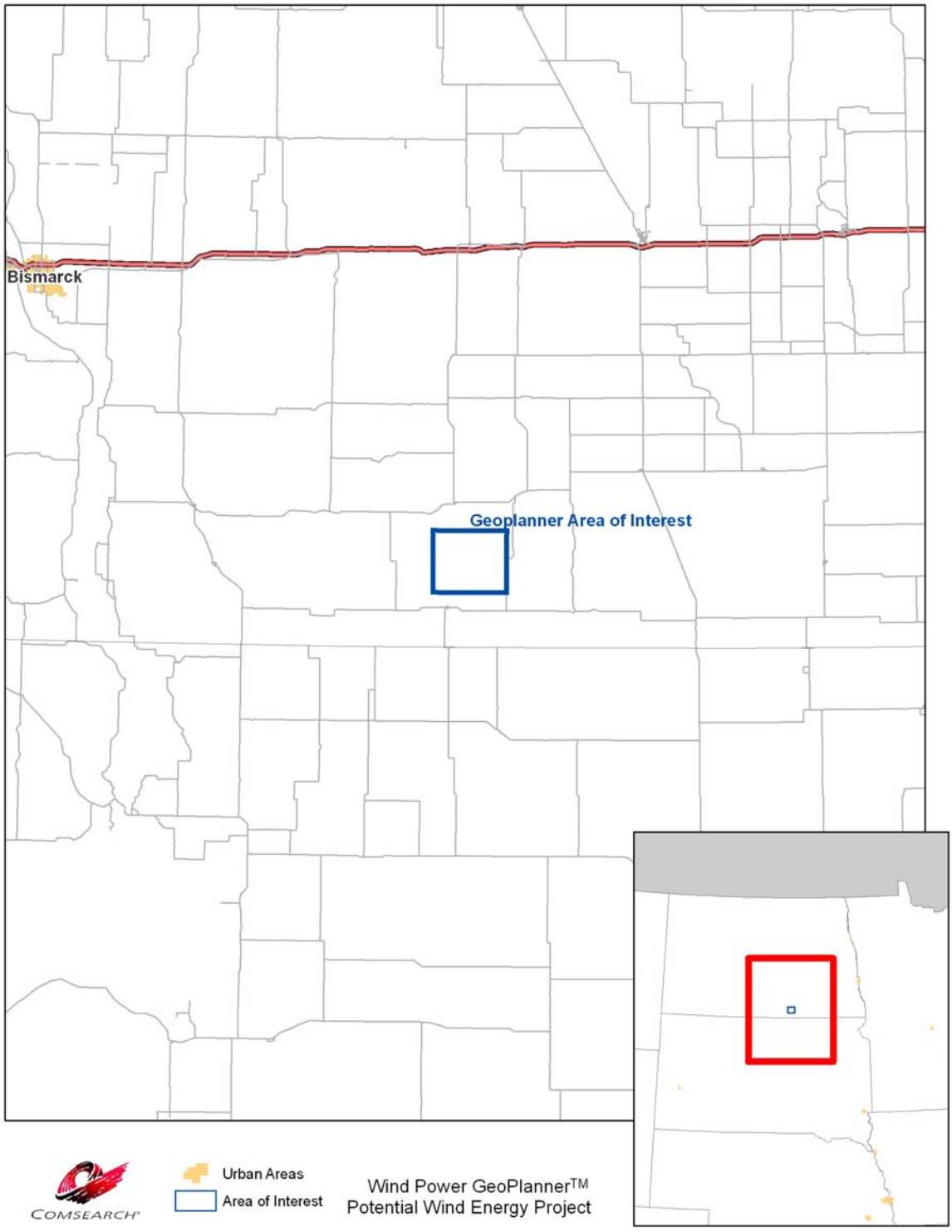


Figure 1 General Area of the Potential Wind Energy Project

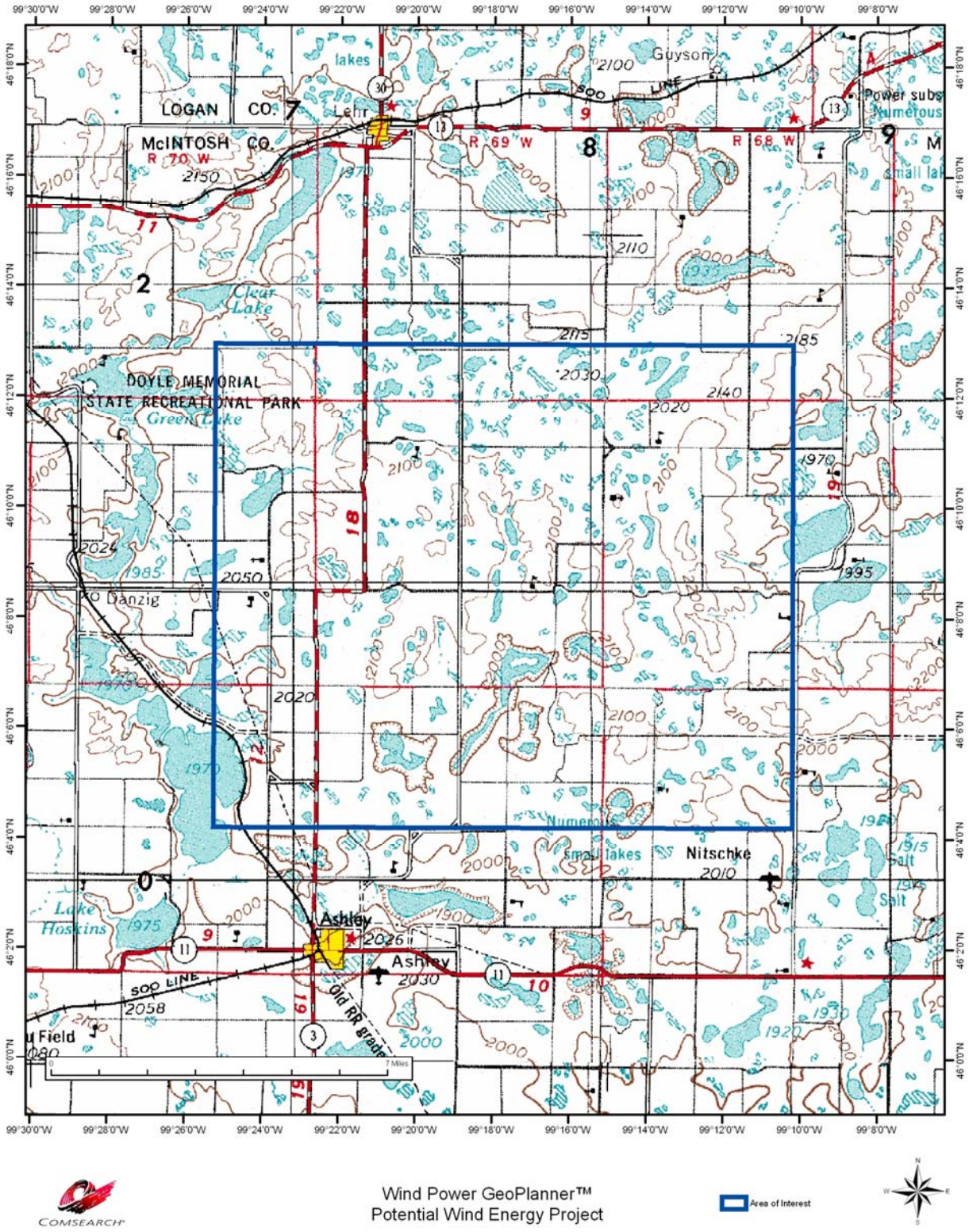


Figure 2 Local Area of Potential Wind Energy Project

Aviation Systems, Inc. Feasibility Evaluation

AVIATION SYSTEMS INC.
Aviation Consultants

September 1, 2009

Mr. John Hafner
CPV Renewable Energy, LLC
50 Braintree Hill Office Park, Suite 300
Braintree, MA 02184

Re: North Dakota Wind Project (Updated), 09-N-0492.006 (A)

Dear Mr. Hafner:

Pursuant to your request, Aviation Systems, Inc. (ASI), has performed an updated evaluation of the feasibility of the North Dakota Wind Project. The purpose of the study is to determine the feasibility of erecting wind turbines with a tip height of up to 500 feet above ground level (AGL), from an aviation and airspace point of view. We have reviewed the above referenced project against aviation and airspace criteria set forth in Federal Aviation Regulation (FAR) Part 77 (14 CFR 77) *Objects Affecting the Navigable Airspace;* FAA Order 8260.3B, the *United States Standard for Terminal Instrument Procedures* (TERPs) and; FAA Order JO 7400.2G, *Procedures For Handling Airspace Matters*. The criteria in these documents comprise the factors the Federal Aviation Administration (FAA) will use in evaluating the aeronautical compatibility of the project when it is submitted for their official regulatory review. Our findings include the following:

- The project consists of proposed wind turbines to be located within an area 11.1 x 10 nautical miles (NM) in the State of North Dakota.

- Ground elevations within the area range from 1960 feet above mean sea level (AMSL) to 2230 feet AMSL. With a proposed turbine height of 500 feet AGL, the highest point of the project would be 2730 feet AMSL. See attached map depicting the project and surrounding area. A 50-foot buffer was added for terrain variations and to establish the "target" height of 2780 feet AMSL.

- The nearest public airport is Ashley Muni (ASY) Airport, located 7.63 NM, south of the project centerpoint. The project would impact the Airport VFR Traffic Pattern above 2382 feet AMSL and FAA would issue a Determination of Presumed Hazard. (Map Sector C)

- The project would have no impact on Minimum Vectoring Altitudes (MVA) or En-Route Low Altitude Airways (MEA). However, two En-Route

2510 West 237th Street • Suite 210 • Torrance, CA 90505
Tel: 310.530.3188 • Fax: 310.530.3850 • Email: asi@aviationsystems.com • www.aviationsystems.com

Airways, V561 and V15 overlap a portion of the project (broken green map line is centerline). These airways are eight miles wide and have Minimum Obstruction Clearance Altitudes protected at 2400 and 2500 feet AMSL respectively. These levels constitute an FAA Obstruction Standard and the FAA may initially issue Notices of Presumed Hazard. However, Obstruction Standards are not considered ultimate Operational Limitations and the FAA should issue Determinations of No Hazard after conducting an extended study.

- No Long Range Radar Sites are within 60 NM of the search area centerpoint. Development is unlikely to impact Air Defense and Homeland Security radars. Further radar impact study is not necessary.

- Minimal to no impact to Weather Surveillance Radar-1988 Doppler (WSR-88D) weather radar operations. Further radar impact study is not necessary.

- The project would be located outside the boundaries of Military Operations Areas (MOA) or Restricted Areas.

- Future plans for Ashley Airport (as relayed to ASI by the North Dakota Aeronautics Commission) call for a rebuilding of runway 14/32 and the development of an instrument approach procedure. The FAA is required to protect the airspace for future approaches. Except for Sector C, sector limits listed below are potential heights based on currently known obstacles and terrain features. Wishek Municipal (6L5) is also expected to implement an instrument approach in the future.

    - Sector A – 2300' AMSL – ASY RNAV (GPS) Runway 14 Primary Area
    - Sector B – 2300' to 2550' AMSL – ASY RNAV (GPS) Runway 14 Secondary Area
    - Sector C – 2382' AMSL – ASY VFR CAT C Traffic Pattern
    - Sector D – 2386' to 2780' AMSL – Runway 32 Outer Departure Area
    - Sector E – 2599' to 2780' AMSL – Runway 08 Outer Departure Area
    - Sector F – 2737' to 2780' AMSL – Wishek Muni (6L5) Runway 14 Outer Departure Area
    - Sector G – 2498' to 2690' AMSL – ASY Runway 32 Outer Departure Area
    - Sector H – 2780' AMSL – "Target Height"

Additionally, any structure over 200 feet AGL, in this case the turbines, requires notice to the FAA and also would require lighting in accordance with FAA Advisory Circular (AC) 70/7460-1K, change 2. After suitable locations are selected and at your request, ASI can handle the FAA filing process pursuant to the notice requirements of FAR Part 77 and follow-up until the No Hazard Determinations are issued by the FAA. We will be able to negotiate selective

lighting so that not all of the turbines would require the extra expense of installing and maintaining lights.

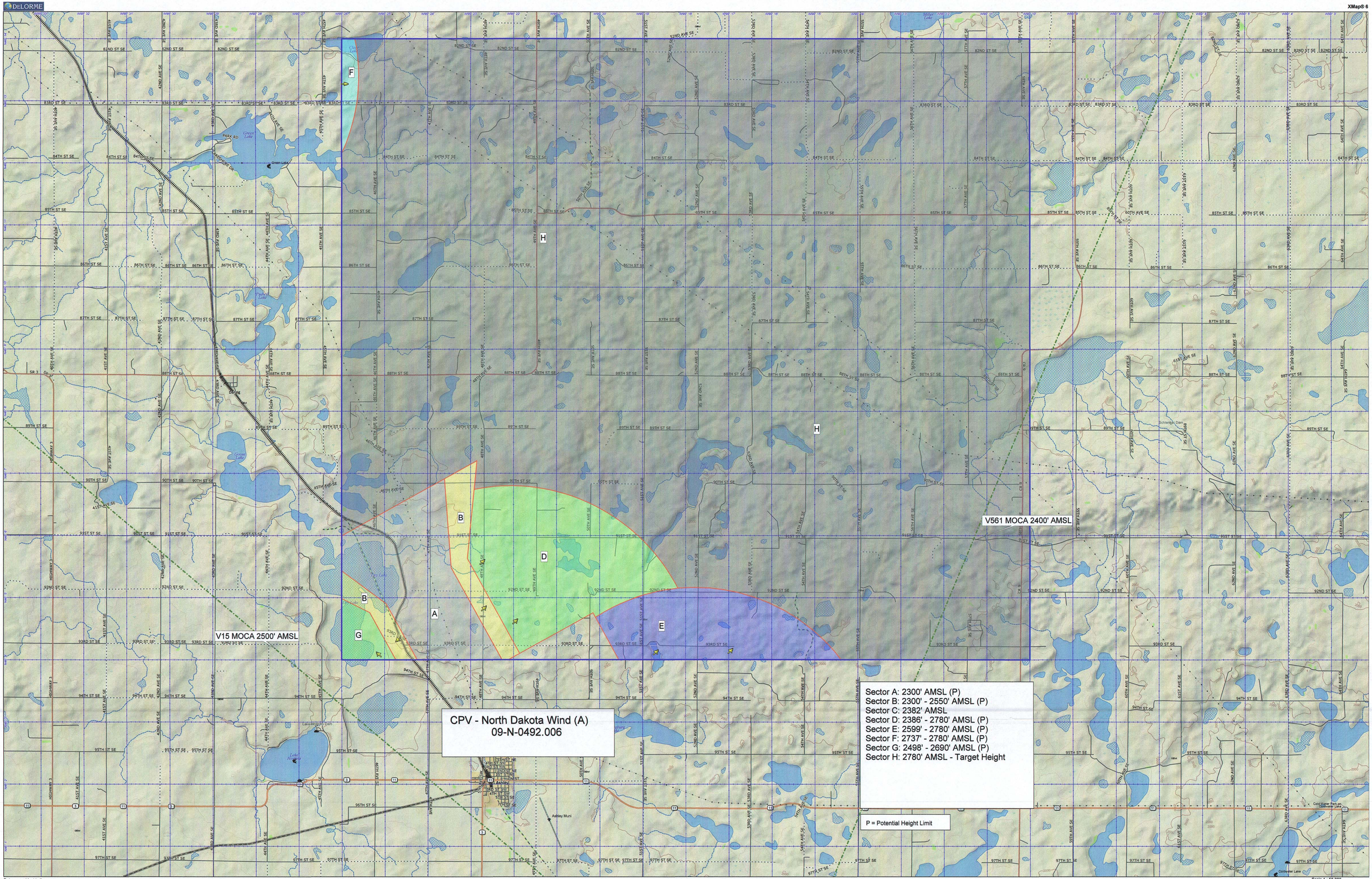
FAA makes changes to the National Aviation System everyday. New approaches are published, departure procedures are changed, new runways are planned, MVAs are modified, etc. Therefore, it is possible for the study findings to become obsolete in a relatively short time period. We recommend that prior to filing specific sites within the study area, the study findings be reviewed for currency. Studies greater than 12 months old should automatically be re-visited and their findings confirmed.

Our findings are intended as a planning tool, in conjunction with the resolution of other pertinent issues. Actual construction activities are not advisable until the FAA Determinations of No Hazard are issued.

Sincerely,

Jerry Chavkin
Vice President, Airspace Operations

Attachments



Data use subject to license.
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www.delorme.com

Scale 1 : 50,000
1" = 4,166.7 ft
Data Zoom 12-0

Appendix D
Example Determination of No Hazard

Federal Aviation Administration
Air Traffic Airspace Branch, ASW-520
2601 Meacham Blvd.
Fort Worth, TX 76137-0520

Aeronautical Study No.
2010-WTE-819-OE

Issued Date: 02/24/2010

John Hafner
CPV Ashley Renewable Energy Company, LLC
50 Brantree Hill Office Park #300
Braintree, MA 02184

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Wind Turbine B6
Location:	Ashley, ND
Latitude:	46-11-48.87N NAD 83
Longitude:	99-23-20.64W
Heights:	443 feet above ground level (AGL) 2586 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

As a condition to this Determination, the structure is marked and/or lighted in accordance with FAA Advisory circular 70/7460-1 K Change 2, Obstruction Marking and Lighting, white paint only - Chapters 12&13(Turbines).

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part I)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part II)

This determination expires on 02/24/2012 unless:

(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

Additional wind turbines or met towers proposed in the future may cause a cumulative effect on the national airspace system. This determination is based, in part, on the foregoing description which includes specific coordinates and heights . Any changes in coordinates will void this determination. Any future construction or alteration requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (404) 305-7082. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2010-WTE-819-OE.

Signature Control No: 678487-123025870 (DNE -WT)
Earl Newalu
Specialist

Appendix E
Agency Correspondence

Summary Table of Agency Correspondence for the Ashley Wind Energy Project

Consultation Letter Sent 1/8/2010 to:	Agency Response Received On:	Medium Of Response:
Mr. Steve Obenauer Airports District Office Manager Federal Aviation Administration Bismarck Airports District Office, BIS-ADO-600 2301 University Drive, Bldg. 23B Bismarck, ND 58504	2/1/2010, 2/8/2010	Phone call; Letter (dated Feb 2, 2010)
Mr. Daniel Cimarosti Regulatory Program Manager U.S. Army Corps of Engineers Omaha District, North Dakota Regulatory Office 1513 South 12th Street Bismarck, ND 58504	Not Yet Received	
Mr. Russell Bubach Administrative Officer U.S. Department of Agriculture North Dakota State Farm Service Agency Office 1025 28th Street South Fargo, ND 58103-2372	Not documented	Letter (dated Jan 25, 2010)
Ms. Mary Baumann District Conservationist U.S. Department of Agriculture, Natural Resources Conservation Service Ashley Field Office 118 E. Main, PO Box 389 Ashley, ND 58413-0389	Not Yet Received	
Mr. Mike Shanahan Chief of Staff U.S. Environmental Protection Agency – Region 8 1595 Wynkoop Street Denver, CO 80202-1129	1/14/2010, 2/10/2010	Phone Call (Voice message); Letter (dated Feb 5, 2010)
Mr. Jeffrey Towner Field Supervisor U.S. Fish and Wildlife Service North Dakota Field Office 3425 Miriam Avenue Bismarck, ND 58501-7926	Not Yet Received	
Attorney General Wayne Stenehjem State of North Dakota, Office of Attorney General State Capitol 600 E. Boulevard Ave. Dept. 125 Bismarck, ND 58505	12-Jan-20	Phone Call from Liz Brocker, Executive Assistant; Letter (dated Jan 25, 2010)
Governor John Hoeven Office of Governor John Hoeven State of North Dakota 600 E. Boulevard Ave. Bismarck, ND 58505-0001	Not Yet Received	
Ms. Maren Daley, J.D. Executive Director Job Service North Dakota PO Box 5507 Bismarck, ND 58506-5507	19-Jan-10	Letter (dated Jan 13, 2010)
Mr. Mark Holzer Aviation Planner North Dakota Aeronautics Commission PO Box 5020 Bismarck, ND 58502	Not Yet Received	
Mr. Doug Goehring Agriculture Commissioner North Dakota Department of Agriculture 600 E. Boulevard Ave., Dept. 602 Bismarck, ND 58505	Not Yet Received	

Summary Table of Agency Correspondence for the Ashley Wind Energy Project

Consultation Letter Sent 1/8/2010 to:	Agency Response Received On:	Medium Of Response:
Mr. Wayne Kutzer Director and Executive Officer North Dakota Department of Career and Technical Education State Capitol 15th Floor 600 E. Boulevard Ave., Dept. 270 Bismarck, ND 58505-0610	Not Yet Received	
Mr. Paul Govig Director North Dakota Department of Commerce Division of Community Services 1600 E. Century Ave., Suite 2 PO Box 2057 Bismarck, ND 58502-2057	Not Yet Received	
Mr. Paul Lucy Director North Dakota Department of Commerce Economic Development & Finance Division PO Box 2057 Bismarck, ND 58502-2057	Not Yet Received	
Dr. Terry Dwelle, M.D., M.P.H.T.M. State Health Officer North Dakota Department of Health 600 E. Boulevard Ave. Bismarck, ND 58505-0200	Undocumented	Letter (dated Jan 26, 2010)
Ms. Carol Olson Executive Director North Dakota Department of Human Services 600 E. Boulevard Ave., Dept. 325 Bismarck, ND 58505-0250	Not Yet Received	
Ms. Lisa Fair McEvers Commissioner of Labor North Dakota Department of Labor 600 E. Boulevard Ave., Dept. 406 Bismarck, ND 58505-0340	19-Jan-10	Letter (dated Jan 13, 2010)
Ms. Sheri Lares Environmental and Transportation Services Division North Dakota Department of Transportation 608 E. Boulevard Ave. Bismarck, ND 58505-0700	25-Jan-10	Letter (dated Jan 21, 2010)
Mr. John Schumacher Conservation Biologist North Dakota Game and Fish Department 100 N. Bismarck Expressway Bismarck, ND 58501-5095	Not Yet Received	
Mr. Edward Murphy State Geologist North Dakota Geological Survey 600 E. Boulevard Ave. Bismarck, ND 58505-0840	19-Jan-10	Letter (dated Jan 12, 2010)
Mr. Scott Davis Executive Director North Dakota Indian Affairs Commission State Capitol Building 600 E. Boulevard Ave. 1st Floor, Judicial Wing - Room #117 Bismarck, ND 58505	Not Yet Received	
Ms. Pam Sharp Director North Dakota Office of Management and Budget 600 E. Boulevard Ave., Dept. 110 Bismarck, ND 58505-0400	Not Yet Received	

Summary Table of Agency Correspondence for the Ashley Wind Energy Project

Consultation Letter Sent 1/8/2010 to:	Agency Response Received On:	Medium Of Response:
Mr. Douglass Prchal Director North Dakota Parks and Recreation Department 1600 E. Century Ave, Suite 3 Bismarck, ND 58503-0649	1-Feb-10	Letter (dated Jan 29, 2010)
Mr. Gary D. Preszler Commissioner North Dakota State Land Department PO Box 5523 Bismarck, ND 58506-5523	Not Yet Received	
Mr. Jeff Engleson Director North Dakota State Land Department Energy Development Impact Office PO Box 5523 Bismarck, ND 58506-5523	Not Yet Received	
Mr. Scott Hochhalter Soil Conservation Specialist NDSU Extension Service North Dakota State Soil Conservation Committee 2718 Gateway Avenue, Unit #104 Bismarck, ND 58503	Not Yet Received	
Mr. Dale Frink State Engineer North Dakota State Water Commission 900 E. Boulevard Ave., Dept. 770 Bismarck, ND 58505-0850	22-Feb-10	Letter (dated Feb 17, 2010)
Mr. Paul Picha Chief Archaeologist State Historical Society of North Dakota 612 E. Boulevard Ave. Bismarck, ND 58505	19-Jan-10	Letter (dated Jan 13, 2010)
Mr. Neil Meidinger McIntosh County Commissioner 2720 89th Street SE Zeeland, ND 58581-9779	Not Yet Received	
Mr. Ron Meidinger McIntosh County Commissioner 615 Center Avenue N Ashley, ND 58413-7011	22-Jan-10	Phone call
Mr. James Raile McIntosh County Commissioner 907 7th Avenue S Wishek, ND 58495-7531	18-Feb-10	Letter (dated Feb 3, 2010)
Mr. Donavon Bender Chair McIntosh County Soil Conservation District 118 East Main Street, Box 389 Ashley, ND 58413	Not Yet Received	
Mayor Donald Kosel City of Ashley 113 1st Street NW Ashley, ND 58413	12-Jan-10	Phone Call from Mayor Donald Kosel

TETRA TECH EC, INC.

January 8, 2010

Mr. Steve Obenauer
Airports District Office Manager
Federal Aviation Administration
Bismarck Airports District Office, BIS-ADO-600
2301 University Drive, Bldg. 23B
Bismarck, ND 58504

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Obenauer:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the Federal Aviation Administration to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

The proposed Project has a planned commercial operation date in the 4th quarter of 2012 and would provide approximately 200 megawatts (MW) of wind energy capacity. It is expected that the selected turbine for the Project will range between 1.5 to 3.0 MW in generating capacity, 80 to 90 meters (m) in hub height, and 80 to 103 m in rotor diameter. In addition to the erection of wind turbines, the Project would involve: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an operation and maintenance building; construction of an electrical switchgear facility; erection of three to four 80 to 90 m tall permanent meteorological masts; and construction of an interconnection substation facility. A temporary construction staging and laydown area would also be used during the construction phase of the Project.

133 Federal Street, 6th Floor, Boston, MA 02110
Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

County	Township	Range	Sections
McIntosh	T131N	R69W	5-11, 14-23, 26-30
	T131N	R70W	1, 2, 11-14, 23, 24
	T132N	R69W	31, 32
	T132N	R70W	35, 36

We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

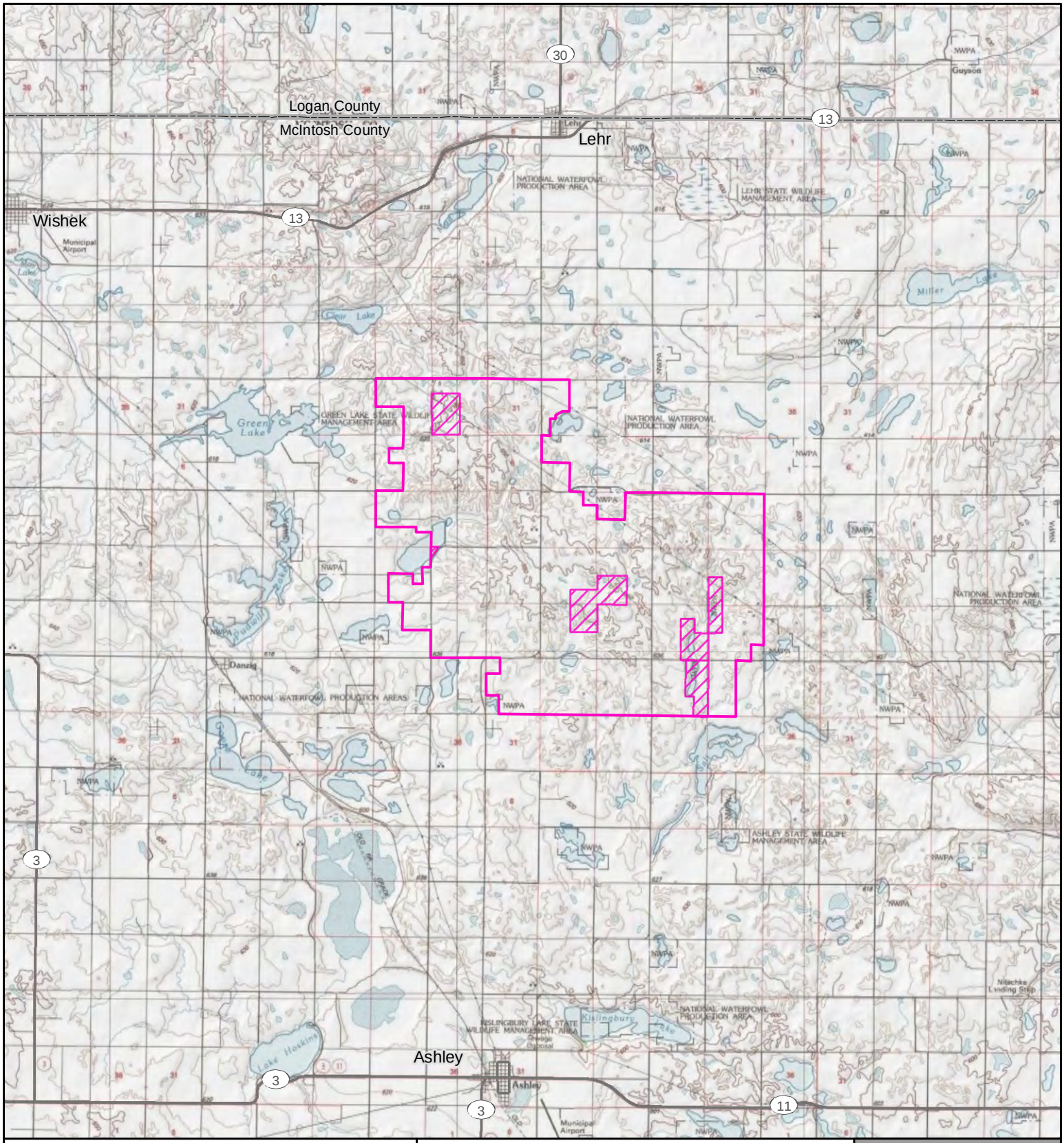
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

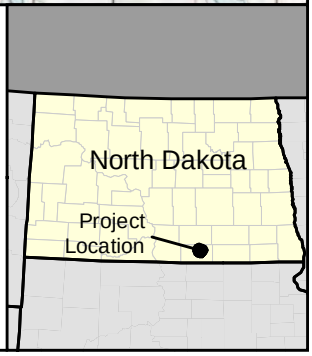
Non-Leased Area

N

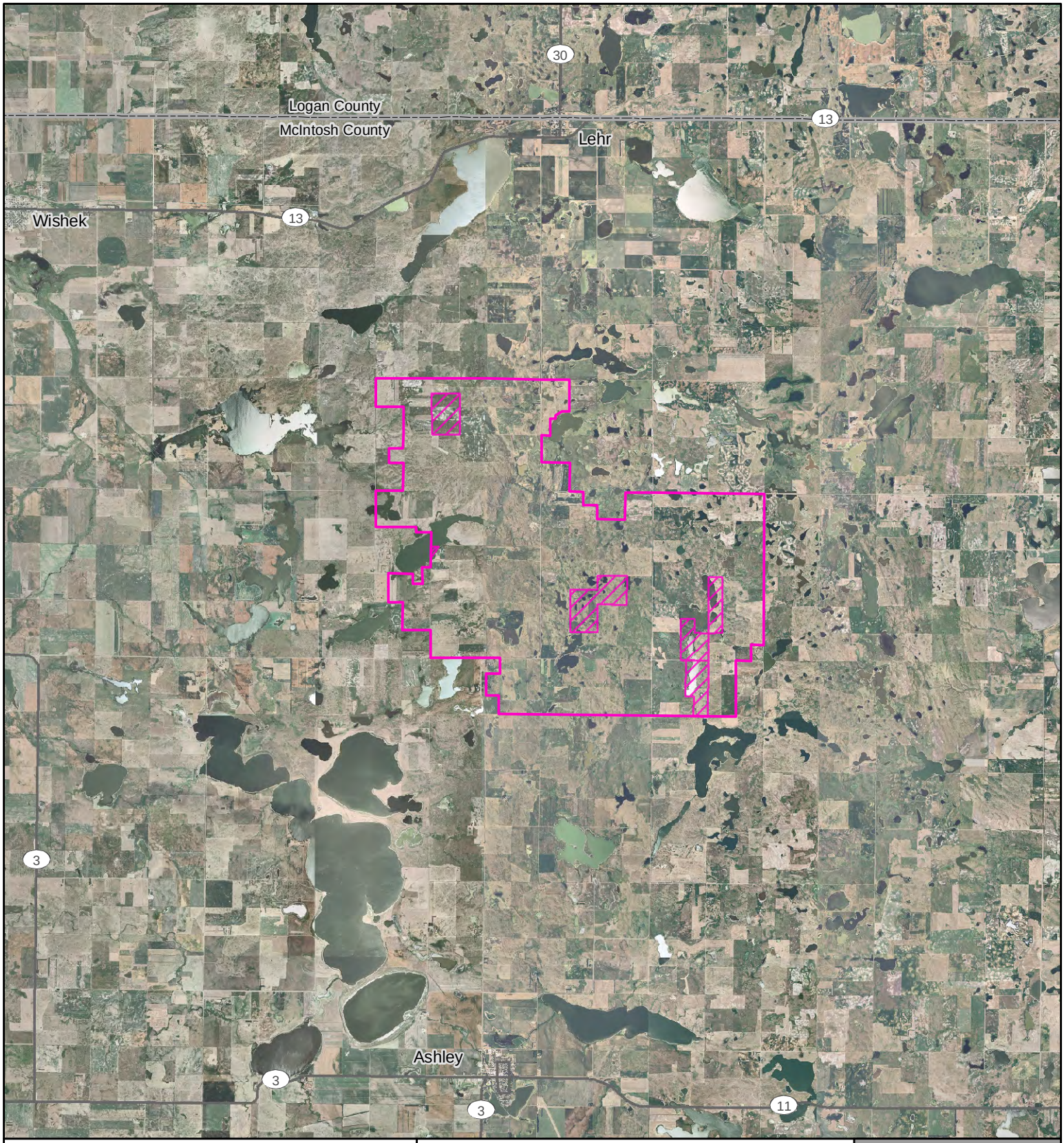
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, ND 58504

February 2, 2010

Ms. Erika J. Roberts
Project Manager
Tetra Tech EC, Inc.
133 Federal Street, 6th Floor
Boston, MA 02110

Ashley Wind Energy Project
CPV Ashley Renewable Energy Company, LLC
and the Tennessee Valley Authority
McIntosh County, North Dakota

Dear Ms. Roberts:

The Bismarck Airports District Office has no objections to the proposed Ashley Wind Energy Project in McIntosh County identified in your letter dated January 8, 2010 and the Tennessee Valley Authority letter dated January 28, 2010 provided:

1. The Federal Aviation Administration (FAA) is notified of construction or alterations as required by Federal Aviation Regulations, Part 77, Objects Affecting Navigable Airspace, Paragraph 77.13. Please note that Part 77 includes temporary construction vehicles and equipment. The Notice of Proposed Construction or Alteration Form 7460-1 may be filed online at https://oeaaa.faa.gov.

2. FAA technical operations are contacted to identify any possible impacts to aircraft navigation and/or communication equipment. The Minneapolis Technical Support Center Manager (MSP TSCM) may be contacted in writing at FAA MSP Technical Support Center, 14800 Galaxie Avenue, Suite 300, Apple Valley, MN, 55124 or by phone at (952) 997-9261.

3. The design, construction, and operation of the project and related improvements (including storm water retention ponds, drainage improvements, and any potential wetland mitigation sites) do not create a hazardous wildlife attractant to surrounding airports. Hazardous wildlife and hazardous wildlife separation distances are defined in FAA Advisory Circular (AC) 150/5200-33B, Hazardous Wildlife Attractants on or near airports. All design, construction, and operation of the facility and all facility components (such as materials handling, landscaping, ditches, and storm water management) shall comply with FAA AC 150/5200-33B, Hazardous Wildlife Attractants on or near Airports. A copy of the advisory circular may be obtained at www.faa.gov.

Please be advised FAA Advisory Circular 150/5200-33B, Hazardous Wildlife Attractants On or Near Airports, advises a 5,000 or a 10,000 foot separation distance between airports (the airport) and a hazardous wildlife attractant. Additionally, it is recommended that a 5-mile separation distance be considered when the attractant could cause wildlife movement into or across the approach or departure airspace.

If you or the proponents are uncertain if the proposed development will cause a wildlife hazard for airports, we recommend you or the proponent consult with the United States Department of Agriculture, APHIS, Wildlife Services or another qualified wildlife biologists. We recommend any wildlife biologist consulting on a matter such as this, meet the qualifications identified in FAA Advisory Circular 150/5200-36, "Qualifications for wildlife biologist conducting wildlife hazard assessments and training curriculums for airport personnel involved in controlling wildlife hazards on airports".

If not already included in your planning process, we request that Ashley Municipal Airport be given the opportunity to provide input and comments.

I appreciate that our office was given the opportunity to review this project. Please contact me at (701) 323-7380 if you have any questions or need further information.

Patricia L. Dressler
Environmental Protection Specialist

cc: The Honorable Donald A. Kosel, Mayor, City of Ashley

TETRA TECH EC, INC.

January 8, 2010

Mr. Daniel Cimarosti
Regulatory Program Manager
U.S. Army Corps of Engineers Omaha District, North Dakota Regulatory Office
1513 South 12th Street
Bismarck, ND 58504

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Cimarosti:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the U.S. Army Corps of Engineers to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

The proposed Project has a planned commercial operation date in the 4th quarter of 2012 and would provide approximately 200 megawatts (MW) of wind energy capacity. It is expected that the selected turbine for the Project will range between 1.5 to 3.0 MW in generating capacity, 80 to 90 meters (m) in hub height, and 80 to 103 m in rotor diameter. In addition to the erection of wind turbines, the Project would involve: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an operation and maintenance building; construction of an electrical switchgear facility; erection of three to four 80 to 90 m tall permanent meteorological masts; and construction of an interconnection substation facility. A temporary construction staging and laydown area would also be used during the construction phase of the Project.

133 Federal Street, 6th Floor, Boston, MA 02110
Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

County	Township	Range	Sections
McIntosh	T131N	R69W	5-11, 14-23, 26-30
	T131N	R70W	1, 2, 11-14, 23, 24
	T132N	R69W	31, 32
	T132N	R70W	35, 36

We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

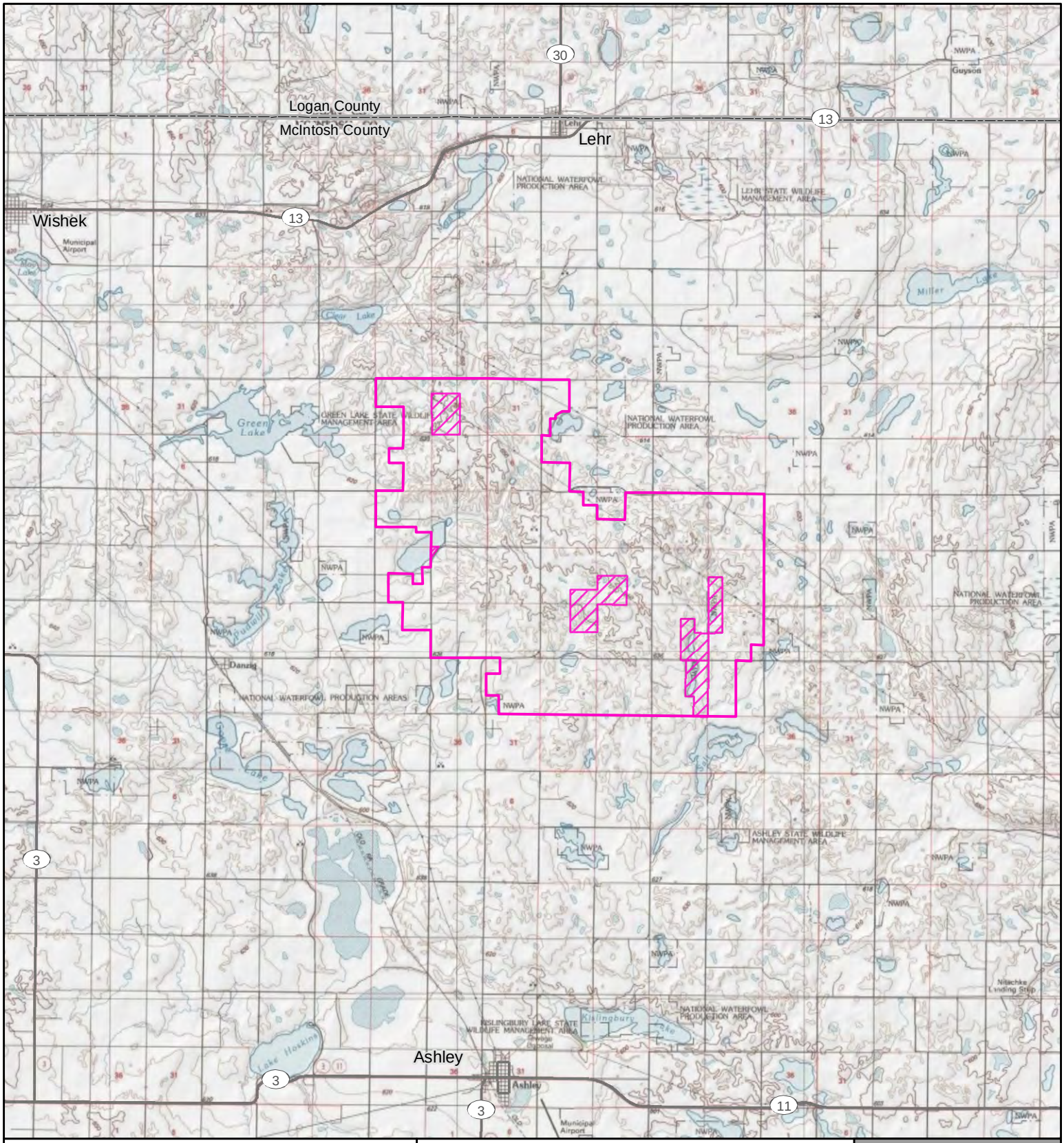
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

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McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

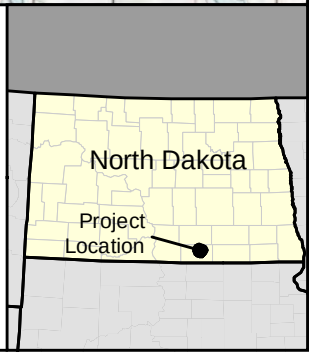
Non-Leased Area

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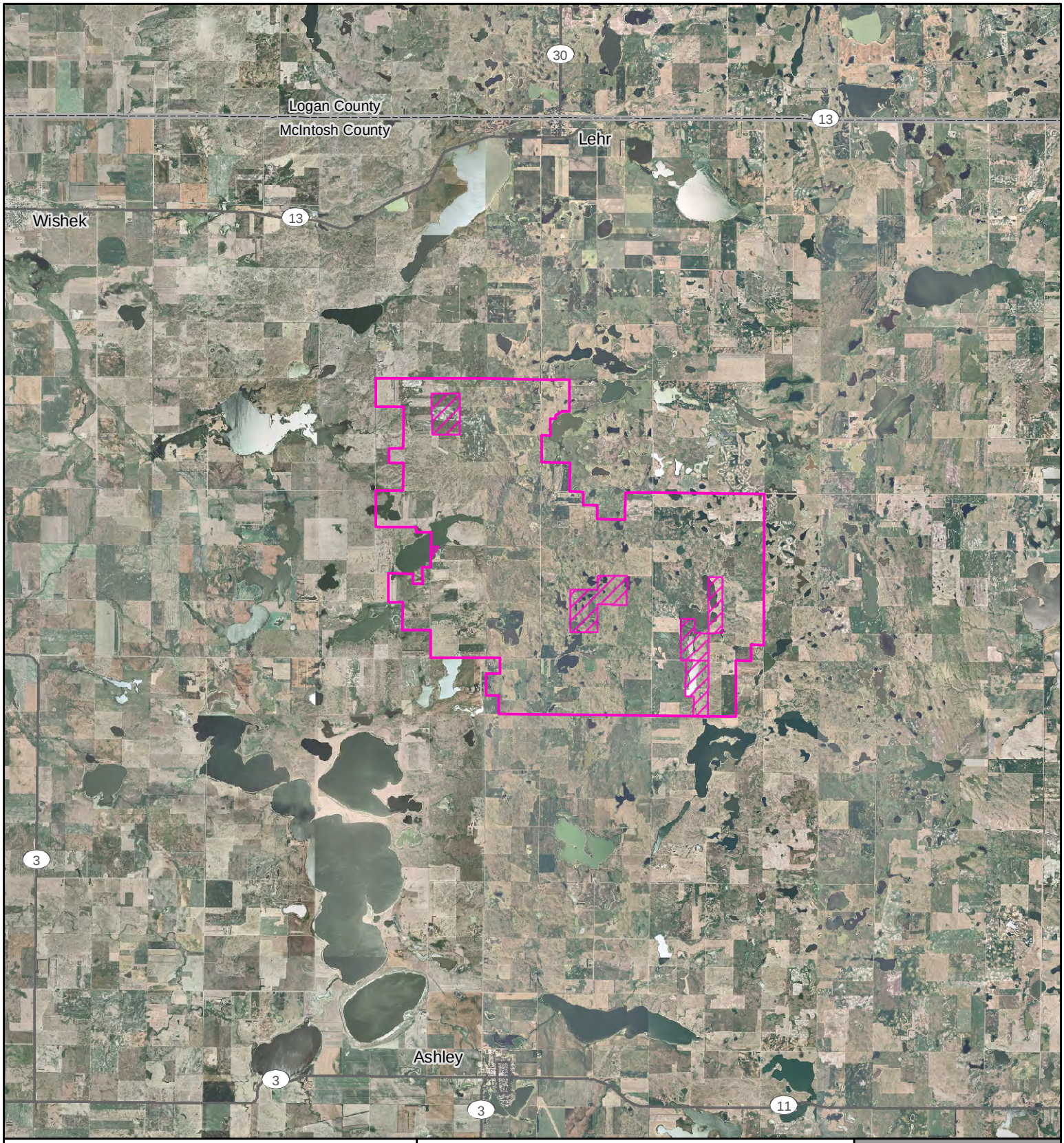
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

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McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

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North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. Russell Bubach
Administrative Officer
U.S. Department of Agriculture
North Dakota State Farm Service Agency Office
1025 28th Street South
Fargo, ND 58103-2372

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Bubach:

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Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

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Respectfully submitted,

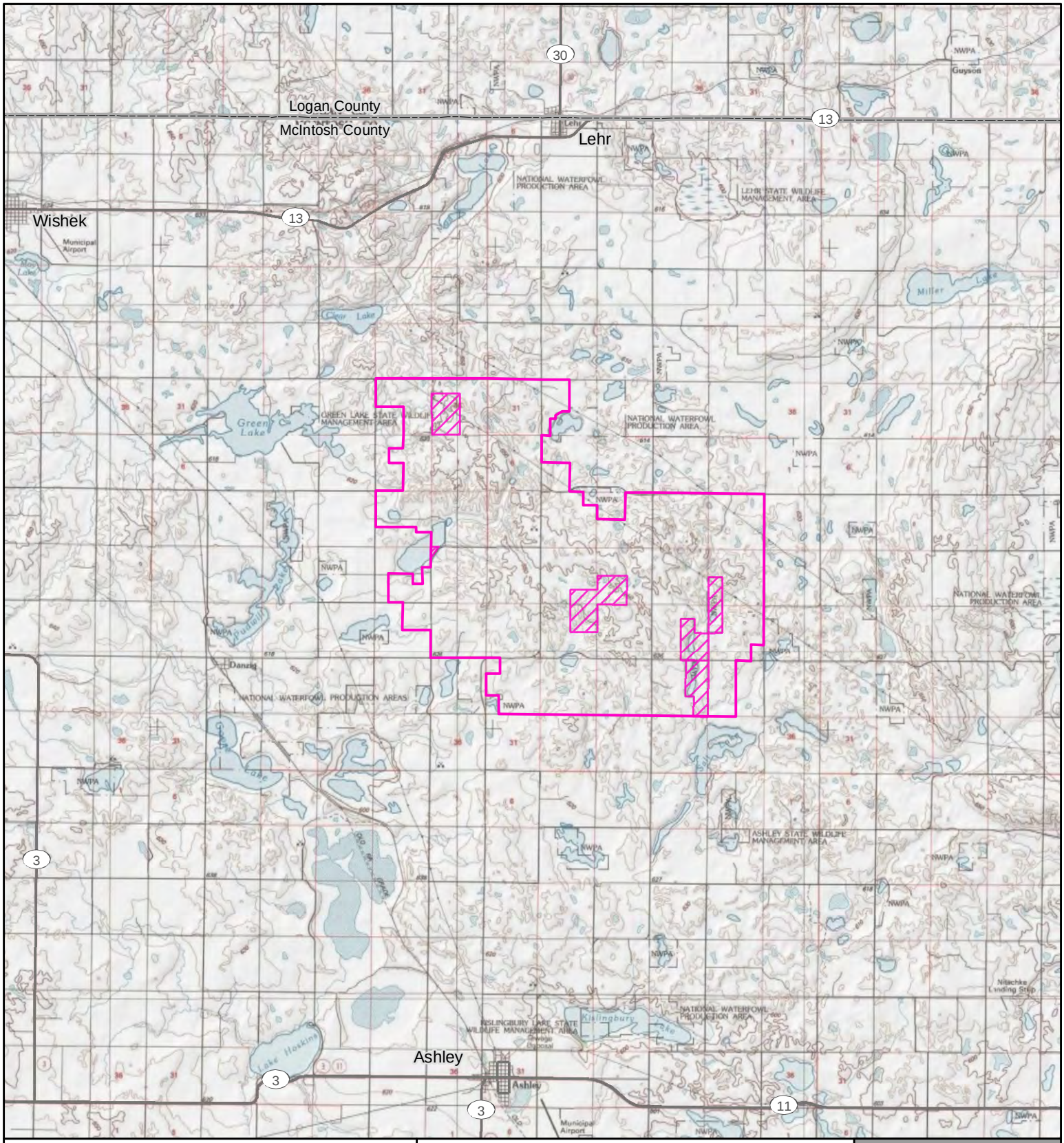
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

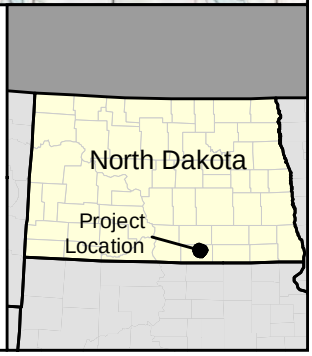
Non-Leased Area

N

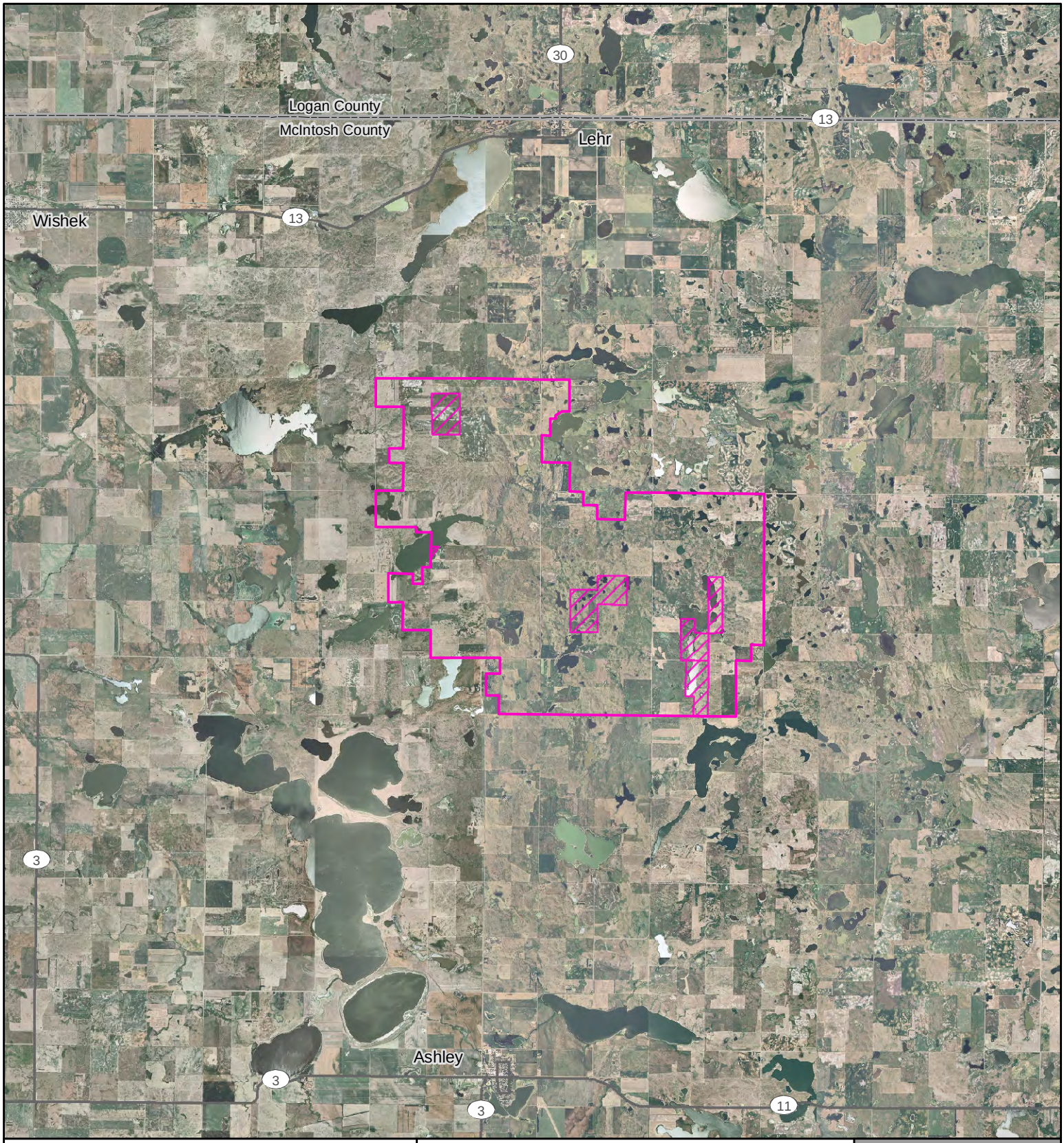
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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USDA FSA

United States Department of Agriculture

Farm Service Agency

North Dakota State Office
1025 28th St South
Fargo, ND 58103-2372

Phone: (701) 239-5224
FAX: (701) 239-5696

January 25, 2010

Erika J. Roberts, Project Manager
Tetra Tech EC, Inc.
133 Federal Street
6th Floor
Boston, MA 02110

RE: Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Ericka J. Roberts:

This letter is response to your request concerning developing Wind Energy projects and the Farm Service Agency in North Dakota. As you probably know, the State of North Dakota has seen an increase of Wind Energy development. Your proposed Ashley Wind Energy Project is just one example of proposed Wind Energy projects in North Dakota.

Currently, the Farm Service Agency (FSA) does not have specific regulations targeted to Wind Energy developments all such developments are subject to existing regulations, including 7 C.F.R. § 765.252 (*Lease of Security*); 7 C.F.R. § 765.351 (*Requirements to Obtain Agency Consent*); 7 C.F.R. § 765.352 (*Use of Proceeds*); and 7 C.F.R. § 765.501 (*Exception Authority*). In addition, where CRP land is to be affected by the proposed development, the requirements of 16 U.S.C. § 3832(a) (7) must be met. Appropriately, Farm Service Agency Handbooks must also be consulted, in particular, FSA Handbooks 4-FLP and 2-CRP (Rev. 4).

For FSA Farm Loan Program (FLP) borrowers, 7 C.F.R. § 765.351 specifically states "The borrower must obtain prior consent from the Agency for any transactions affecting the real estate security, including but not limited to, sale or exchange of security, a right-of-way across security, and a partial release." The FSA loan customer should not sign any proposed Wind Energy Agreement without prior FSA approval, since if he or she does so, they would be in non-compliance with their loan agreements with FSA, subjecting them to possible foreclosure of their mortgage. FSA Handbook 4-FLP, specifically 4-FLP Par. 99 B states that "The borrower must maintain, protect, and account for all security." In addition, 4-FLP Par. 99 B (f) states "The borrower must protect the interest of the Agency when a third party brings suit or takes other action that could affect Agency security." So, it is imperative that the FLP borrower contact the FSA prior to signing any Wind Energy Agreement.

The North Dakota State FSA Office has provided a Farm Loan Programs (FLP) notice to our local County FSA Offices on how to handle Wind Energy Projects. This FLP notice (Notice FLP-638) is attached for your review. While this FLP notice has expired, the basic rules apply in the handling of Wind Energy projects. The North Dakota State FSA Office is currently waiting an Office of General Counsel (OGC) opinion before rereleasing this particular FLP notice to our local FSA Offices. The Office of General Counsel is our Farm Service Agency/Department of Agriculture legal counsel.

The North Dakota State FSA Office has had a few Wind Energy Companies that have followed this particular FLP Notice and they have received National Office approval for their specific Wind Energy Projects. In the following of this Notice, the approval authority ultimately falls to the National Office located in Washington D.C. particularly the Deputy Administrator for Farm Loan Programs. The normal process is that the local County Office receives all of the paperwork, provides the Wind Energy Agreements to the State Office who reviews it and may or may not ask for an OGC review. Normally, if changes are needed to the Wind Energy Agreement, the changes are normally completed by our OGC and the Wind Energy Company and/or Wind Energy Company legal counsel. It is encouraged that if large tracts of FSA mortgaged land is involved in the proposed project, that OGC and the Wind Energy Company legal counsel develop a standardized Wind Energy Agreement that can be used for all projects. The processing time in the following of this FLP Notice can vary (depending on the extent/size of the Wind Energy Project) but typically I would say the whole process should take 3 to 6 months. Our local Office of General Counsel contact is Margit Halvorson Williams, Attorney, telephone number (651) 290-3070.

Another option for Wind Energy projects and the FSA could be a partial release. That is where the Agency is paid current market value for a tract of land requested to be released. The request has to meet the requirements of FSA Handbook 4-FLP specifically 4-FLP Par. 196 A and B (attached for your review). We have also completed these partial releases in North Dakota involving Wind Energy. Typically, the Wind Energy Company provides the FSA and/or the borrower with a specific legal description on the land they want partial released by the FSA and environmental information for the wind turbines and/or transmission lines. The environmental information is requested since we have Federal regulations to meet to make sure that the project won't affect wetlands, highly erodible land, and other environmental factors. Normally, the environmental is not a problem with Wind Energy Companies since they have to do extensive studies prior to receiving the required permits.

The normal process is that the borrower applies in their local County Office servicing their loan(s) via an FSA-2060 "Application For Partial Release, Subordination, or Consent" (attached for your review) and the borrower also has to complete a cashflow that typically shows a feasible plan of operation with the proposed transaction. While the FSA and borrower(s) are working on the cashflow. The FSA orders an appraisal (FSA typically pays for the appraisal) and we typically don't accept a third party appraisal. Typically, the appraisal is to determine a value on the partial release land requested and on the remaining farm tract (to show that FSA is still secured by the transaction). Appraisal times may vary (depending on the workload of the appraiser) but typically the appraisal timeframe is 30 to 60 days. After an appraisal is received back to FSA and it is acceptable to the FSA, the loan officer typically with complete a write-up of the transaction. Normally, the money for the partial release comes from the borrower, bank, and/or the Wind Energy Company. The wind company can set up their own agreement with the borrower if they pay for the release of the land. The partial release approval official depends on the amount of partial release land involved and how much the borrower owes to FSA. Normally, the local county office can approve the transaction but if the transaction is past their approval authority, they send it to our North Dakota State FSA Office for approval. After the approval of the partial release of the land, typically the FSA is out of the wind energy agreement since we have no lien on that particular piece of property partial released. Although, the North Dakota State FSA Office would require a modification to the Wind Energy Agreement. For example, if the original Wind Energy Agreement was for 160 acres but the partial release was only on 4.56 acres. FSA would require a modification to list only the 4.56 acres on the Wind Energy Agreement not the 160 acres.

If Conservation Reserve Program (CRP) acres are involved, the Wind Energy Company and/or FSA customer should discuss the proposed project with the local County Executive Director (CED). As per 2-CRP (Rev. 4) Amendment 12 Par. 282, a "County Committee (COC) may authorize the installation of windmills, wind turbines, wind-monitoring towers, or other wind-powered generation equipment on CRP acreage on a case-by-case basis. The Local FSA County Committee may approve up to 5.0 acres per contract of wind turbines on CRP acreage provided the environmental impacts have been considered according to subparagraph 2-CRP (Rev. 4) Amendment 12 242 F. For authority over 5 acres, COC shall submit a request in writing to Conservation Environmental Program Director (CEPD) through the State Office according to 2-CRP (Rev. 4) Amendment 12 Subparagraph 31 A. This 5.0 acre per contract threshold is a cumulative figure that is calculated by totaling the square footage of land area devoted to the footprint of the wind generating device and firebreak installment around the footprint. Access roads, transformers, and other ancillary equipment will not be considered in calculating the 5.0-acre per contract threshold."

This was a brief summary of ways to process Wind Energy Agreement with FSA currently throughout North Dakota. It should be noted that other state FSA offices may process Wind Energy differently. It is our understanding that our National FSA Office is working on a notice and/or regulations providing our office with additional guidance to processing/handling Wind Energy Agreements. Thus, the North Dakota FSA may be processing Wind Energy development differently in the future based on this National FSA Office direction. No timeframe is known on when the National Office will provide these updated notices/regulations.

The local McIntosh FSA County FSA Contacts are:

- Marlo Haugom, County Executive Director, Telephone (701) 288-3481, Fax (701) 288-3210, Mailing Address – 118 E Main Street, PO Box 160, Ashley, ND 58413
- Spencer Larson, Farm Loan Manager, Telephone (701) 254-4791, Fax (701) 254-4791, Mailing Address – 318 S. Milwaukee Ave. Suite 1, Linton, ND 58552 (Note: Farm Loan Programs out of Emmons services both McIntosh and Emmons counties)

If you have any further questions concerning the North Dakota State FSA policy, please feel free to contact Ryan Lindbom, Farm Loan Specialist in the North Dakota State FSA Office at (701) 893-2219. Thank you for your attention to this matter.

Sincerely,

Aaron Krauter

Aaron Krauter
North Dakota State Executive Director

Attachments

CC: Emmons FSA Office, Attn: Farm Loan Programs (w/o attachments)
CC: McIntosh FSA Office, Attn: Marlo Haugom, CED (w/o attachments)
CC: Russ Bubach, AO, North Dakota State FSA Office (w/o attachments)

This form is available electronically.

Form Approved - OMB No. 0560-0236
(See Page 2 for Privacy Act and Public Burden Statements)

FSA-2060
(12-31-07)

U.S. DEPARTMENT OF AGRICULTURE
Farm Service Agency

Position 5

APPLICATION FOR PARTIAL RELEASE, SUBORDINATION, OR CONSENT

PART A - BORROWER REQUEST

1. The undersigned *(a)* _____

_____

("Borrower") in accordance with the terms of the security instruments now held by the United States, acting through U.S. Department of Agriculture, Farm Service Agency (called "Government") on the property, apply for:

(b) ☐ release,

(c) ☐ subordination to *(d)* _____

_____. I agree that none of the funds obtained as a result of the subordination will be used for a purpose that will contribute to excessive erosion of highly erodible land or to the conversion of wetlands to produce an agricultural commodity as explained in 7 C.F.R, part 1940, subpart G, Exhibit M;

(e) ☐ consent to *(f)* _____.

2. Description of Property:

3. Name of lienholder, approximate amount of each lien, including FSA in the order of lien priority:

(a) Name of lienholder	(b) Approximate amount of lien	(c) Lien priority
	$	
	$	
	$	
	$	

4. The use to be made of the property covered by this application:

5. The anticipated proceeds or benefits from this transaction are:

6. Additional considerations:

7. Borrower proposes to use the proceeds as follows:

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its program and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of Discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW., Washington, DC 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

8. Have you, or any entity members if applicable, ever been: (If "Yes", provide details in Item 9)	YES	NO
(a) Convicted under any Federal or State law of planting, cultivating, growing, producing, harvesting, or storing a controlled substance within the previous 5 crop years? (See the Food Security Act of 1985, Pub. Law. 99-198)		
(b) Determined ineligible for Federal benefits based on a conviction for the distribution of controlled substances or any offense involving the possession of a controlled substance under 21 U.S.C. 862?		
(c) Determined ineligible for Federal benefits based on Federal Crop Insurance Corporation fraud? (See 7 U.S.C. 1515)		

9. Explanations for any "YES", answers to Item 8.

10. I understand that unless FSA executes a separate written instrument for subordination or partial release, FSA's approval of this application will merely constitute and evidence FSA's consent, as lienholder, to the proposed transaction without in any way subordinating its liens, releasing any of its security, modifying the payment terms of my loans, or otherwise affect any FSA rights. If this application is approved, I agree to comply with such terms as may be set by FSA and to dispose of the proceeds as required by FSA.

The statements and representations made above are made in connection with the request for a change in the loan security and/or the release of USDA-provided funds. The making of any false statement or misrepresentations herein may be a crime punishable under the Title 18 U.S.C., §1001. I certify that the statements made are true, complete, and correct to the best of my knowledge and belief.

11A. Signature	11B. Date
12A. Signature	12B. Date
13A. Signature	13B. Date
14A. Signature	14B. Date

NOTE: *The following statements are made in accordance with the Privacy Act of 1974 (5 USC 552a): the Farm Service Agency (FSA) is authorized by the Consolidated Farm and Rural Development Act, as amended (7 USC 1921 et seq.), or other Acts, and the regulations promulgated thereunder, to solicit the information requested on its application forms. The information requested is necessary for FSA to determine eligibility for credit or other financial assistance, service your loan, and conduct statistical analyses. Supplied information may be furnished to other Department of Agriculture agencies, the Internal Revenue Service, The Department of Justice or other law enforcement agencies, the Department of Defense, the Department of Housing and Urban Development, the Department of Labor, the United States Postal Service, or other Federal, State, or local agencies as required or permitted by law. In addition, information may be referred to interested parties under the Freedom of Information Act (FOIA), to financial consultants, advisors, lending institutions, packagers, agents, and private or commercial credit sources, to collection or servicing contractors, to credit reporting agencies, to private attorneys under contract with FSA or the Department of Justice, to business firms in the trade area that buy chattel or crops or sell them for commission, to Members of Congress or Congressional staff members, or to courts or adjudicative bodies. Disclosure of the information requested is voluntary. However, failure to disclose certain items of information requested, including your Social Security Number or Federal Tax identification Number, may result in a delay in the processing of an application or its rejection.*

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0560-0236. The time required to complete this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. ***RETURN THIS COMPLETED FORM TO YOUR COUNTY FSA OFFICE.***

PART B - FSA APPROVAL

1. Recommendation for approval or denial of the request and comments

2(a) Initial Payment	2(b) Subsequent Payments
(1) $ _____ to prior liens	(1) $ _____ or _____ % to prior liens
(2) $ _____ to extra payment on FSA loan	(2) $ _____ or _____ % to extra payment of FSA loan
(3) $ _____ to regular payment on FSA loan	(3) $ _____ or _____ % to regular payment of FSA loan
(4) $ _____ Other (specify): _____	(4) $ _____ Other (specify): _____
(5) $ _____ to borrower	(5) $ _____ or _____ % to borrower

3. I hereby:

(a) ☐ recommend this application for approval.

(b) ☐ do NOT recommend this application be approved.

(c) Recommending Official Name	(d) Title
(e) Signature	(f) Date

4. I hereby:

(a) ☐ approve this application.

(b) ☐ do NOT approve this application

(c) Reason for denial of the request:

(d) Approving Official Name	(e) Title
(f) Signature	(g) Date

Section 3 Real Estate Security Partial Releases

196 Requirements

A General

[7 CFR 765.351] The borrower must obtain prior consent from the Agency for any transactions affecting the real estate security, including but not limited to, sale or exchange of security, a right-of-way across security, and a partial release. The Agency may consent to such transactions provided the conditions in this section are met.

B Conditions for Approval

[7 CFR 765.351(a)] The following conditions apply to all transactions affecting real estate:

(1) The transaction will enhance the objectives for which the Agency loan or loans were made;

(2) The transaction will not jeopardize the borrower's ability to repay the Agency loan, or is necessary to place the borrower's operation on a sound basis;

Note: Partial releases after acceleration can be approved, according to subparagraph 197 E, as items (1) and (2) can be met by orderly liquidation.

(3) The amount received for the security being disposed of or the rights being granted is not less than the market value;

(4) Any proceeds in excess of the market value are remitted to lienholders in the order of lien priority;

(5) The transaction must not interfere with the borrower's farming operation;

(6) The market value of the remaining security is adequate to secure the Agency loans, or if the market value of the security before the transaction was inadequate to fully secure the Agency loans, the Agency's equity in the security is not diminished;

(7) The environmental requirements of subpart G of 7 CFR part 1940 must be met;

(8) The borrower cannot graduate to other credit; and

(9) The borrower must not be ineligible due to disqualification resulting from Federal Crop Insurance violation according to 7 CFR part 718.

UNITED STATES DEPARTMENT OF AGRICULTURE
Fargo, North Dakota 58103
Farm Service Agency
North Dakota State FSA Office

North Dakota
Notice FLP- 638

Filing: 4-FLP

For: All County and District Offices

Wind Energy

Approved By: State Executive Director

1. Overview:

A. Background

The State of North Dakota has seen an increase in Wind Energy development in recent months with the proposal of "Wind Farms" in certain local communities throughout North Dakota, as well as an increase of Wind Energy projects such as Wind Towers and transmission line construction throughout the state. Most wind farms in the U.S. operate on working ranches, farms, and rangeland.

The North Dakota State FSA Office has received numerous requests from FSA Farm Loan customers throughout North Dakota asking for FSA approval to build wind towers or develop wind tower transmission lines on FSA-mortgaged land.

B. Purpose

The purpose of this FLP notice is to provide FSA field offices with guidance on the handling of requests for consent to develop Wind Energy projects. This FLP Notice has the concurrence of the Office of General Counsel (OGC).

C. Contact

Questions regarding this Notice should be directed to Ryan Lindbom, Farm Loan Programs at (701) 893-2219 and/or Don Wellman, Farm Loan Program Director at (701) 893-2241 in the North Dakota State Office.

2. County Office Action:

In North Dakota, all Wind Energy Projects development must first be approved by the North Dakota Public Service Commission. The Wind Energy Company must provide the Commission with environmental information for it to complete an environmental review, and obtain specific permits and licenses from the Commission for the proposed development.

The FSA Farm Loan customer is typically either contacted by a Wind Energy Company wishing to develop a project on his land, or the customer attends a Wind Energy Company public meeting proposing the project. If the customer expresses an interest in permitting his property to be used for development, the Wind Energy Company provides a Wind Tower Agreement, Land Lease Agreement, Wind Energy Project Easement, and/or some other legal agreement for the borrower's signature. Whatever the Agreement is called, it will typically grant the requesting company the right to lease the property for a specified number of years and/or provide that the liens and interests of all other parties, including FSA's mortgage, are subordinate to the rights of the company. Throughout the rest of this FLP Notice we will refer to these Agreements as "Wind Tower Agreements."

In some instances, the Wind Energy Company has done a title search prior to contacting the borrower, and contacts all lienholders to obtain their consent to the project, as well as that of the borrower. However, in many instances, the companies ask the borrower to sign the Agreement before any attempt is made to contact lenders and others having an interest in the land. It is strongly encouraged that borrowers obtain proper legal representation prior to signing any documentation regarding a Wind Energy project. FSA personnel may not provide any legal opinion on Wind Energy projects. The FSA loan customer should not sign the proposed Wind Tower Agreement without prior FSA approval, since if he does so, he could be in non-compliance with his loan agreements with FSA, subjecting him to possible foreclosure of the mortgage.

Although Farm Service Agency does not have specific regulations targeted to Wind Energy developments, all such developments are subject to existing regulations, including 7 C.F.R. § 765.252 (*Lease of Security*); 7 C.F.R. § 765.351 (*Requirements to Obtain Agency Consent*); 7 C.F.R. § 765.352 (*Use of Proceeds*); and 7 C.F.R. § 765.501 (*Exception Authority*). In addition, where CRP land is to be affected by the proposed development, the requirements of 16 U.S.C. § 3832(a) (7) must be met. Appropriate Farm Service Agency Handbooks must also be consulted, in particular, FSA Handbooks 4-FLP and 2-CRP (Rev. 4).

If an FSA loan customer or energy company requests information from the County Office on what is needed by the FSA for their particular Wind Energy project, the following should be discussed:

2. County Office Action (Continued):

A. A full and precise legal description of the property is needed by the FSA. The description must show where the proposed wind tower(s) and/or the transmission lines will be constructed, the location of all access roads, and the description of all other development (i.e., buildings to house transmission equipment). **This legal description must be specific.** For instance, the company cannot just list a quarter of land as the proposed development site. The company must provide a specific legal description so that FSA can determine what environmental assessments are needed, what cropland, pasture, wetlands, or waste land is affected by the proposed transaction, and determine if the farming operation will be adversely affected by the proposed transaction. **Note:** The Wind Energy Company should also provide maps, aerial maps, plans, and any other documentation used to determine the proper legal description for the proposed construction.

B. The Wind Tower Agreement language must reasonably limit the power of the Energy Company over the land described in the agreement. For example, a document may not provide that the Company has sole discretion to locate, install and operate access roads, or use vague language such as "whatever equipment and improvements are necessary or useful to convert wind energy into electricity." The Wind Tower Agreement may have language that gives the Wind Energy Company permission to build and install such facilities as foundations and concrete pads, steel towers, large turbine generators, wires, anchors, fences, maintenance, and roads, etc., but they should be described, and the agreement should require that the company receives written permission from the land owner and all lien holders before they are installed.

C. The Wind Tower Agreement must allow access to the security property to the FSA loan customer and all lien holders. The Wind Energy Company may limit access to the specific towers, equipment, and buildings it constructs, in order to provide for public safety and the security of the improvements it makes to the property.

D. The Wind Tower Company must provide specific terms of the proposed Wind Tower Agreement. It should be noted that 7 C.F.R. § 765.252 and 4-FLP Par. 99 E (2) limit the terms of real estate security leases to 3 years, or 5 years if the borrower and the lessee are related by blood or marriage. Thus, any wind tower agreement for a term longer than 3 years will need a Deputy Administrator for Farm Loan Programs Administrator Exception, as described in 4-FLP 4 B.

E. The Wind Tower Agreement must provide specific monetary figures. The figures may include upfront payments, annual lease payments, and/or any other compensation to be paid to the FSA farm loan customer in the

2. County Office Action (Continued):

development of the project. This Wind Tower Agreement should also include how lease payments will be determined (if payment is based on how much wind energy is produced, an annual fixed lease price, the cost of inflation, or any other formula). The Agreement should also state when the FSA farm loan customer will receive payment (annually, semi-annually, quarterly, or monthly).

F. The Wind Tower Agreement will not have language that permits the energy company to sell, assign, encumber, or transfer its interest under the Agreement, relieving it of further liability for performance, **unless** the Agreement provides that the company must first obtain the written consent of the Owners and lienholders.

G. If a Wind Energy Company requests a subordination from the FSA for its particular wind energy project, the Deputy Administrator for Farm Loan Programs must grant an exception before the request can be granted. 7 C.F.R. § 765.205 only permits subordination of FSA's lien to the lien of another **lender**. Therefore, 4-FLP Par. 117 does not address issues proposed by the Wind Tower Agreement. If the Wind Energy Company requests the Agency to approve the requested subordination on its own particular subordination form, the company must provide the form to FSA to obtain OGC's review and approval of its use.

H. The Wind Tower Company must provide all environmental information concerning the Wind Tower project for the particular legal description involved. As noted above, all Wind Tower Companies in North Dakota must undertake environmental review and obtain specific permits and licenses for the proposed development by the North Dakota Public Service Commission. Copies of pertinent documentation should be provided to FSA for its review.

I. If CRP acres are involved, the Farm Loan Manager should have the Wind Energy Company and/or FSA Farm Loan Customer discuss the proposed project with the local County Executive Director (CED). As per 2-CRP (Rev. 4) Amendment 12 Par. 282, a "COC may authorize the installation of windmills, wind turbines, wind-monitoring towers, or other wind-powered generation equipment on CRP acreage on a case-by-case basis. COC may approve up to 5.0 acres per contract of wind turbines on CRP acreage provided the environmental impacts have been considered according to subparagraph 2-CRP (Rev. 4) Amendment 12 242 F. For authority over 5 acres, COC shall submit a request in writing to Conservation Environmental Program Director (CEPD) through the State Office according to 2-CRP (Rev. 4) Amendment 12 Subparagraph 31 A. This 5.0 acre per contract threshold is a cumulative figure that is

2. County Office Action (Continued):

calculated by totaling the square footage of land area devoted to the footprint of the wind generating device and firebreak installment around the footprint. Access roads, transformers, and other ancillary equipment will not be considered in calculating the 5.0-acre per contract threshold."

J. The proposed Wind Tower Agreement must have specific language in the Agreement that documents removal of any wind power facilities. The Agreement must not state that the Wind Tower Company has sole discretion to remove any or all wind towers at any time. The agreement must state the Wind Tower Company may dismantle wind tower facilities after receiving written permission from the land owner and all lien holders.

K. If the Wind energy project proposes crop damage or pasture damage during or after construction, the Wind Tower Agreement must have a specific formula to determine damages. The formula must be acceptable to the Agency and to the Farm Loan Program customer.

After receiving a Wind Tower Agreement and a signed FSA Form 2060 "Application for Partial Release, Subordination, or Consent" from the FSA farm loan customer, the Farm Loan Manager should review the proposed Wind Tower Agreement and the FSA Form 2060 thoroughly. A copy of the Agreement and Form 2060 should be sent to the North Dakota State FSA Office, Attn: STO FLP. This initial review by the Farm Loan Manager will be documented in the Farm Business Plan (FBP) running record. A copy of this running record will be placed in the customer's case file.

After the initial review by the FLM and the North Dakota State FSA Office, the Manager will send a letter to the FSA loan customer with a courtesy copy sent to the North Dakota State FSA Office and the Wind Energy Company. This letter will reference the application for a Wind Tower or transmission lines and whether the application is considered complete. If the Wind Tower Agreement needs rewording, the FLM should specifically state in the letter which wording needs modification.

After an application is received, FSA should order an appraisal to determine the value of the property with the proposed development. The appraisal will be based on the specific legal description that the Wind Energy Company provided, as well as the building of any roads or other development. Normally, the FLM should order an appraisal concerning the entire property affected by the transaction. For example: on a 160-acre farm, a Wind Energy Company is proposing a Wind Energy Project on 5 acres, and construction of roads on an additional 6 acres.

2. County Office Action (Continued):

The FLM should order an appraisal based on the whole parcel affected, in this case, the 160-acre farm. Another example: a Wind Energy Company is proposing a 4-acre wind tower project on an 80-acre parcel. The entire FSA security is 640 acres. In this example, the FLM would order an appraisal on only the 80-acre parcel, not the entire 640 acres. The appraisal report should show the tract "as is" and "as improved" with the proposed Wind Energy construction. The wind tower project may or may not have an adverse impact on property value, as determined by the Agency appraisal.

The FLM must view the proposed property and complete Form FSA-851 "Environmental Risk Survey Form," which will be forwarded to the State Environmental Coordinator (SEC) for approval prior to any referral to the Deputy Administrator for Farm Loan Programs Administrator for an exception as described in 4-FLP 4 B. The proper completion of the FSA-851 enables FSA to determine if a higher level of site assessment by an environmental professional is necessary to determine the exact level of threat to the environment. As mentioned earlier in the FLP Notice, the Wind Tower Company must provide all environmental information concerning the Wind Tower project for the particular legal description involved for FSA to make a proper environmental evaluation. As directed in 4-FLP Par. 196 B (7) "The environmental requirements of subpart F of 7 CFR part 1940 must be met." Photographs, aerial maps, and any other documentation are encouraged for a proper environmental evaluation. Any direct questions concerning the environment should be forwarded to the State Environmental Coordinator. The State Environmental Coordinator will be the approval official for any proposed transaction and will determine what additional requirements are needed for a proper environmental evaluation.

The Farm Loan customer and the FLM must complete a Farm Business Plan (FBP) as described in 1-FLP Section 3 for the proposed Wind Energy project. A Credit Presentation using the D-Loan/Regular Servicing Credit Action is also required.

As per 4-FLP Par. 197 A, "Proceeds from transactions affecting the real estate security may only be used as follows: (1) Applied on liens in order of priority." The income from the wind energy project must be assigned to lienholders. This includes upfront money paid to the farm loan customer and annual payments made to the farm loan customer. This would normally be an extra payment on the FSA loans. However, as per 4-FLP Par. 197 D, "With SED's consent, proceeds may be applied to FSA as regular payments." FSA would require the completion of Form FSA-2044 "Assignment of Income from Real Estate Security" for this assignment, unless OGC approves use of an assignment form drafted by the Wind Energy Company.

If the Wind Energy Company requests to contact the Office of General Counsel (OGC) directly on modifications to its Wind Tower Agreement, it should be first referred to the North Dakota State FSA Office. The Wind Energy Company will

2. County Office Action (Continued):

be referred on a case by case basis to OGC, based on the complexities involved in the case and the modifications needed to the Agreement.

After the environmental evaluation is completed, the appraisal is received and deemed acceptable by FSA, the FBP and FBP Credit Presentation has been completed, and the Wind Tower Agreement has been modified as deemed acceptable to the FLM, the case file and all other documentation received should be forwarded to the North Dakota State FSA Office. (The local District Director will not be the approval official for the Wind Tower Agreement.) The North Dakota State Office will then refer the case to OGC for its legal opinion. OGC will draft a Memorandum stating any legal objections to provisions of the Wind Tower Agreement, and provide it with the case file to the North Dakota State FSA Office.

In order to obtain approval for the Wind Energy Project from the Deputy Administrator for Farm Loan Programs, the case file must specifically document that the Wind Tower Agreement meets the requirements of 4-FLP Par. 196 B, and 7 C.F.R. § 765.351(a), specifically:

1) The transaction will enhance the objectives for which the Agency loan or loans were made;
2) The transaction will not jeopardize the borrower's ability to repay the Agency loan, or is necessary to place the borrower's operation on a sound basis;
3) The amount received for the security being disposed of or the rights being granted is not less than market value;
4) Any proceeds in excess of the market are remitted to lienholders in the order of lien priority;
5) The transaction must not interfere with the borrower's farming operation;
6) The market value of the remaining security is adequate to secure the Agency loans, or if the market value of the security before the transaction was inadequate to fully secure the Agency loans, the Agency equity in the security is not diminished;
7) The environmental requirements of subpart F of 7 CFR part 1940 must be met.
8) The borrower cannot graduate to other credit; and
9) The borrower must not be ineligible due to disqualification resulting from Federal Crop Insurance violation according to 7 CFR part 718.

If the Wind Tower Agreement is legally acceptable, and the case file properly documents that the preceding requirements have been met, the North Dakota State FSA Office will forward the case file to the Deputy Administrator for Farm Loan Programs for approval. Pursuant to 4-FLP Par. 4 B, "SED's must submit an exception request, in writing, to the Administrator or DAFLP (Deputy

2. County Office Action (Continued):

Administrator for Farm Loan Programs). The request must describe the status of the account, including:

- A brief background on the case
- Total outstanding FSA indebtedness; loan types and amounts
- Current status of the account; if it is delinquent, where it is in Primary Loan Servicing.
- Type of security (chattel or real estate) and estimated value
- Prior liens
- Proposed plan of action that warrants the exception request
- What procedure is to be waived
- The adverse effect to FSA resulting from compliance with the regulation and how it would be eliminated or minimized through the exception
- Discussion of graduation
- How the action is in the best interest of the Government
- Additional Information that SED thinks will be needed to review the case.

Note: As per 4-FLP Par. 4 B "A decision as to whether an exception request will be submitted will be at FSA's discretion and is not appealable."

If the proposed Wind Energy Project is approved by the Deputy Administrator for Farm Loan Programs, the North Dakota State FSA Office will send a memo to the County Office with specific closing instructions.

Note: The key to any Wind Energy Project application is documentation. North Dakota FSA employees are responsible for documenting **all** contacts with the borrower or other significant persons related to the transaction, such as other lenders, closing agents, wind tower employees, etc. Information recorded should include the date, who was involved, items discussed, outcomes, and necessary follow-up when required. Information recorded in the running case record should be factual and able to be substantiated. Opinions, speculations, feelings, and instincts should be avoided. Documentation may take many forms but should always be clear, concise, readable, and factual.

This FLP notice may be forwarded to Wind Energy Companies at the Farm Loan Manager's discretion. In certain cases, it could help the Wind Energy Company understand what is needed for FSA approval of a Wind Energy Project.

TETRA TECH EC, INC.

January 8, 2010

Ms. Mary Baumann
District Conservationist
U.S. Department of Agriculture, Natural Resources Conservation Service
Ashley Field Office
118 E. Main, PO Box 389
Ashley, ND 58413-0389

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Ms. Baumann:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the U.S. Department of Agriculture, Natural Resources Conservation Service to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

The proposed Project has a planned commercial operation date in the 4th quarter of 2012 and would provide approximately 200 megawatts (MW) of wind energy capacity. It is expected that the selected turbine for the Project will range between 1.5 to 3.0 MW in generating capacity, 80 to 90 meters (m) in hub height, and 80 to 103 m in rotor diameter. In addition to the erection of wind turbines, the Project would involve: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an operation and maintenance building; construction of an electrical switchgear facility; erection of three to four 80 to 90 m tall permanent meteorological masts; and construction of an interconnection substation facility. A temporary construction staging and laydown area would also be used during the construction phase of the Project.

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Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

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	T131N	R70W	1, 2, 11-14, 23, 24
	T132N	R69W	31, 32
	T132N	R70W	35, 36

We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

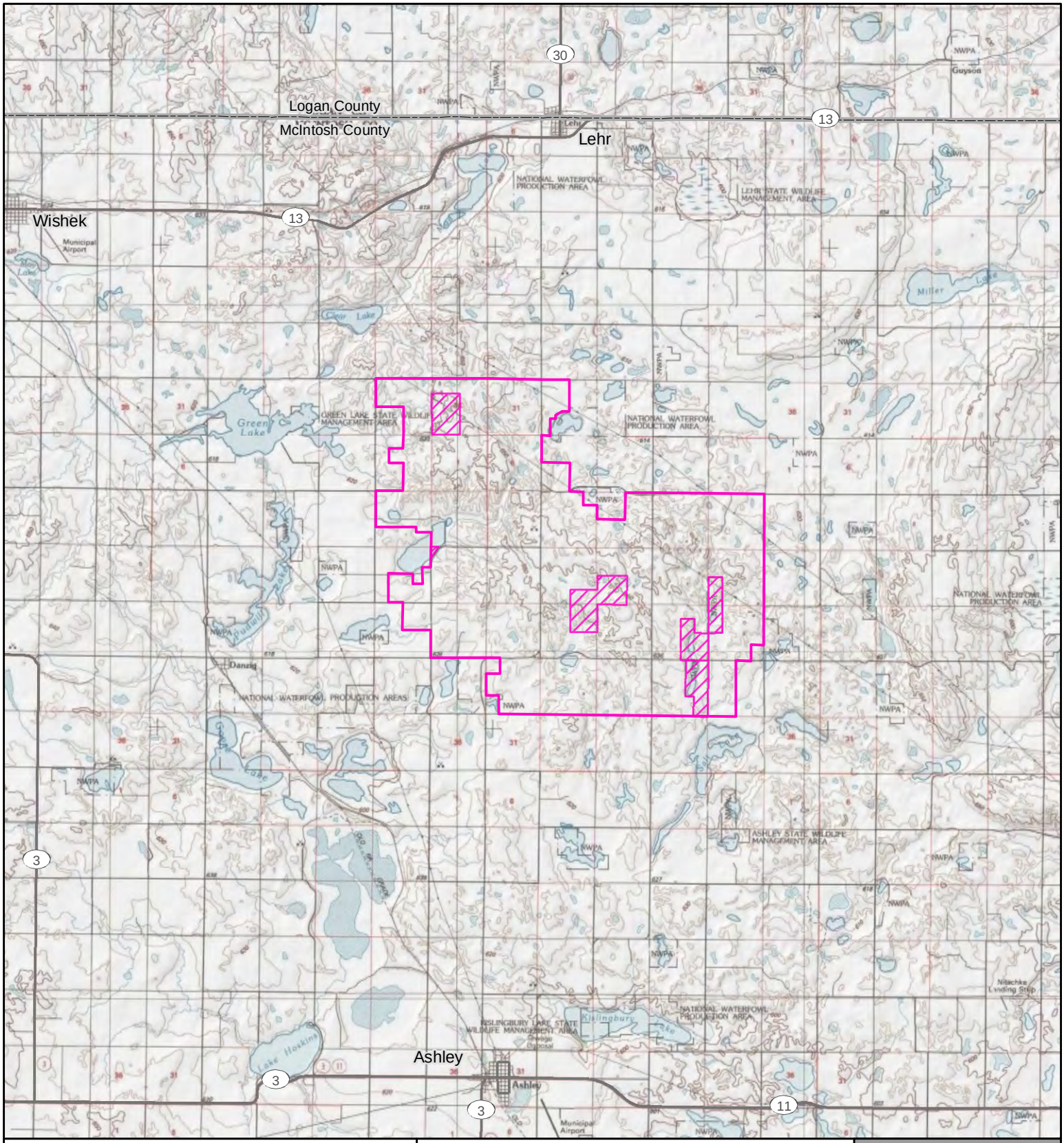
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

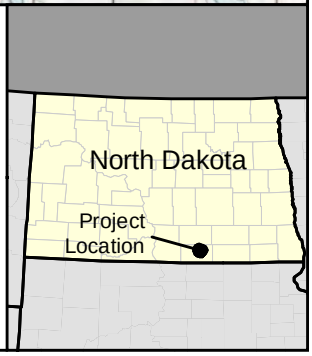
Non-Leased Area

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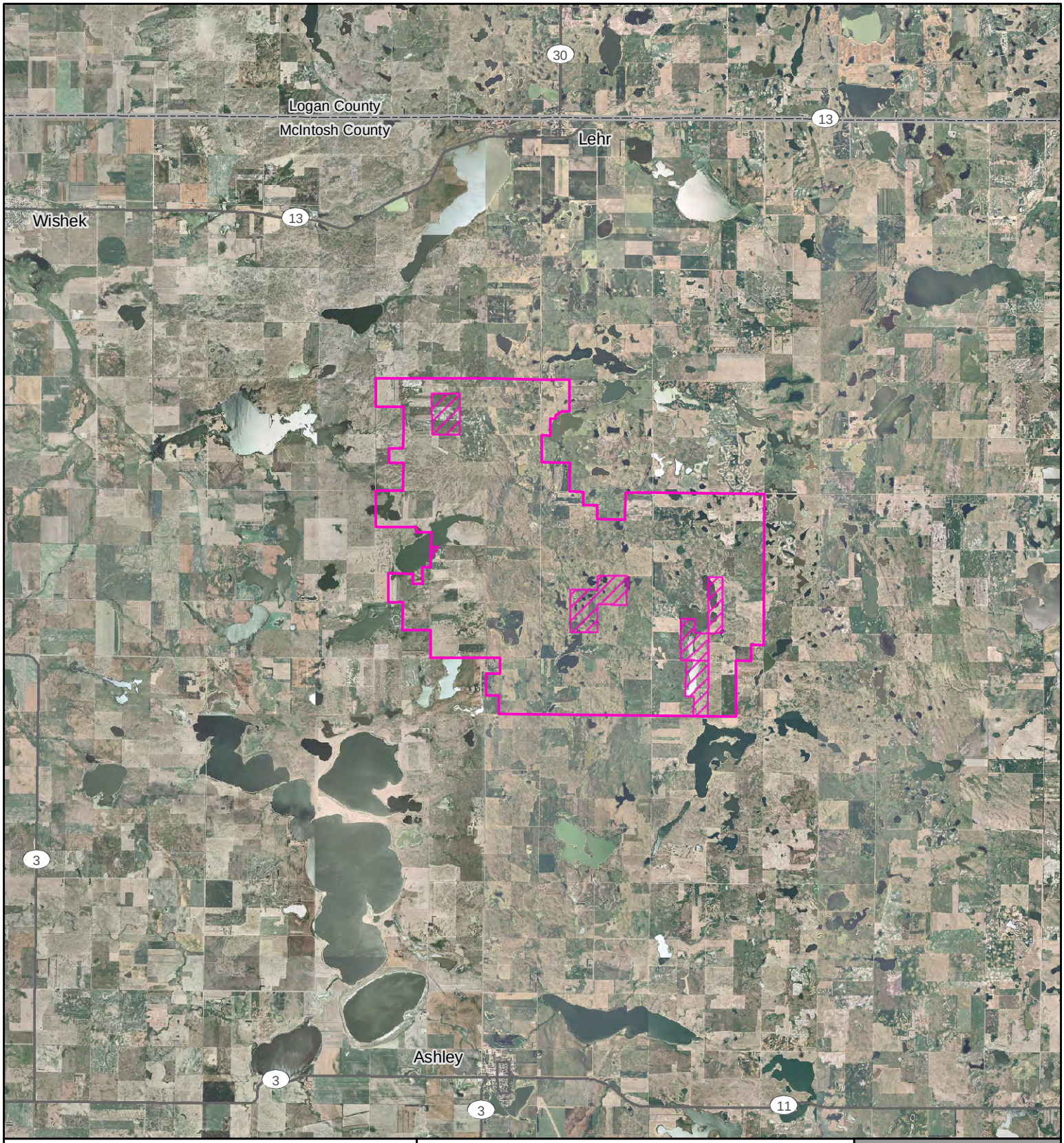
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. Mike Shanahan
Chief of Staff
U.S. Environmental Protection Agency – Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Shanahan:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the U.S. Environmental Protection Agency to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

The proposed Project has a planned commercial operation date in the 4th quarter of 2012 and would provide approximately 200 megawatts (MW) of wind energy capacity. It is expected that the selected turbine for the Project will range between 1.5 to 3.0 MW in generating capacity, 80 to 90 meters (m) in hub height, and 80 to 103 m in rotor diameter. In addition to the erection of wind turbines, the Project would involve: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an operation and maintenance building; construction of an electrical switchgear facility; erection of three to four 80 to 90 m tall permanent meteorological masts; and construction of an interconnection substation facility. A temporary construction staging and laydown area would also be used during the construction phase of the Project.

133 Federal Street, 6th Floor, Boston, MA 02110
Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

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McIntosh	T131N	R69W	5-11, 14-23, 26-30
	T131N	R70W	1, 2, 11-14, 23, 24
	T132N	R69W	31, 32
	T132N	R70W	35, 36

We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

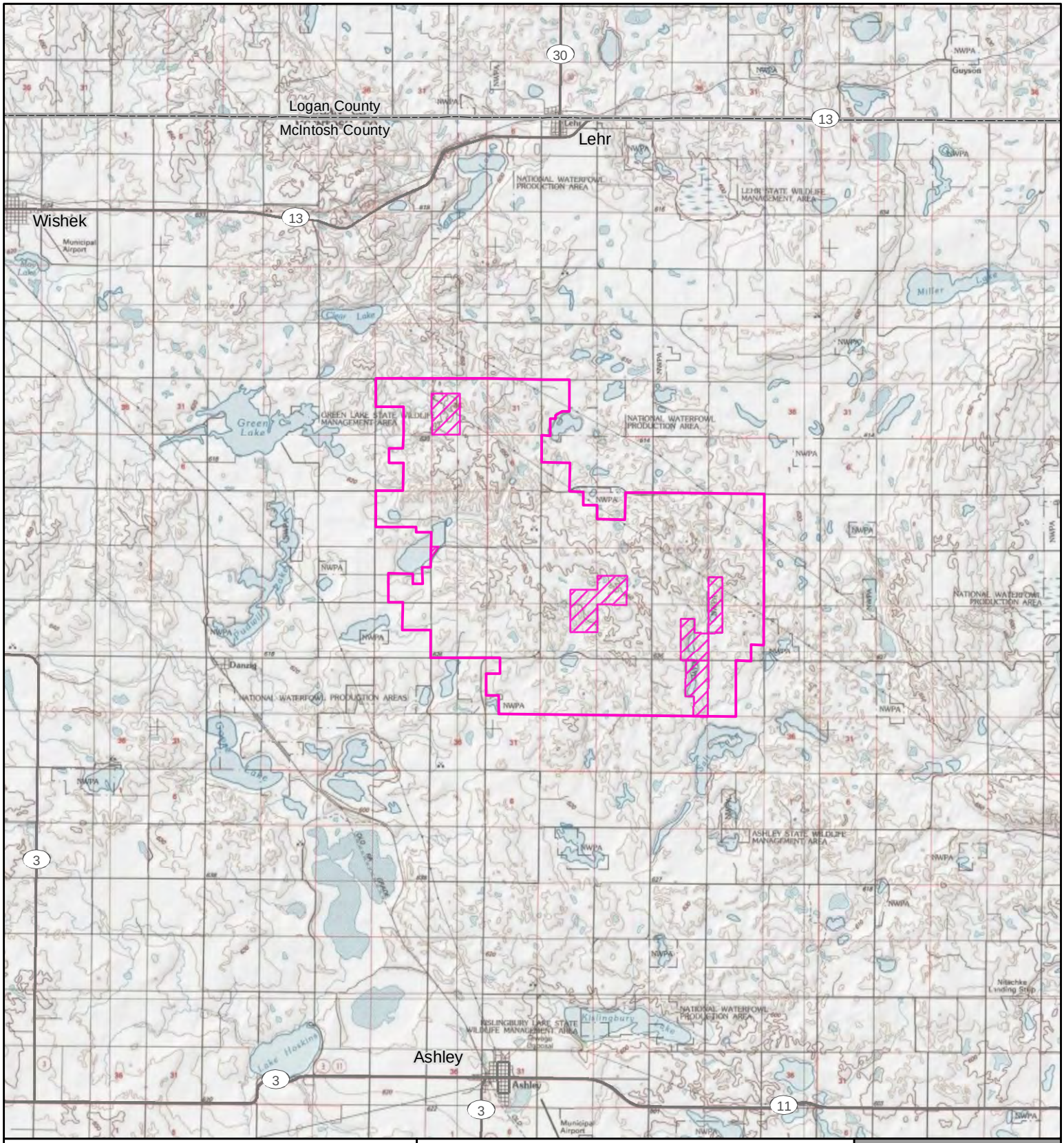
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

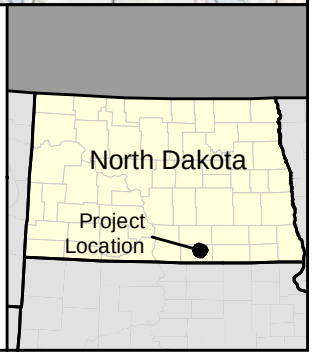
Non-Leased Area

N

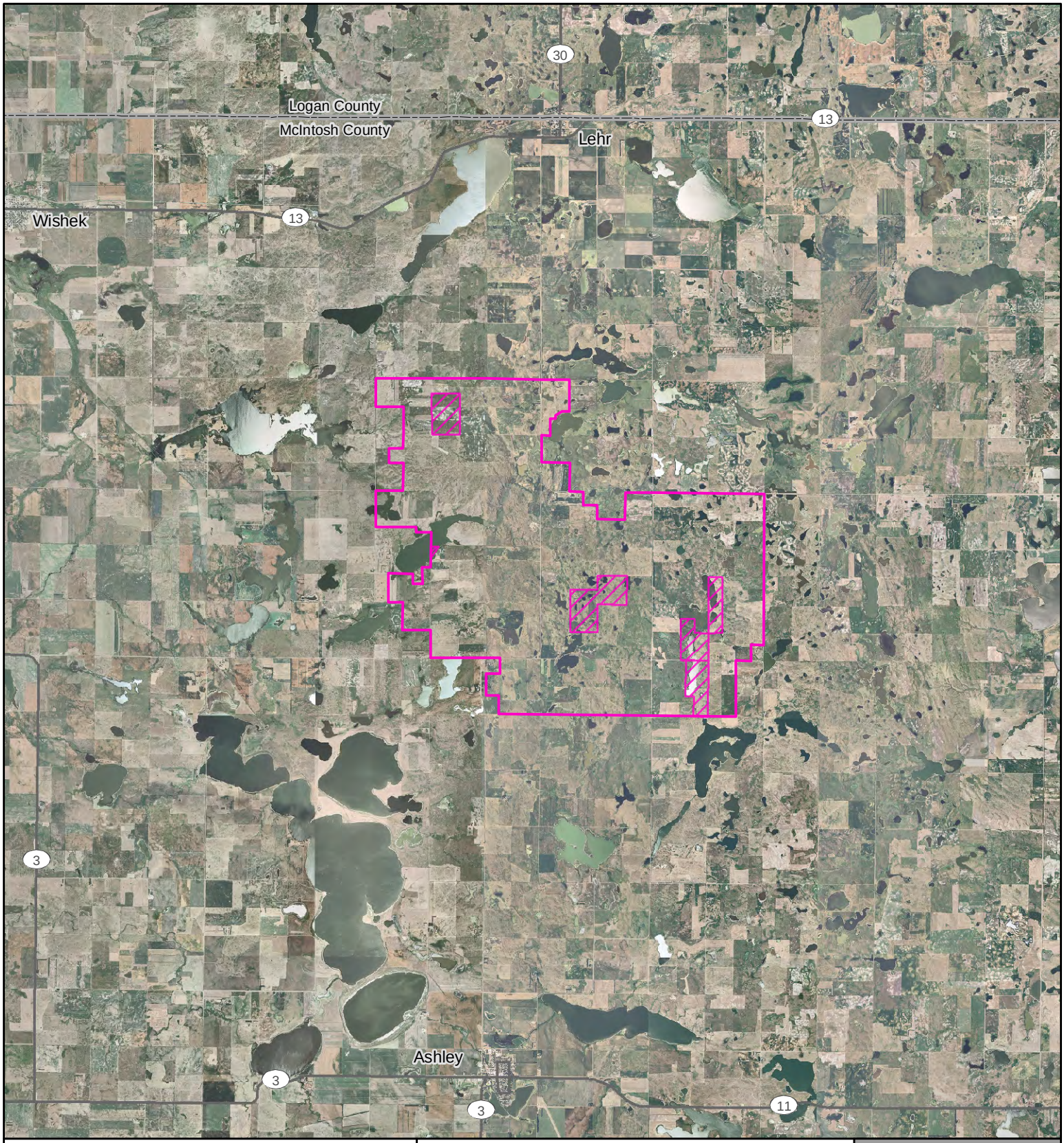
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

FEB 05 2010

Ref: EPR-N

Erica J. Roberts
Project Manager
Tetra Tech EC, Inc.
133 Federal Street, 6th Floor
Boston, MA 02110

RE: Ashely, North Dakota Wind Energy Project – Certificate of Site Compatibility

Dear Ms. Roberts:

This letter is acknowledgement of receipt of your January 8, 2010 Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota, which you submitted to Mike Shanahan, Chief of Staff for EPA Region 8. It is also follow up to voice mail contact Nathaniel Miullo, Region 8's Clean Energy and Revitalization Advisor had with you on January 13, 2010.

The National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

EPA's responsibilities and authority during the planning process for Federal actions are designated under Section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4332(2)(C), and Section 309 of the Clean Air Act, 42 U.S.C. Section 7609. It is EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of all projects for which an Environmental Impact Statement (EIS) is prepared. EPA may also review Environmental Assessments (EAs) or Categorical Exclusions.

EPA also devotes resources to preparing scoping comments regarding issues that we believe should be considered during preparation of an EIS, or occasionally EAs. EPA's involvement in the NEPA process typically begins with the publication of a Notice of Intent (NOI) to prepare an EIS or EA in the Federal Register. Our communications, during scoping and subsequent document preparation stages, are conducted directly with the Federal Agency responsible for the NEPA document once the EIS and/or EA preparation phase of the project has been initiated.

The information included in and attached to your January 8, 2010, letter is not enough for us to determine whether or not any review will or will not be necessitated by EPA. If there is an EA or EIS initiated, EPA Region 8's NEPA Compliance and Review Program will evaluate whether or not any further action is required. Thank you for the early notice on this renewable energy project and should a Federal Agency have any questions, they may contact us during the EA/EIS preparation phase.

Sincerely

Larry Svoboda,
Director, NEPA Compliance and Review Program
Office of Ecosystem Protection and Remediation

Printed on Recycled Paper

TETRA TECH EC, INC.

January 8, 2010

Mr. Jeffrey Towner
Field Supervisor
U.S. Fish and Wildlife Service
North Dakota Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Towner:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the U.S. Fish and Wildlife Service to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

The proposed Project has a planned commercial operation date in the 4th quarter of 2012 and would provide approximately 200 megawatts (MW) of wind energy capacity. It is expected that the selected turbine for the Project will range between 1.5 to 3.0 MW in generating capacity, 80 to 90 meters (m) in hub height, and 80 to 103 m in rotor diameter. In addition to the erection of wind turbines, the Project would involve: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an operation and maintenance building; construction of an electrical switchgear facility; erection of three to four 80 to 90 m tall permanent meteorological masts; and construction of an interconnection substation facility. A temporary construction staging and laydown area would also be used during the construction phase of the Project.

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www.tteci.com

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We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

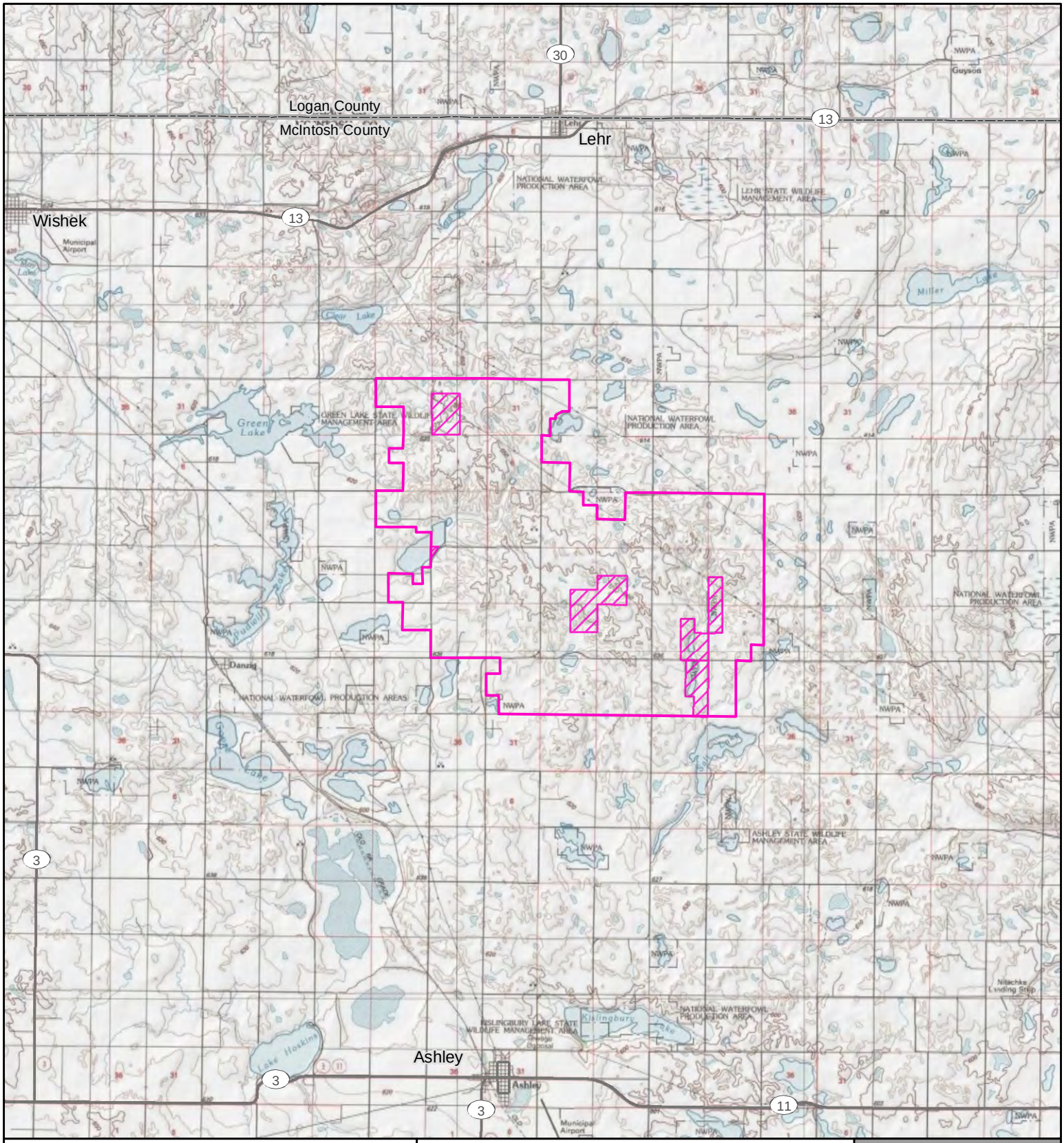
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

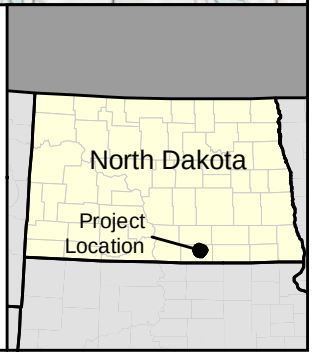
Non-Leased Area

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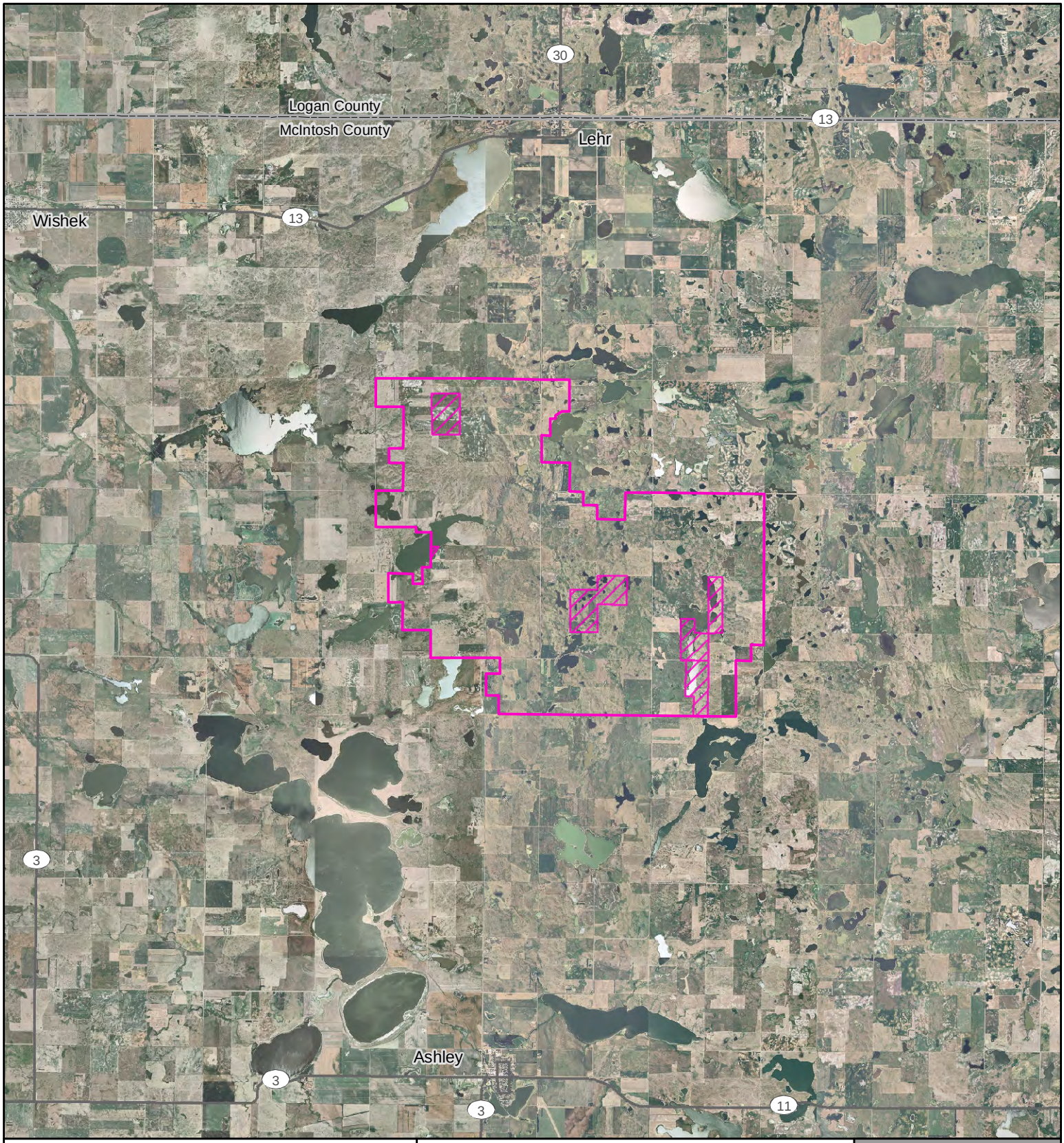
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Attorney General Wayne Stenehjem
State of North Dakota, Office of Attorney General
State Capitol
600 E. Boulevard Ave.
Dept. 125
Bismarck, ND 58505

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Attorney General Stenehjem:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the Office of Attorney General to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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Respectfully submitted,

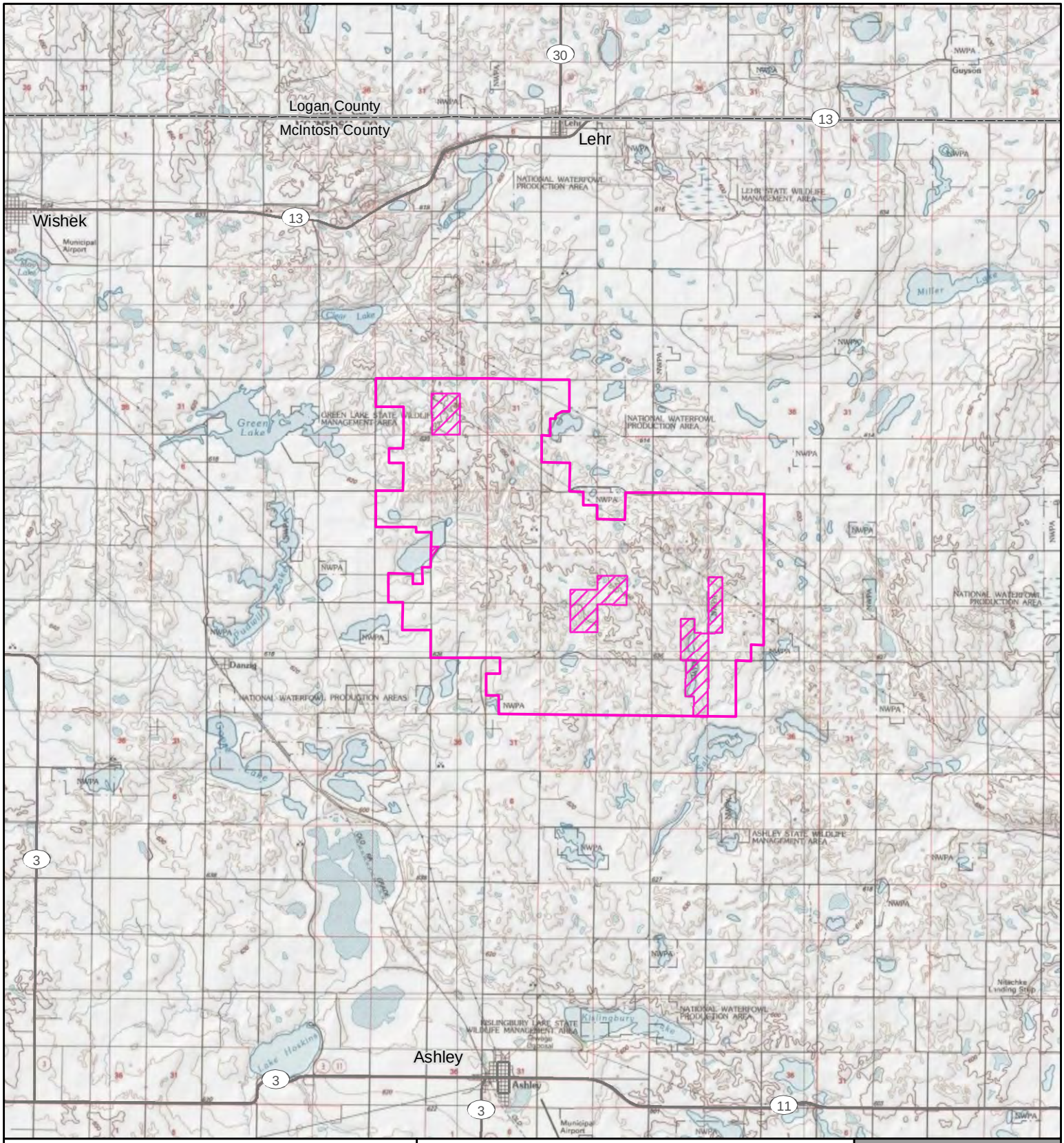
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

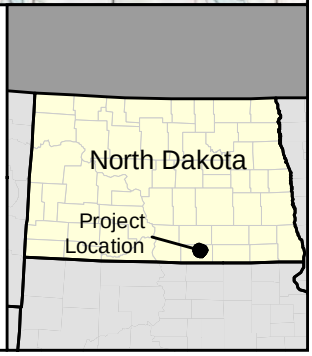
Non-Leased Area

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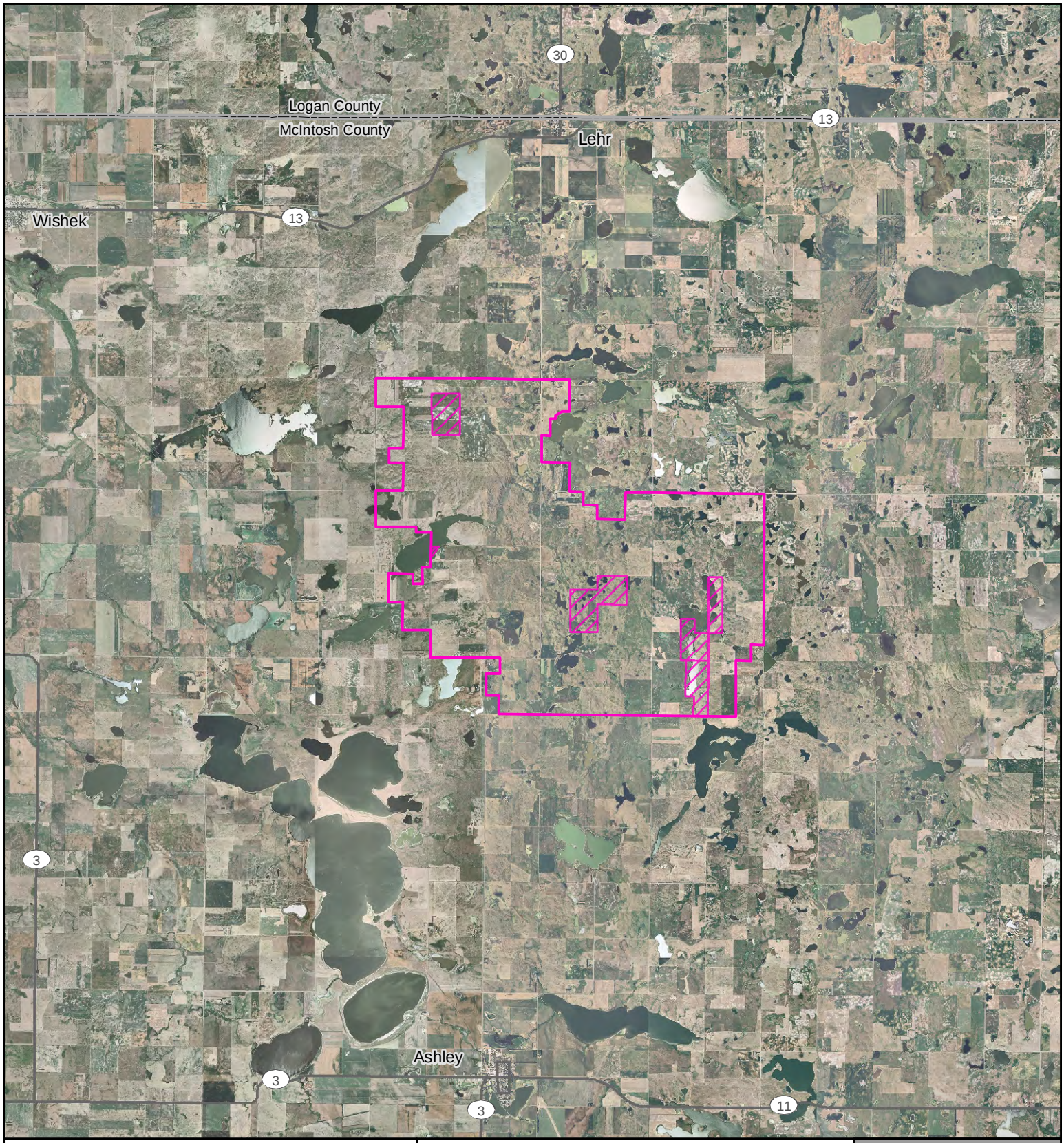
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Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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STATE OF NORTH DAKOTA
OFFICE OF ATTORNEY GENERAL
STATE CAPITOL
600 E BOULEVARD AVE DEPT 125
BISMARCK, ND 58505-0040
(701) 328-2210 FAX (701) 328-2226
www.ag.state.nd.us

Wayne Stenehjem
ATTORNEY GENERAL

January 25, 2010

Erika Roberts
Tetra Tech
133 Federal Street
6th Floor
Boston MA 02110

Dear Ms. Roberts:

I am responding on behalf of the Attorney General to your recent letter requesting assistance from this office relating to the Ashley Wind Energy project in McIntosh county, ND.

You will note that N.D.A.C 69-06-01-05 provides only that this office is entitled to receive notice of your application. There is no requirement for this office to review your business proposal or inform you of any potential problems or issues. In fact, the Attorney General's office is prohibited by statute from providing legal assistance to private businesses or reviewing private legal matters. We may only serve as legal advisors to state officials, state's attorneys, and certain city officials. Please note the actual requirements of N.D.A.C 69-06-01-05 for future reference.

If your company has a legal department, those lawyers will be able to conduct research and identify any potential issues that may affect this project. If not, you should consult an attorney in private practice to ensure compliance with all state laws, regulations and local ordinances which may be relevant to this project.

Sincerely,

Liz Brocker

Liz Brocker
Executive Assistant

TETRA TECH EC, INC.

January 8, 2010

Governor John Hoeven
Office of Governor John Hoeven
State of North Dakota
600 E. Boulevard Ave.
Bismarck, ND 58505-0001

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Governor Hoeven:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the Office of the Governor to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

The proposed Project has a planned commercial operation date in the 4th quarter of 2012 and would provide approximately 200 megawatts (MW) of wind energy capacity. It is expected that the selected turbine for the Project will range between 1.5 to 3.0 MW in generating capacity, 80 to 90 meters (m) in hub height, and 80 to 103 m in rotor diameter. In addition to the erection of wind turbines, the Project would involve: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an operation and maintenance building; construction of an electrical switchgear facility; erection of three to four 80 to 90 m tall permanent meteorological masts; and construction of an interconnection substation facility. A temporary construction staging and laydown area would also be used during the construction phase of the Project.

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Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

County	Township	Range	Sections
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	T131N	R70W	1, 2, 11-14, 23, 24
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	T132N	R70W	35, 36

We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

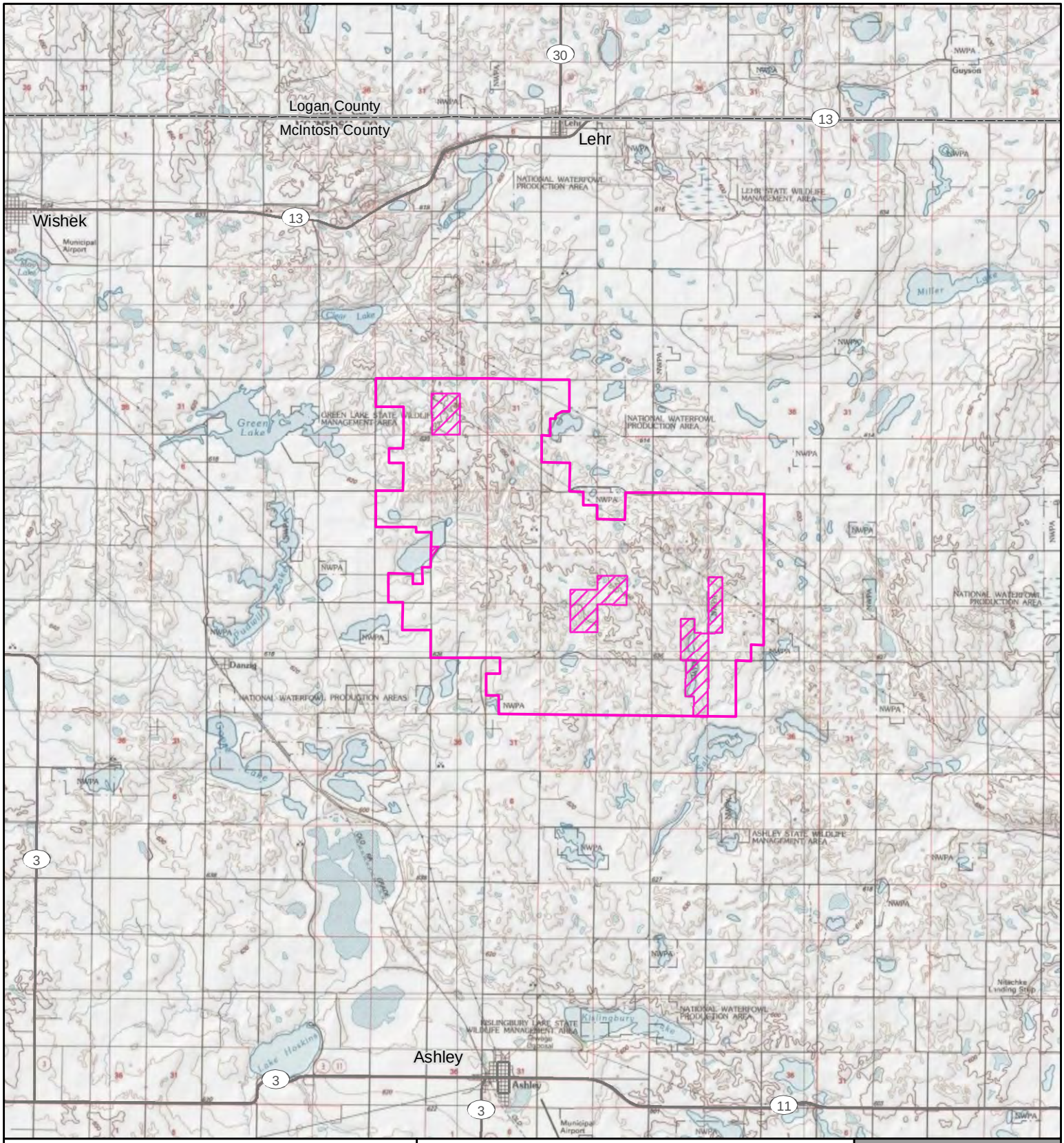
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

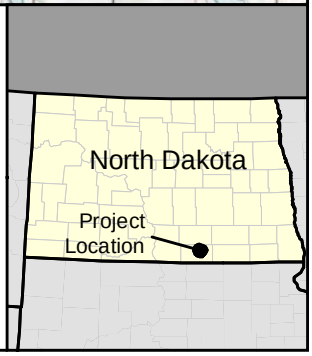
Non-Leased Area

N

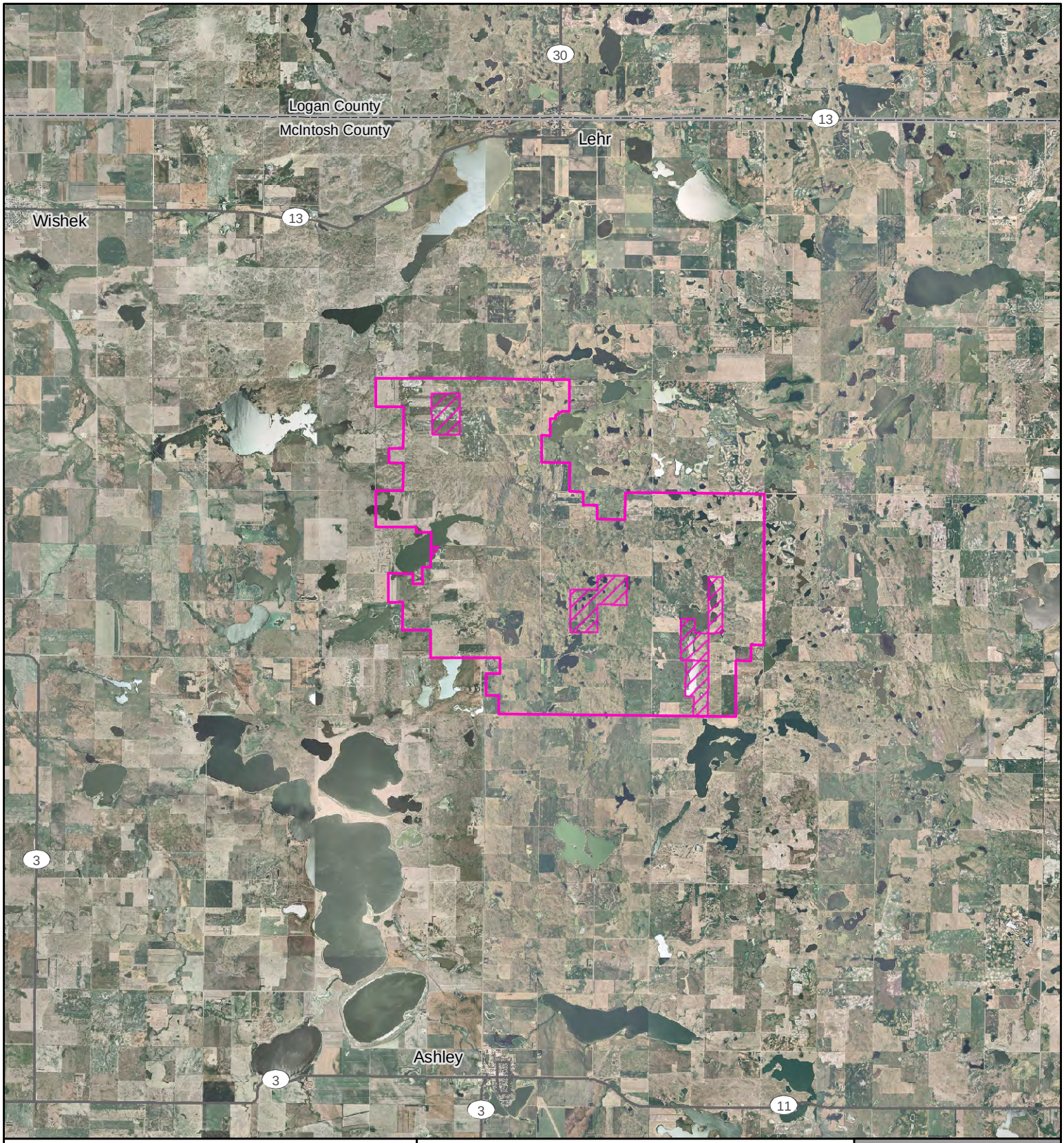
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Ms. Maren Daley, J.D.
Executive Director
Job Service North Dakota
PO Box 5507
Bismarck, ND 58506-5507

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Ms. Daley:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting Job Service North Dakota to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

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www.tteci.com

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Respectfully submitted,

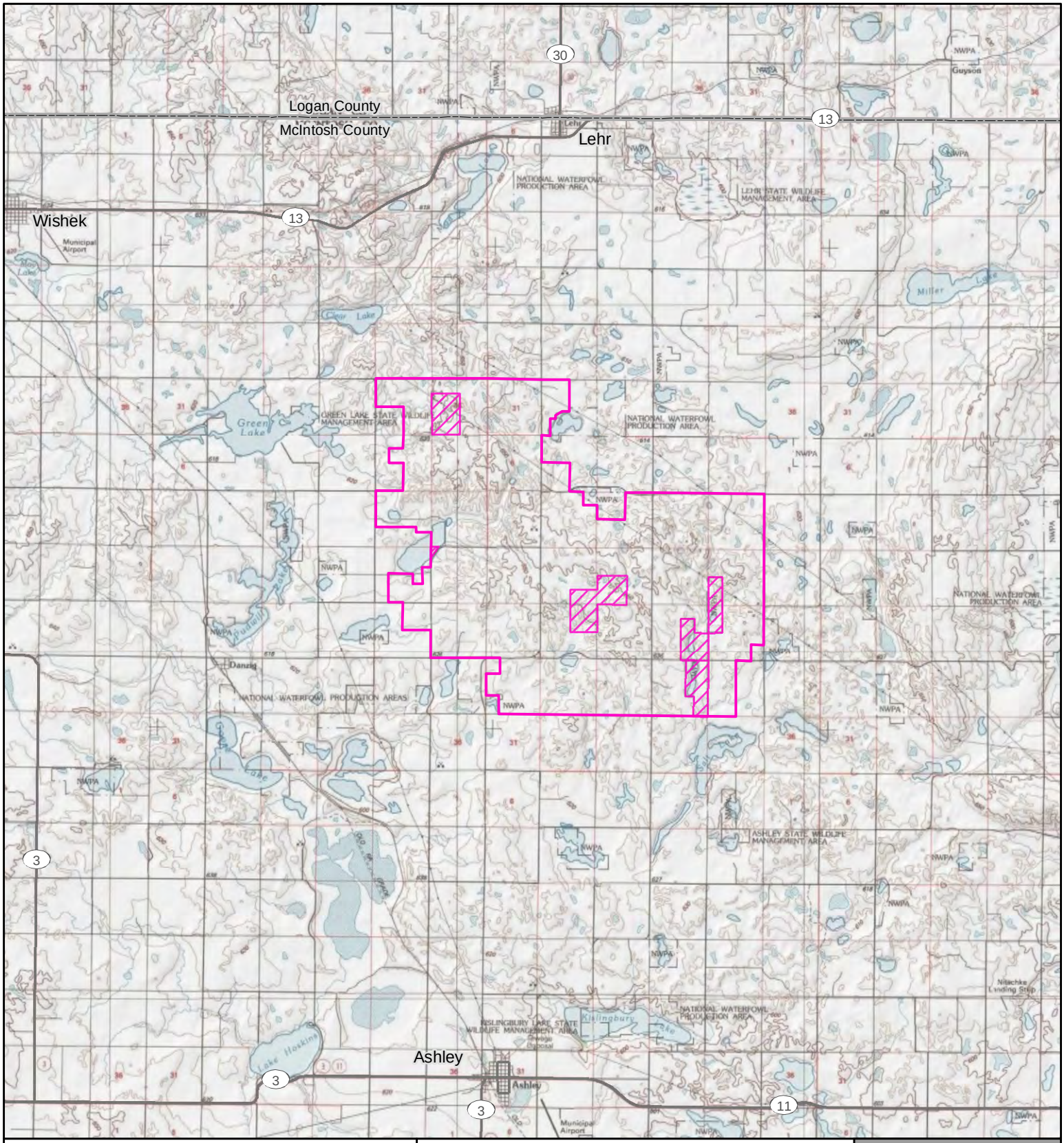
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

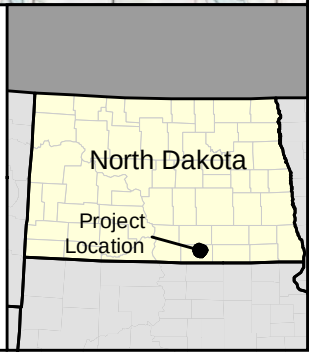
Non-Leased Area

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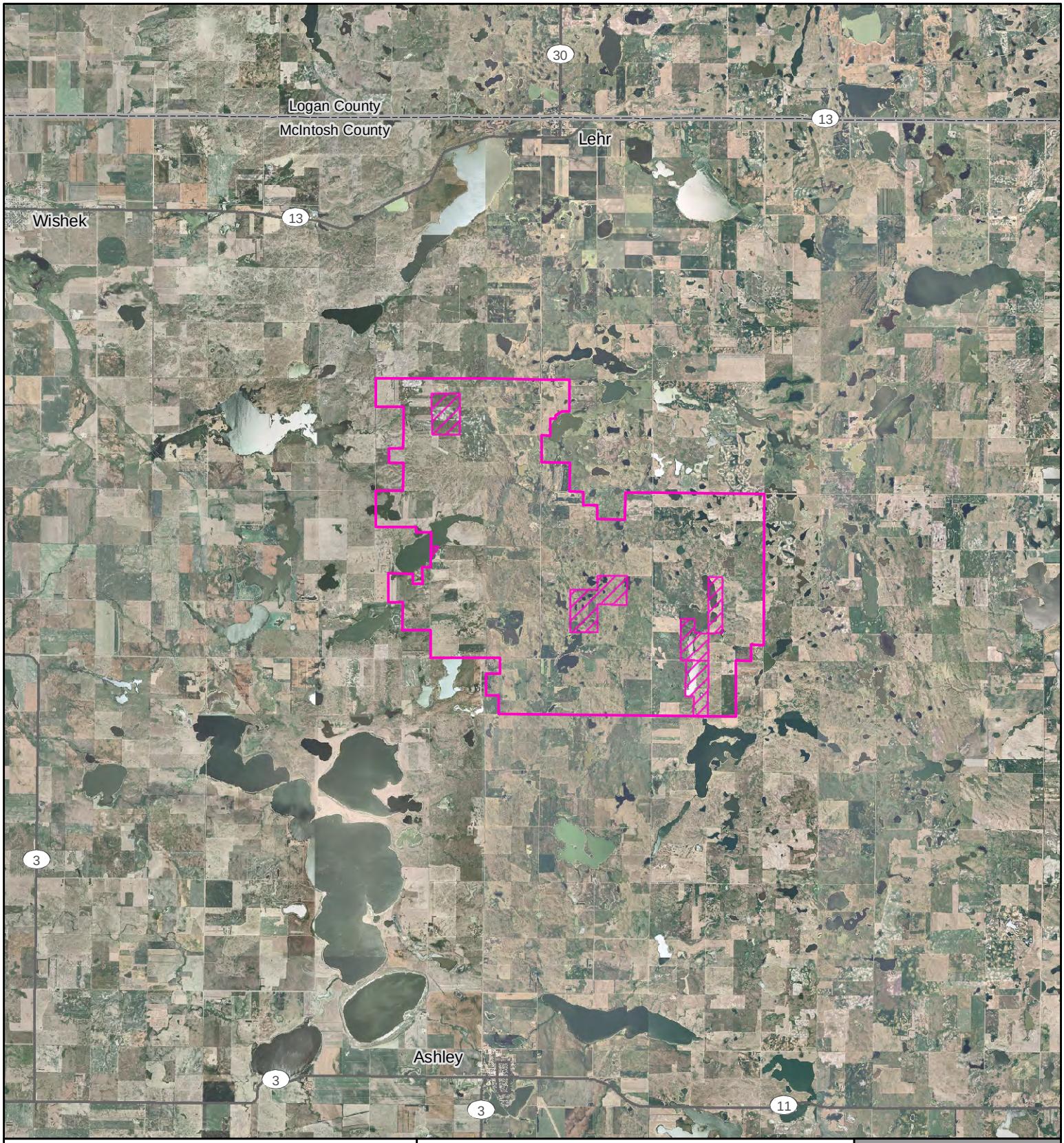
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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JOB SERVICE North Dakota
www.jobsnd.com

John Hoeven, Governor • Maren L. Daley, Executive Director

PO Box 5507 • Bismarck, ND 58506-5507

January 13, 2010

Ms. Erika J. Roberts
Project Manager
Tetra Tech EC, Inc..
133 Federal Street, 6th Floor
Boston, MA 02110

RE: Ashley Wind Energy Project
McIntosh County, North Dakota

Dear Ms. Roberts:

Job Service North Dakota administers the employment service and unemployment insurance programs.

We have no comments regarding the proposed project and have no applicable permits that are required from Job Service North Dakota.

Sincerely,

Maren L. Daley
Executive Director

TETRA TECH EC, INC.

January 8, 2010

Mr. Mark Holzer
Aviation Planner
North Dakota Aeronautics Commission
P.O. Box 5020
Bismarck, ND 58502

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Holzer:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota Aeronautics Commission to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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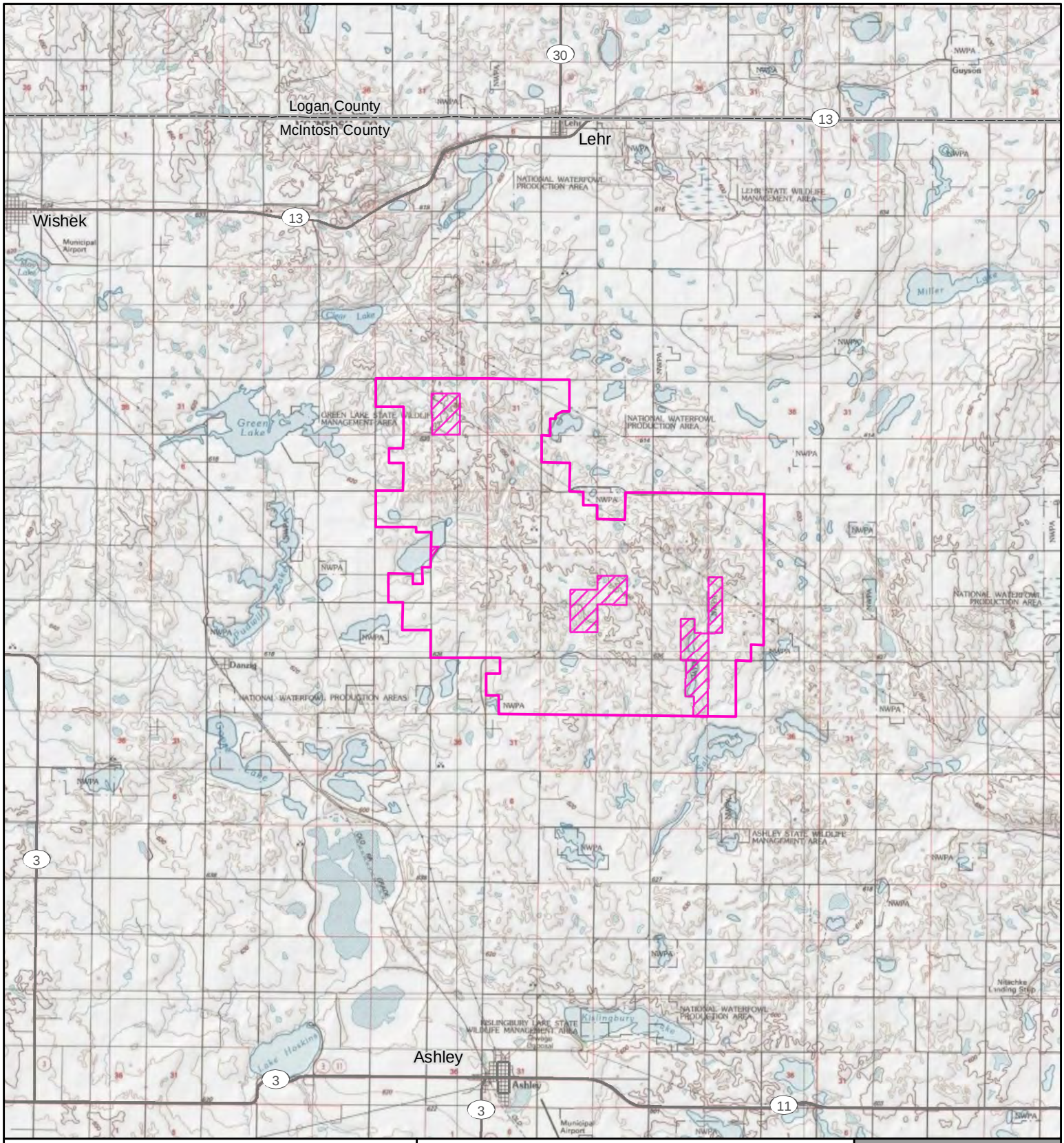
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

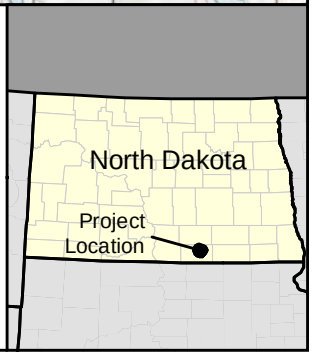
Non-Leased Area

N

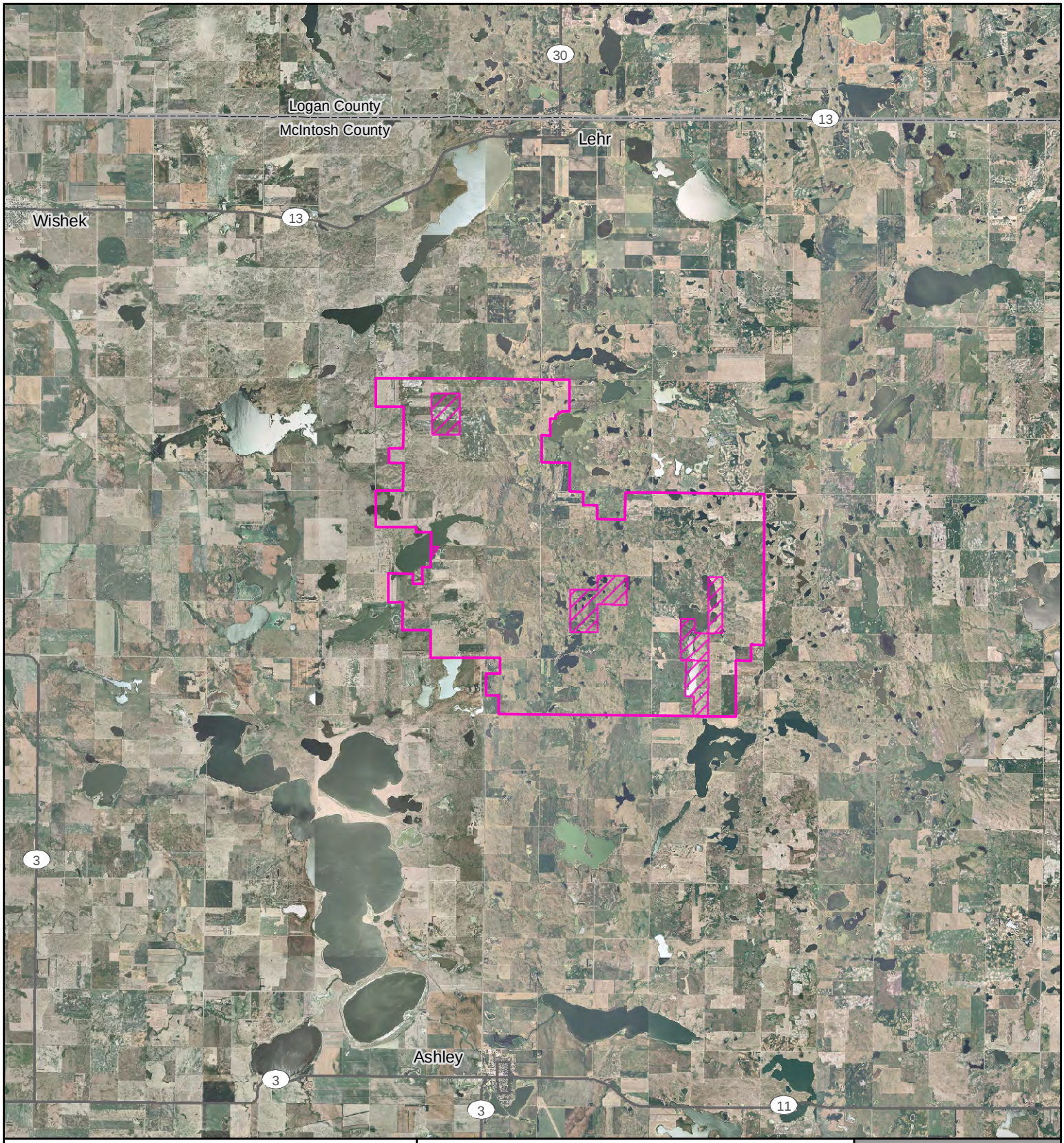
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. Doug Goehring
Agriculture Commissioner
North Dakota Department of Agriculture
600 E. Boulevard Ave., Dept. 602
Bismarck, ND 58505

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Goehring:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota Department of Agriculture to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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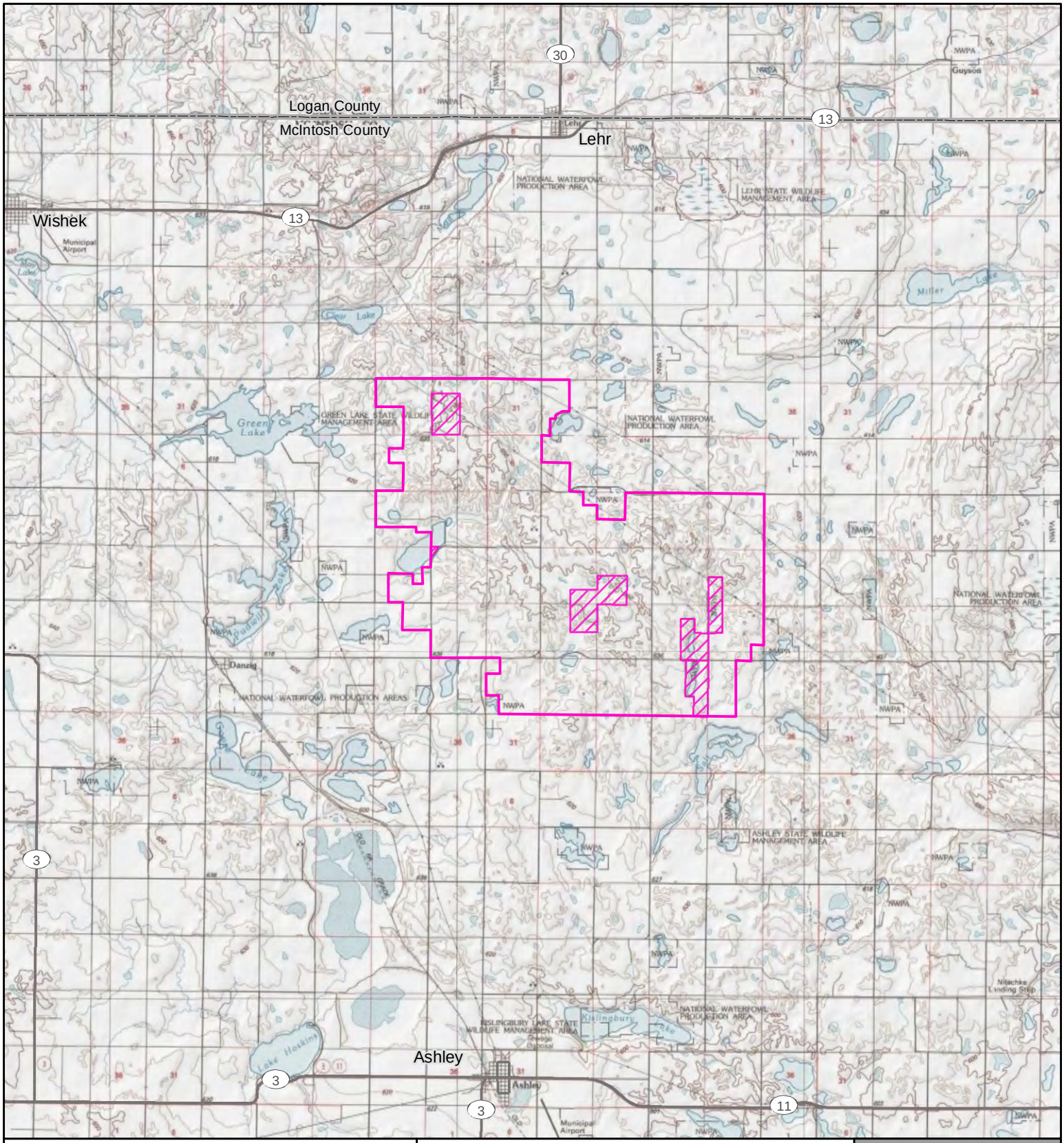
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

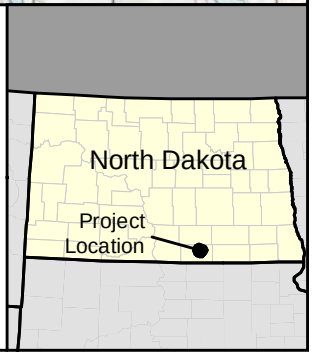
Non-Leased Area

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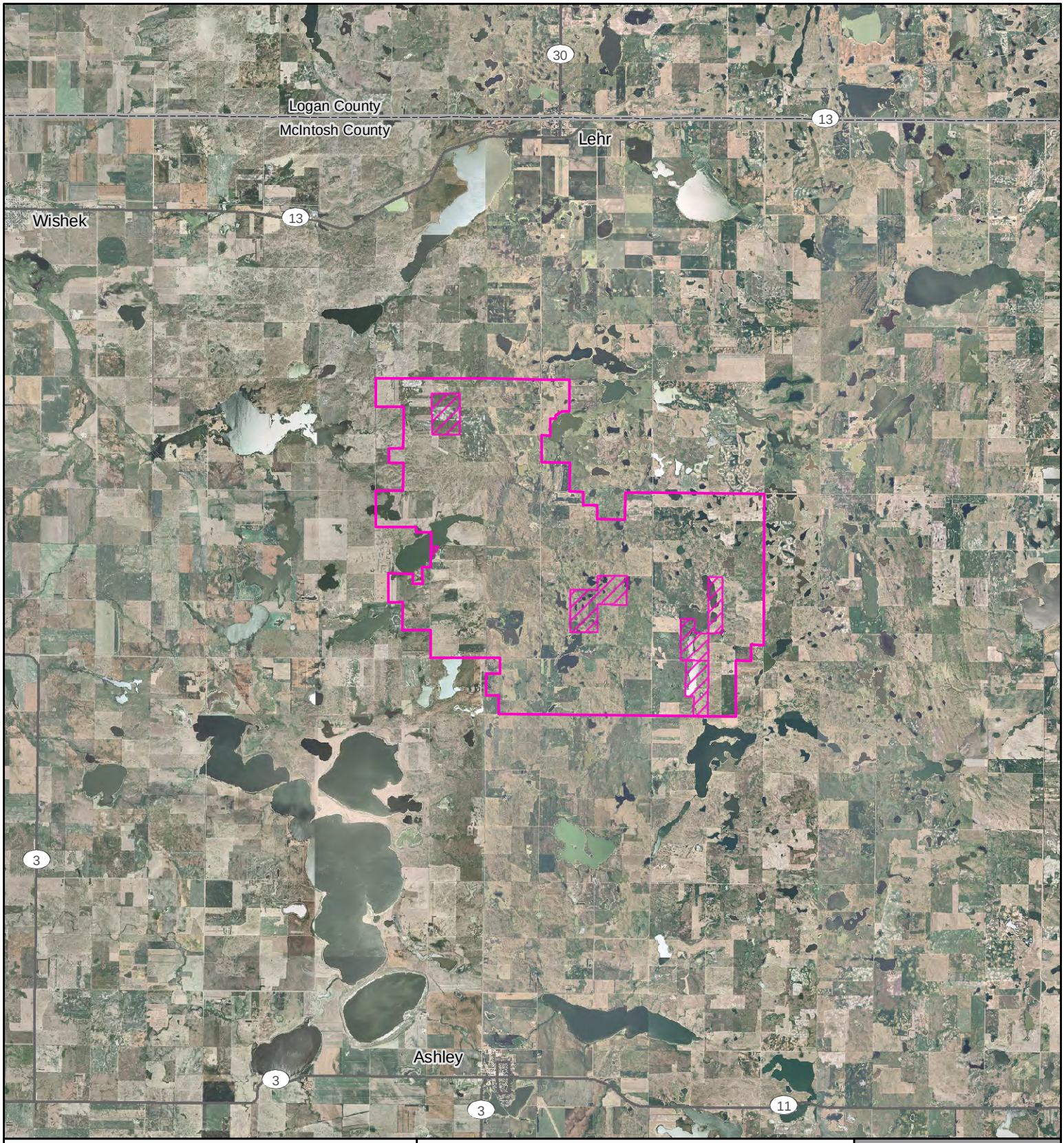
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. Wayne Kutzer
Director and Executive Officer
North Dakota Department of Career and Technical Education
State Capitol 15th Floor
600 E. Boulevard Ave., Dept. 270
Bismarck, North Dakota 58505-0610

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Kutzer:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota Department of Career and Technical Education to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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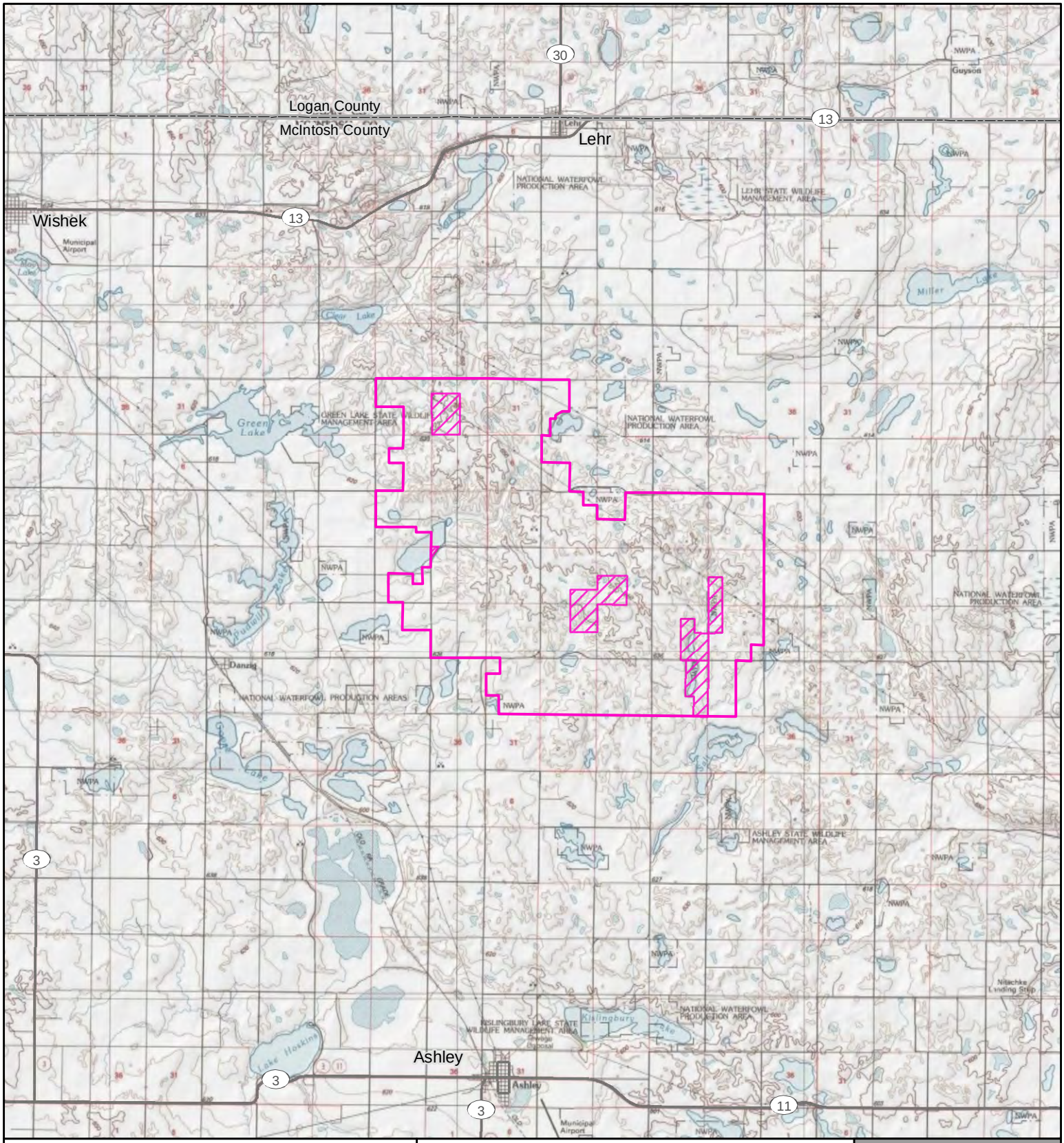
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Project Manager

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John Hafner – CPV

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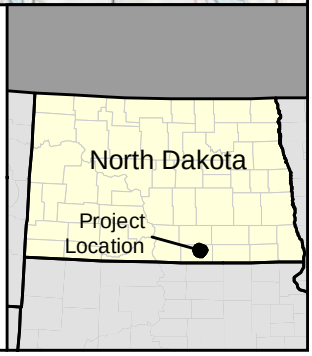
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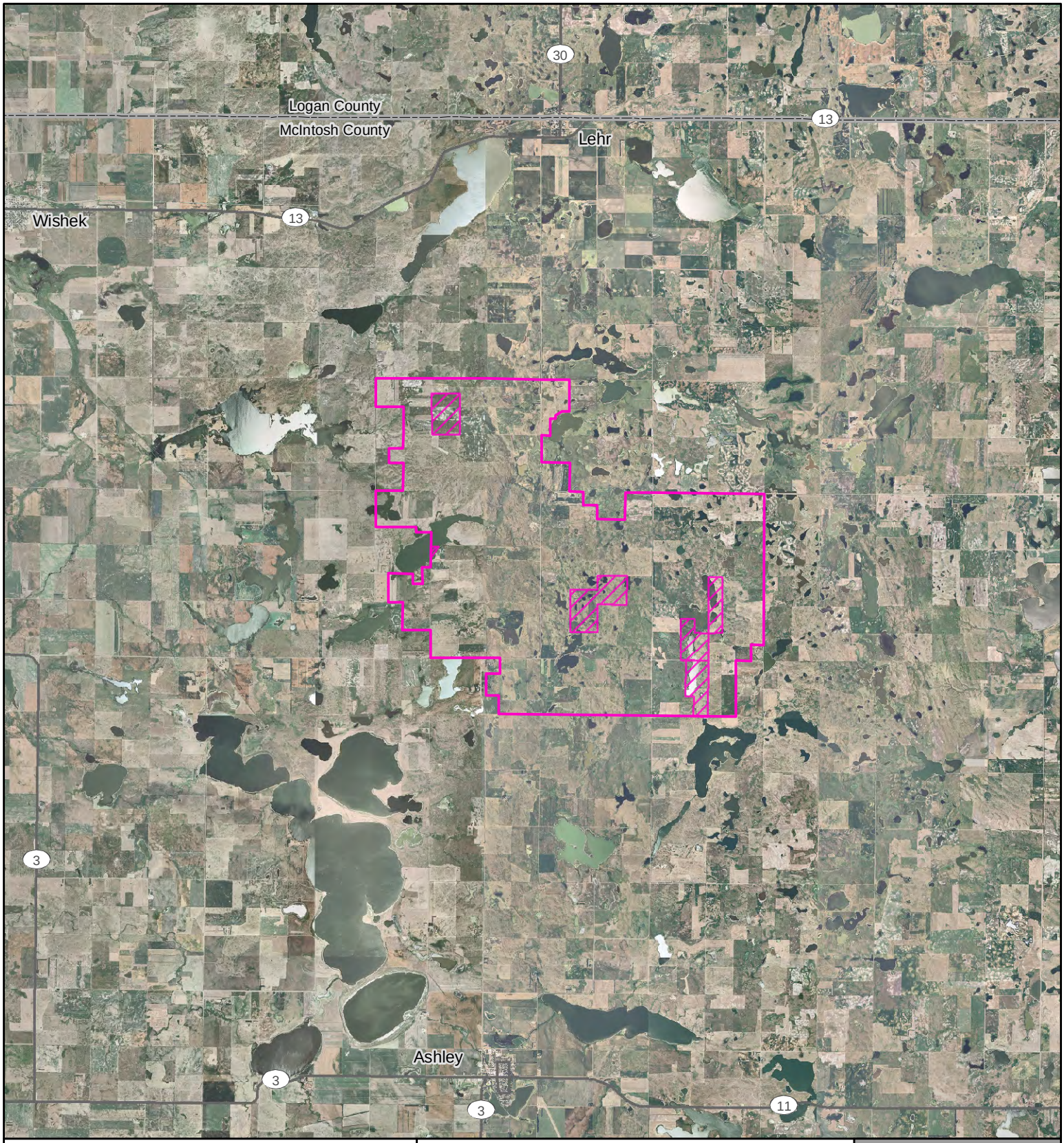
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

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0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. Paul Govig
Director
North Dakota Department of Commerce
Division of Community Services
1600 E. Century Ave., Suite 2
PO Box 2057
Bismarck, ND 58502-2057

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Govig:

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Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

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We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

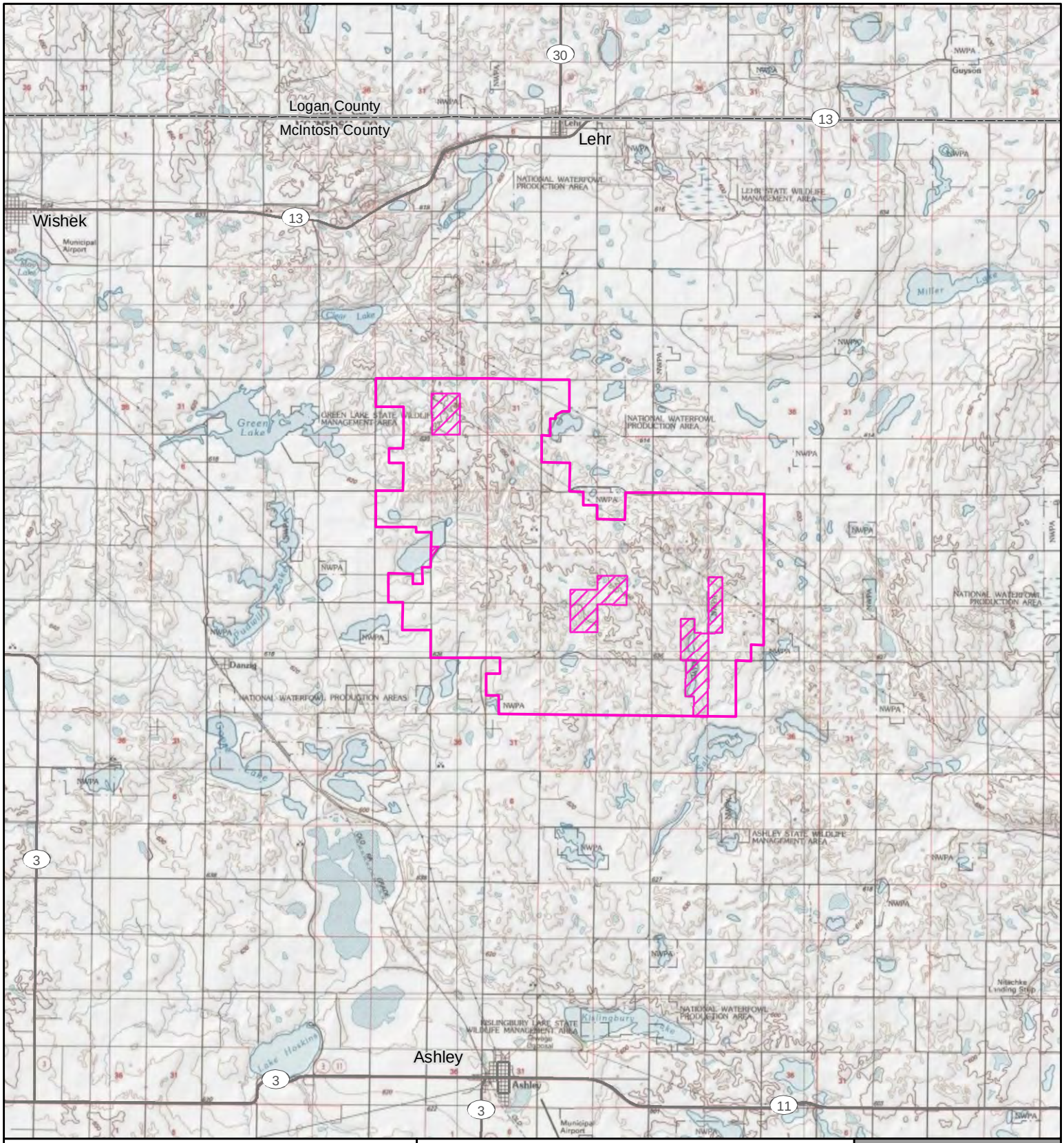
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

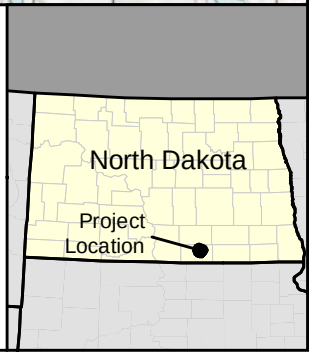
Non-Leased Area

N

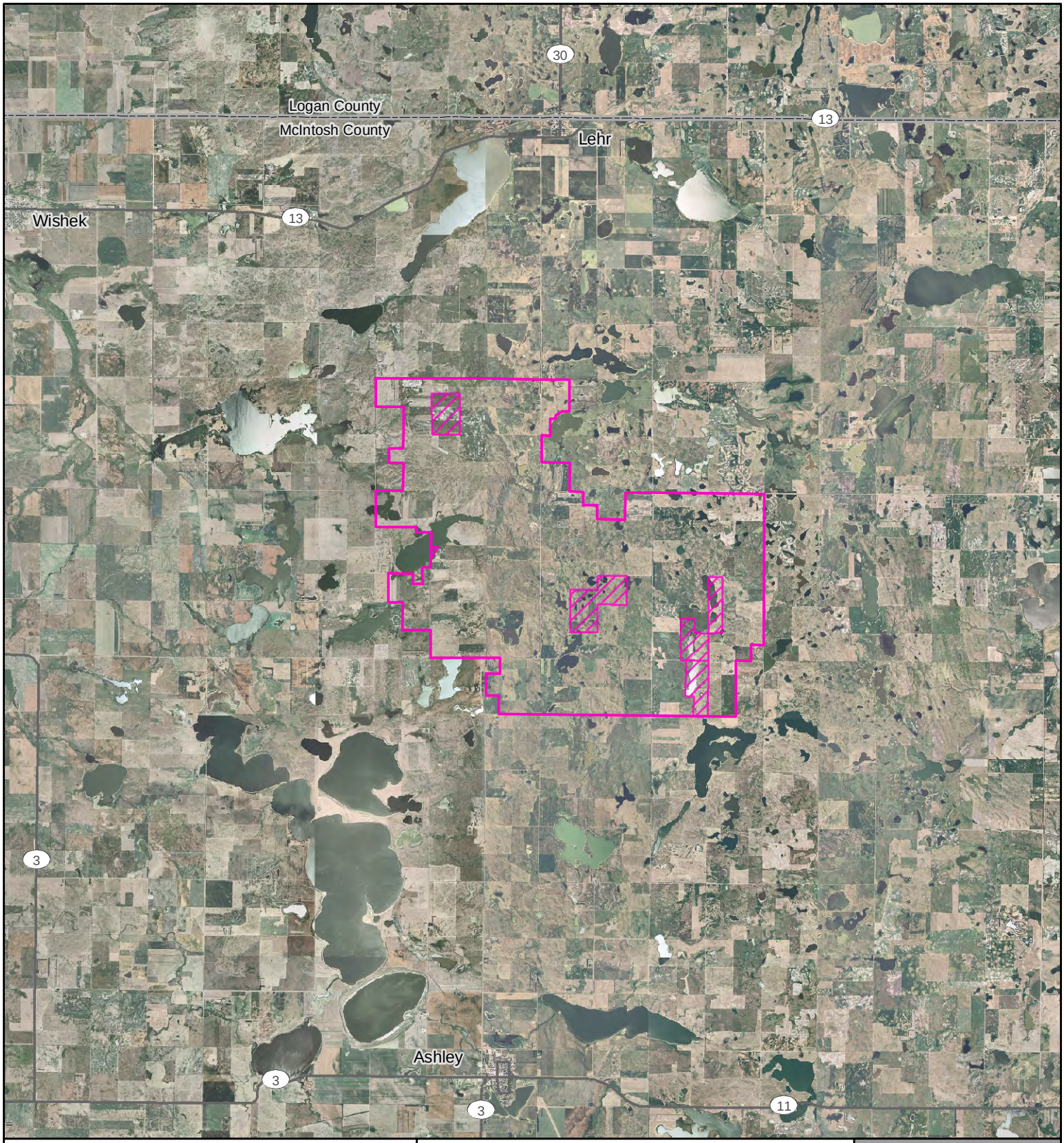
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. Paul Lucy
Director
North Dakota Department of Commerce
Economic Development & Finance Division
P.O. Box 2057
Bismarck, North Dakota 58502-2057

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Lucy:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota Department of Commerce, Economic Development & Finance Division to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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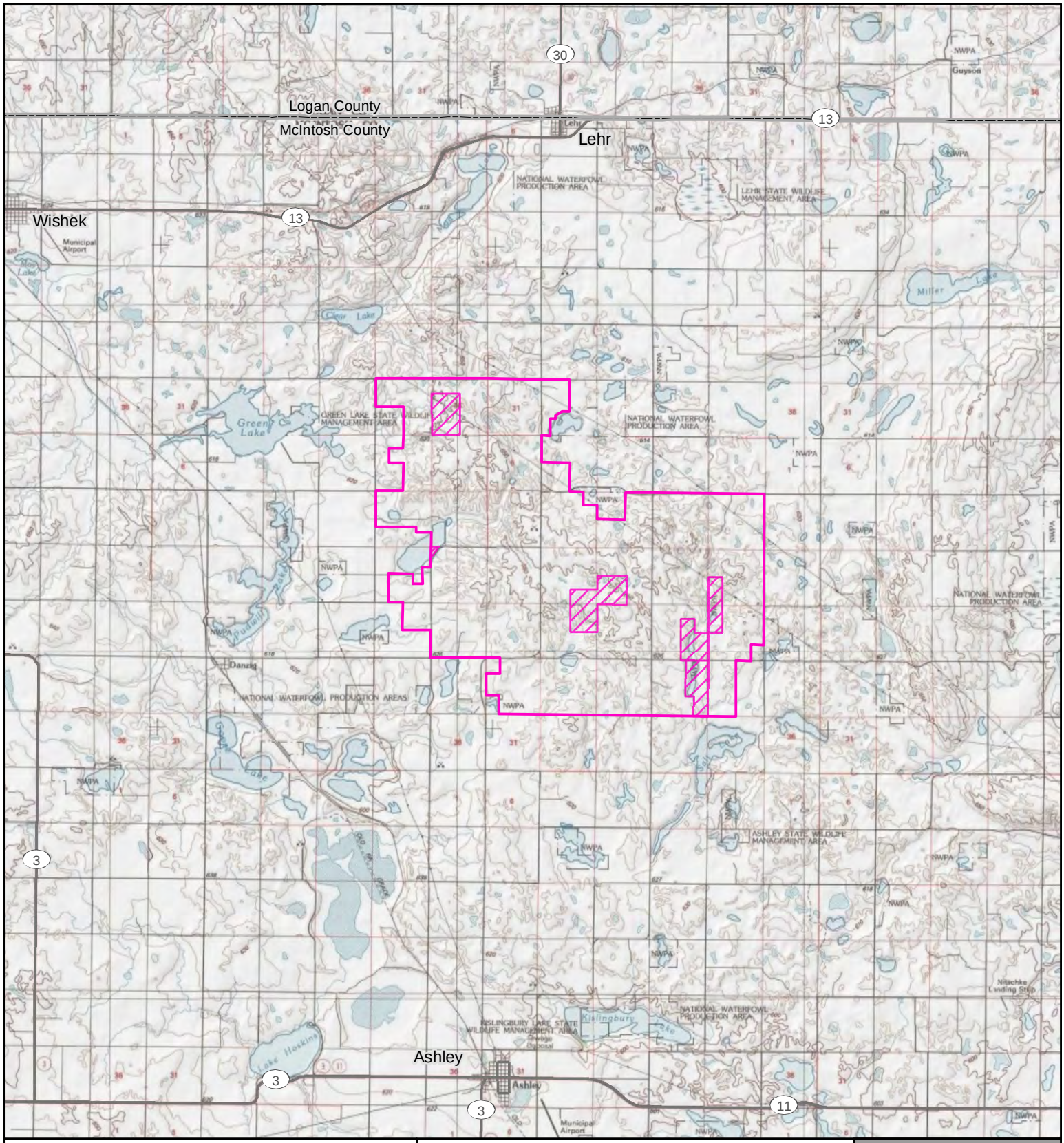
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

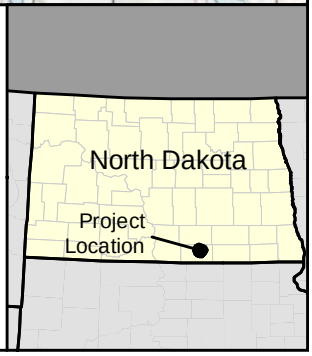
Non-Leased Area

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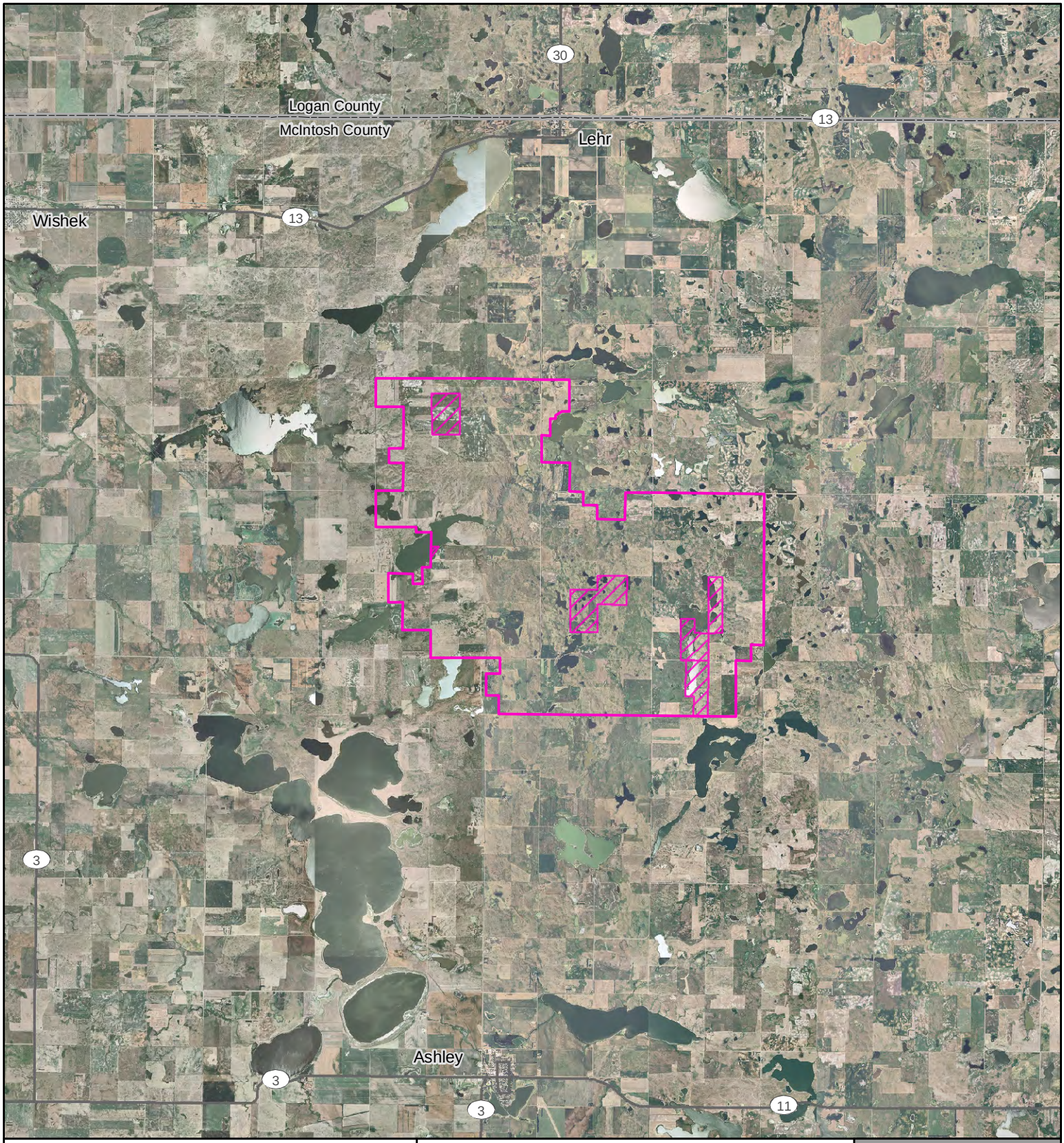
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Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Dr. Terry Dwelle, M.D., M.P.H.T.M.
State Health Officer
North Dakota Department of Health
600 E. Boulevard Ave.
Bismarck, North Dakota 58505-0200

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Dr. Dwelle:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota Department of Health to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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Respectfully submitted,

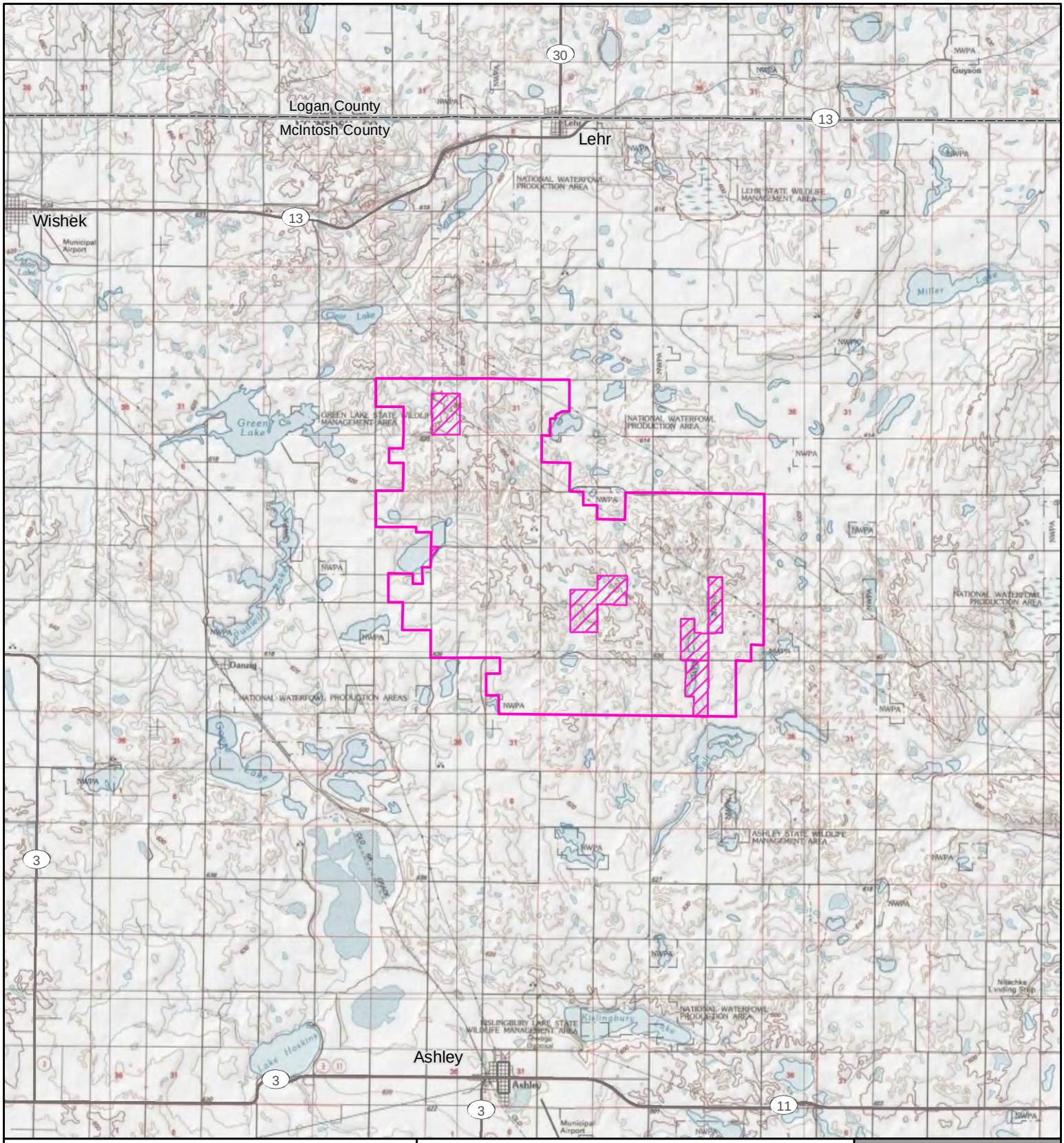
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

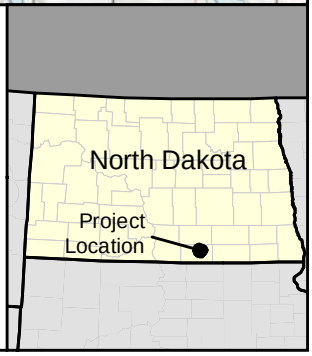
Non-Leased Area

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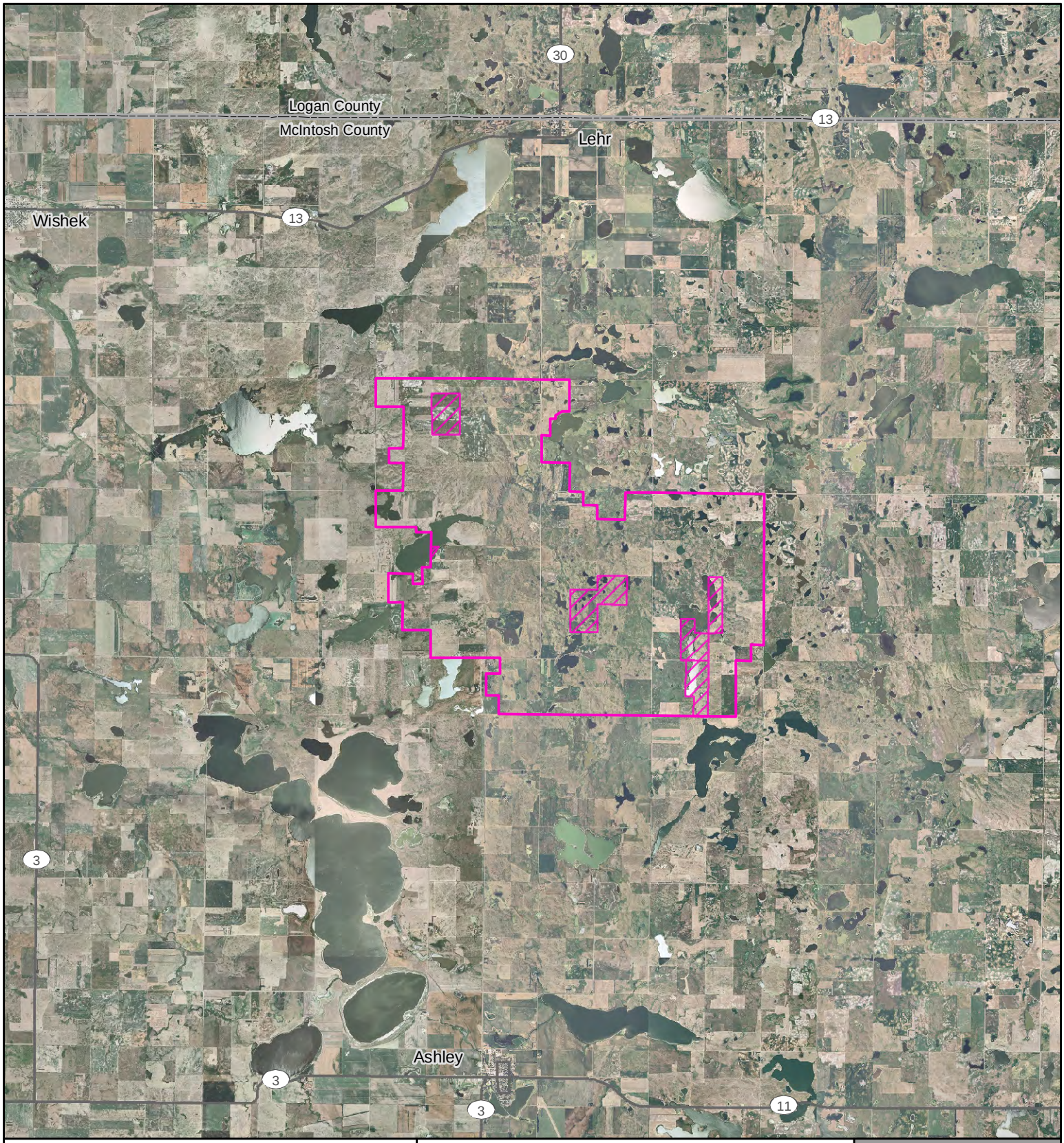
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Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

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McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

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0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

January 26, 2010

Ms. Erika J. Roberts
Tetra Tech EC, Inc.
133 Federal Street, 6th Floor
Boston, MA 02110

Re: Ashley Wind Energy Project, McIntosh County, North Dakota

Dear Ms. Roberts:

This department has reviewed the information concerning the above-referenced project submitted under date of January 8, 2010, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner.

2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.

3. Projects disturbing one or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. Further information on the storm water permit may be obtained from the Department's website or by calling the Division of Water Quality (701-328-5210). Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

4. Noise from construction activities may have adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is

equipped with a recommended muffler in good working order. Noise effects can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
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Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

TETRA TECH EC, INC.

January 8, 2010

Ms. Carol Olson
Executive Director
North Dakota Department of Human Services
600 E. Boulevard Ave., Dept. 325
Bismarck, North Dakota 58505-0250

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Ms. Olson:

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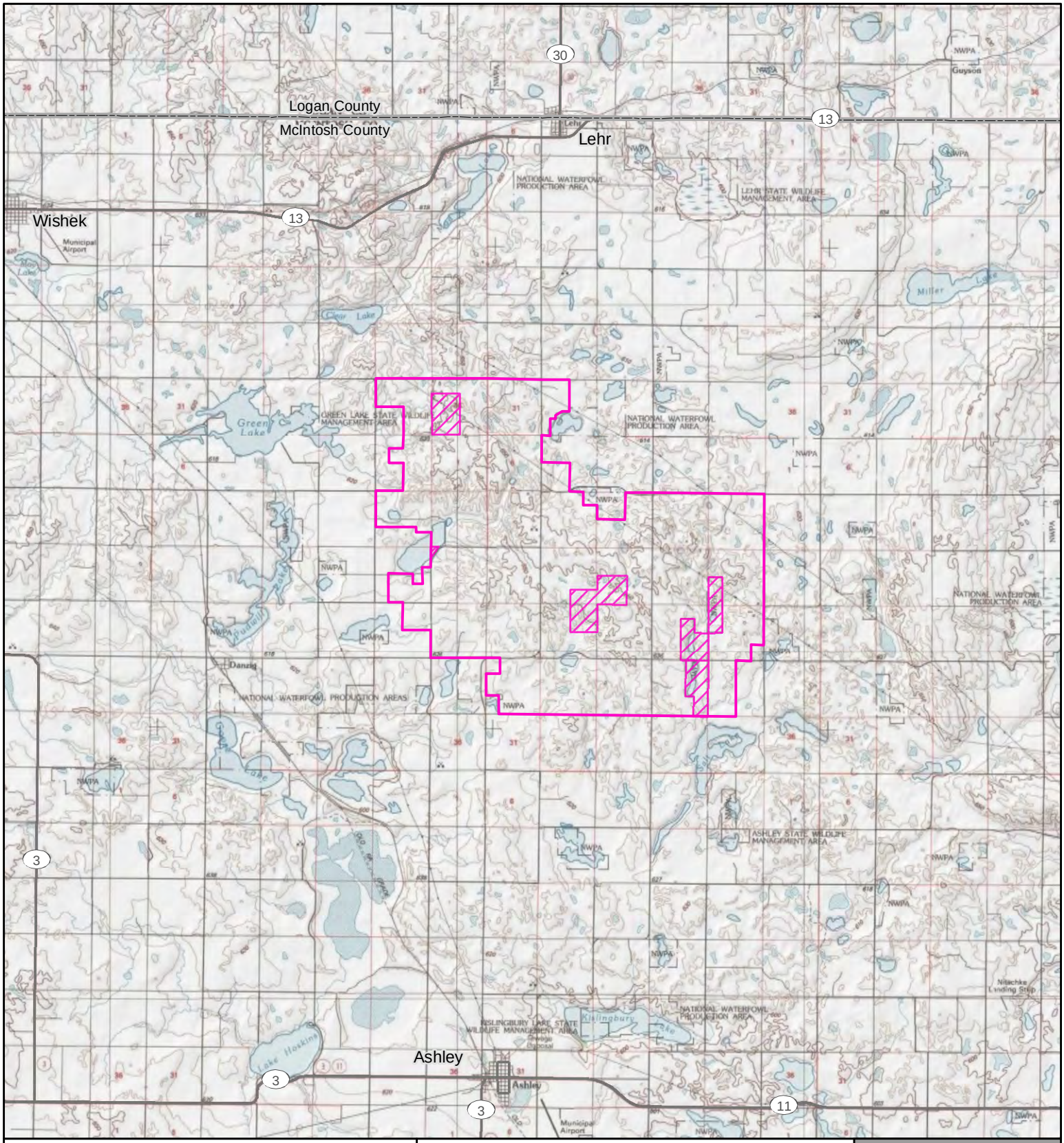
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Erika J. Roberts
Project Manager

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Competitive Power Ventures, Inc.

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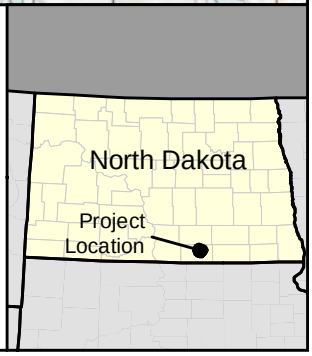
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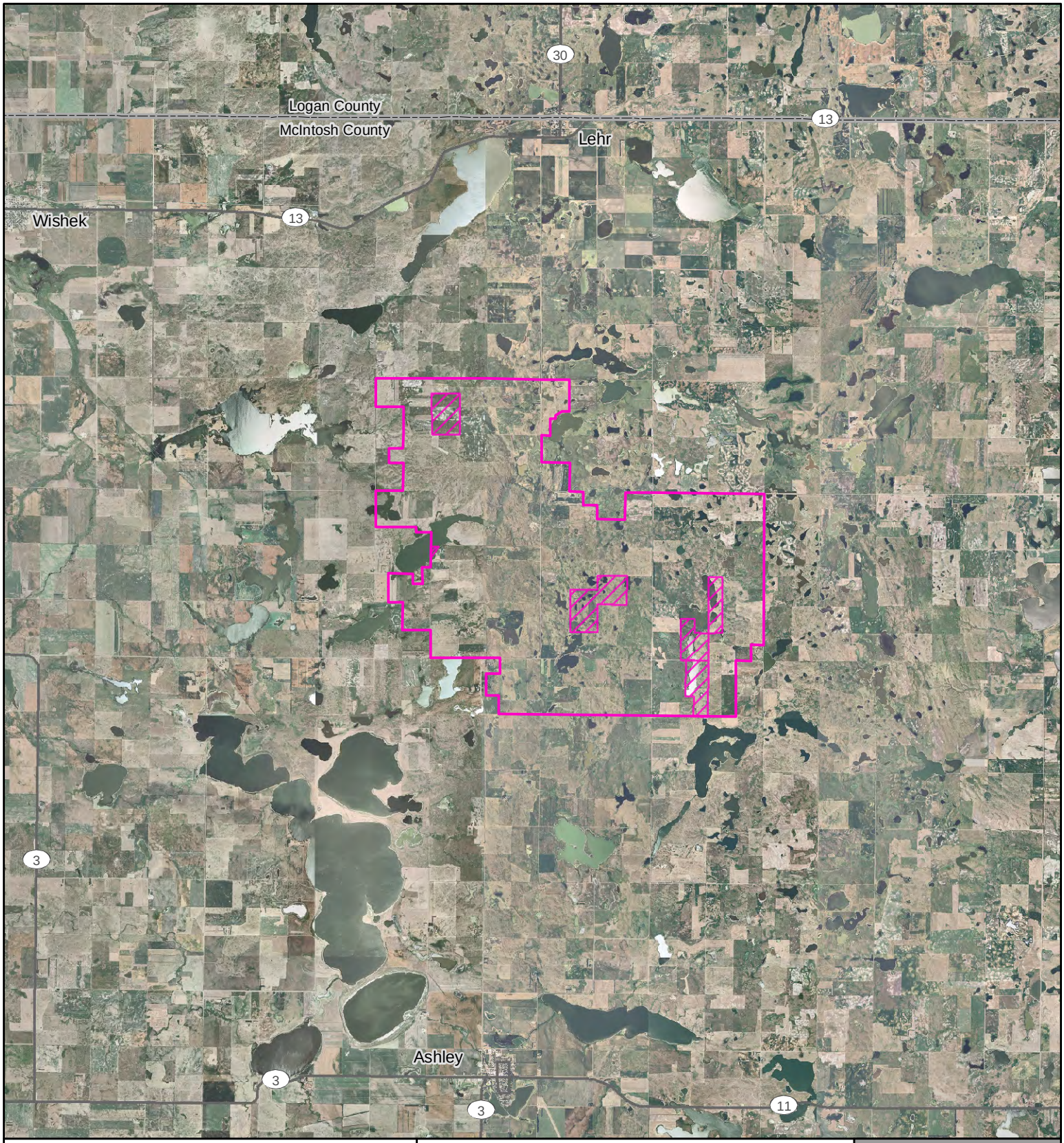
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

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0 2 4 Miles

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North Dakota

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TETRA TECH EC, INC.

January 8, 2010

Ms. Lisa Fair McEvers
Commissioner of Labor
North Dakota Department of Labor
600 E. Boulevard Ave., Dept. 406
Bismarck, North Dakota 58505-0340

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Ms. McEvers:

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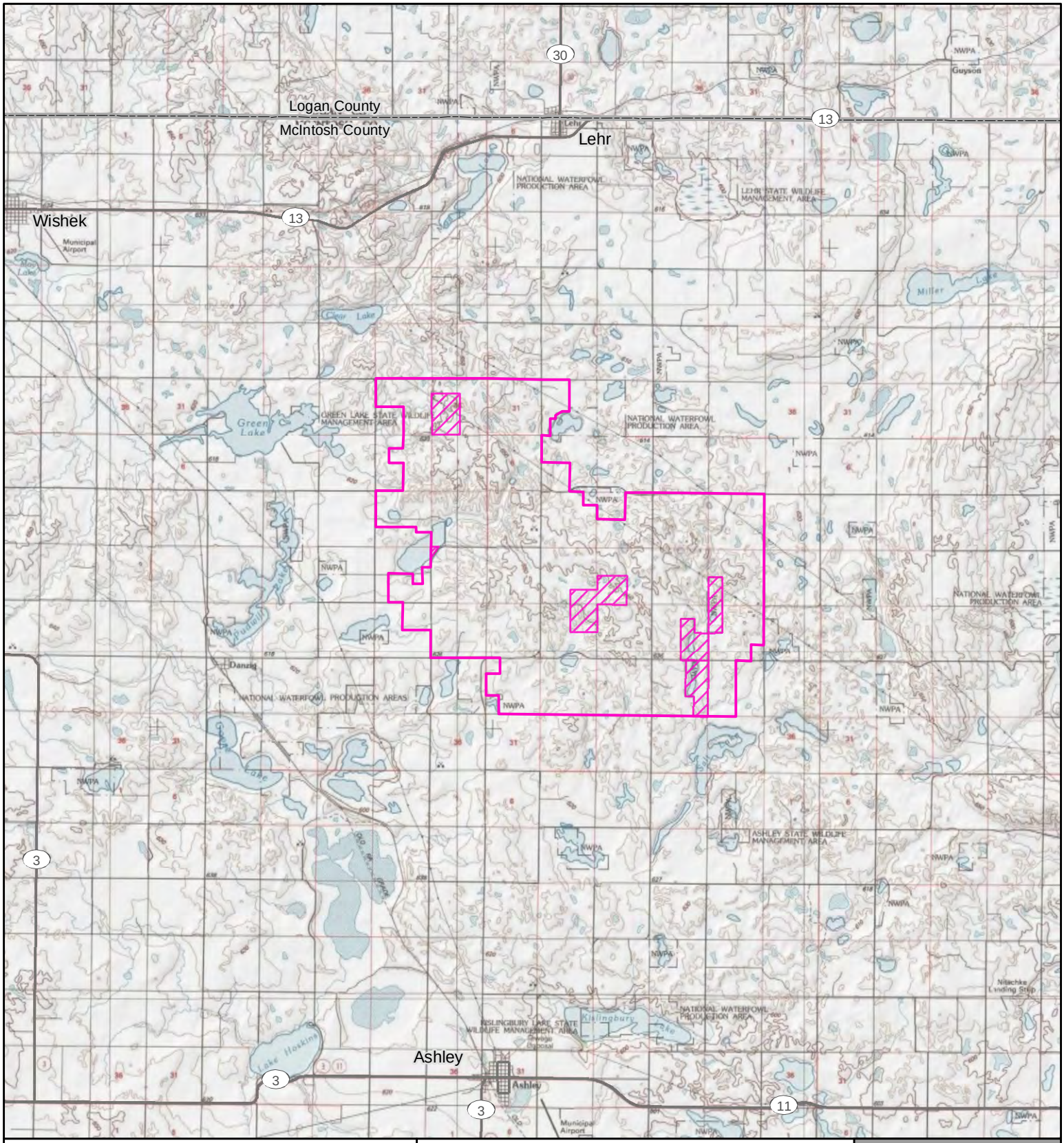
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Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

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McIntosh County, North Dakota

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TETRA TECH EC, INC.

Project Area

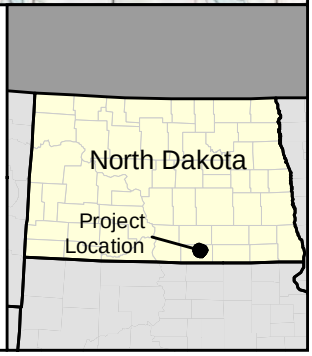
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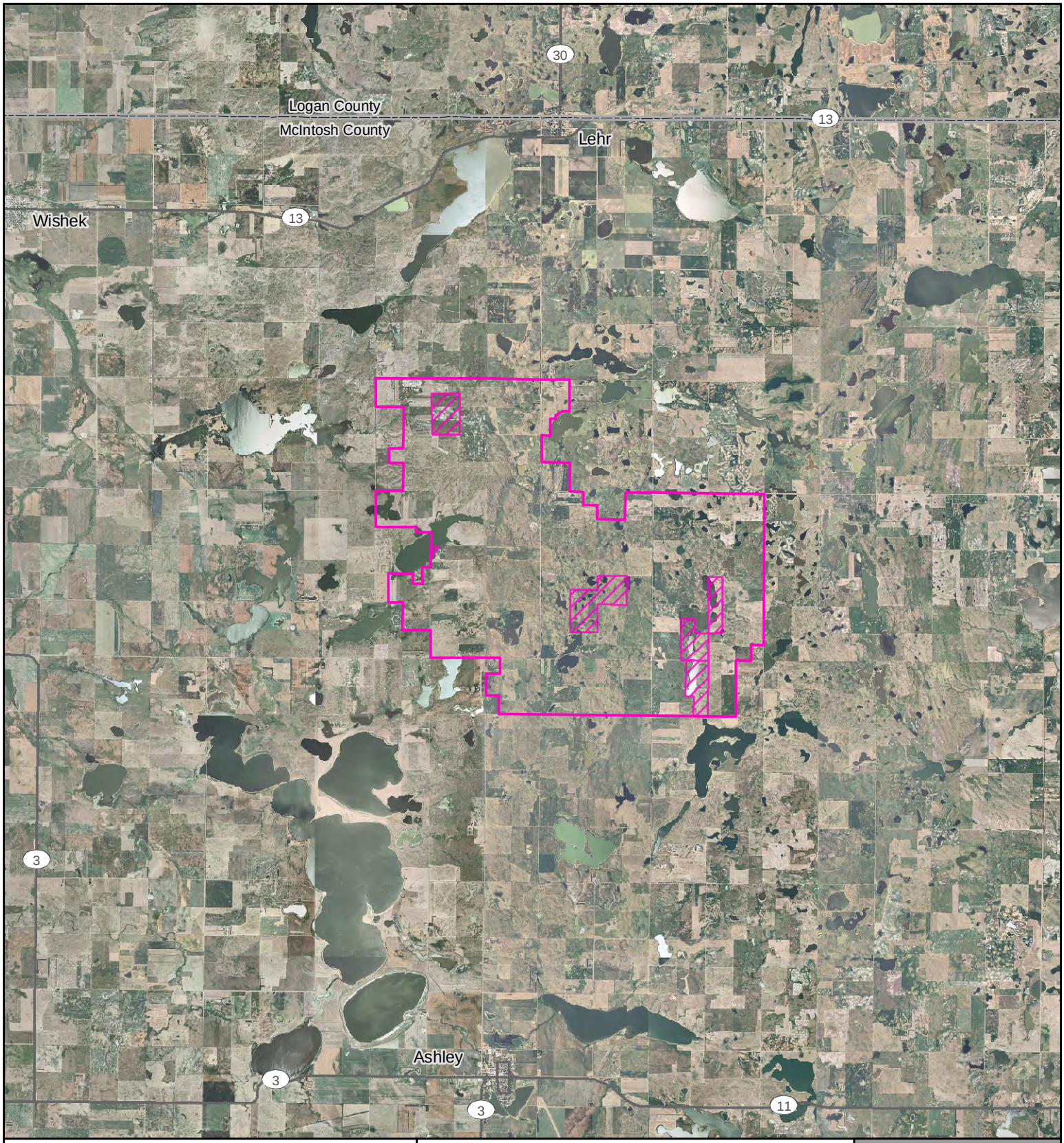
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Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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John Hoeven
Governor

Lisa K. Fair McEvers
Commissioner

NORTH DAKOTA
Department of
LABOR

State Capitol - 13th Floor
600 E Boulevard Ave Dept 406
Bismarck, ND 58505-0340

nd.gov/labor
nd.gov/humanrights

January 13, 2010

Ms. Erika J. Roberts
Tetra Tech, EC Inc.
133 Federal Street, 6th Floor
Boston, MA 02110

Re: Application to North Dakota Public Service Commission for Certificate of Site Compatibility for Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Ms. Roberts,

Thank you for your letter of January 8, 2010, inquiring about assistance in identifying concerns or issues relating to the project you described. The Department of Labor enforces wage and hours laws, investigates allegations of discrimination in employment, housing, public services, public accommodations and credit transactions.

The Department of Labor takes no position on your project, as I am unable to identify any concerns relating to the authority granted to the department.

Sincerely yours,

Lisa K. Fair McEvers
Commissioner

TETRA TECH EC, INC.

January 8, 2010

Ms. Sheri Lares
Environmental and Transportation Services Division
North Dakota Department of Transportation
608 E. Boulevard Ave.
Bismarck, ND 58505-0700

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Ms. Lares:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota Department of Transportation to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

The proposed Project has a planned commercial operation date in the 4th quarter of 2012 and would provide approximately 200 megawatts (MW) of wind energy capacity. It is expected that the selected turbine for the Project will range between 1.5 to 3.0 MW in generating capacity, 80 to 90 meters (m) in hub height, and 80 to 103 m in rotor diameter. In addition to the erection of wind turbines, the Project would involve: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an operation and maintenance building; construction of an electrical switchgear facility; erection of three to four 80 to 90 m tall permanent meteorological masts; and construction of an interconnection substation facility. A temporary construction staging and laydown area would also be used during the construction phase of the Project.

133 Federal Street, 6th Floor, Boston, MA 02110
Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

County	Township	Range	Sections
McIntosh	T131N	R69W	5-11, 14-23, 26-30
	T131N	R70W	1, 2, 11-14, 23, 24
	T132N	R69W	31, 32
	T132N	R70W	35, 36

We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

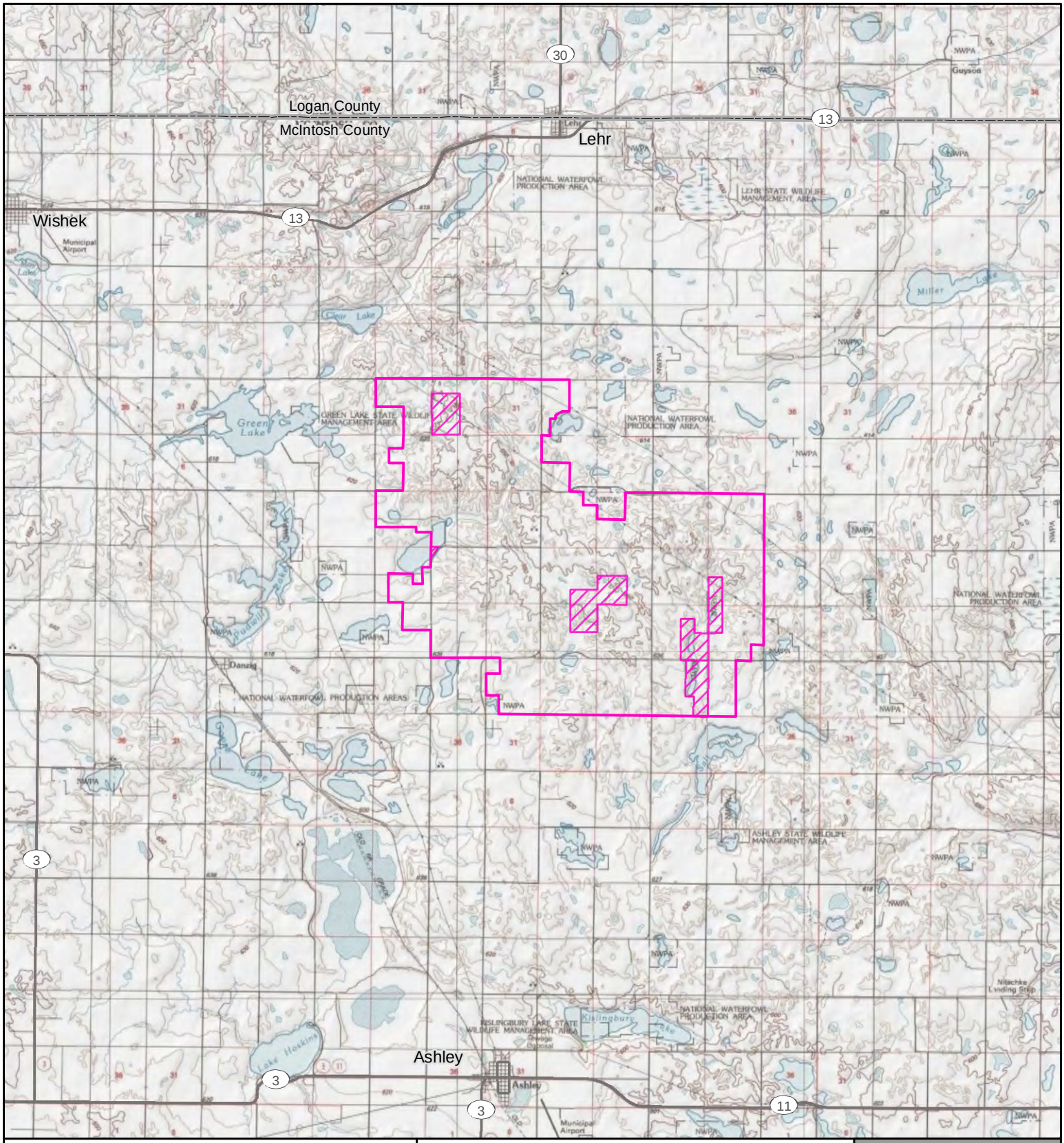
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

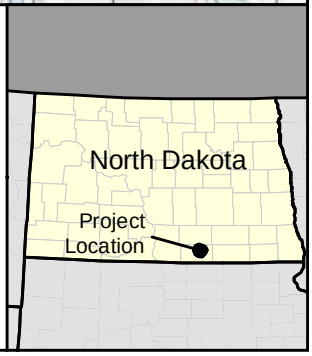
Non-Leased Area

N

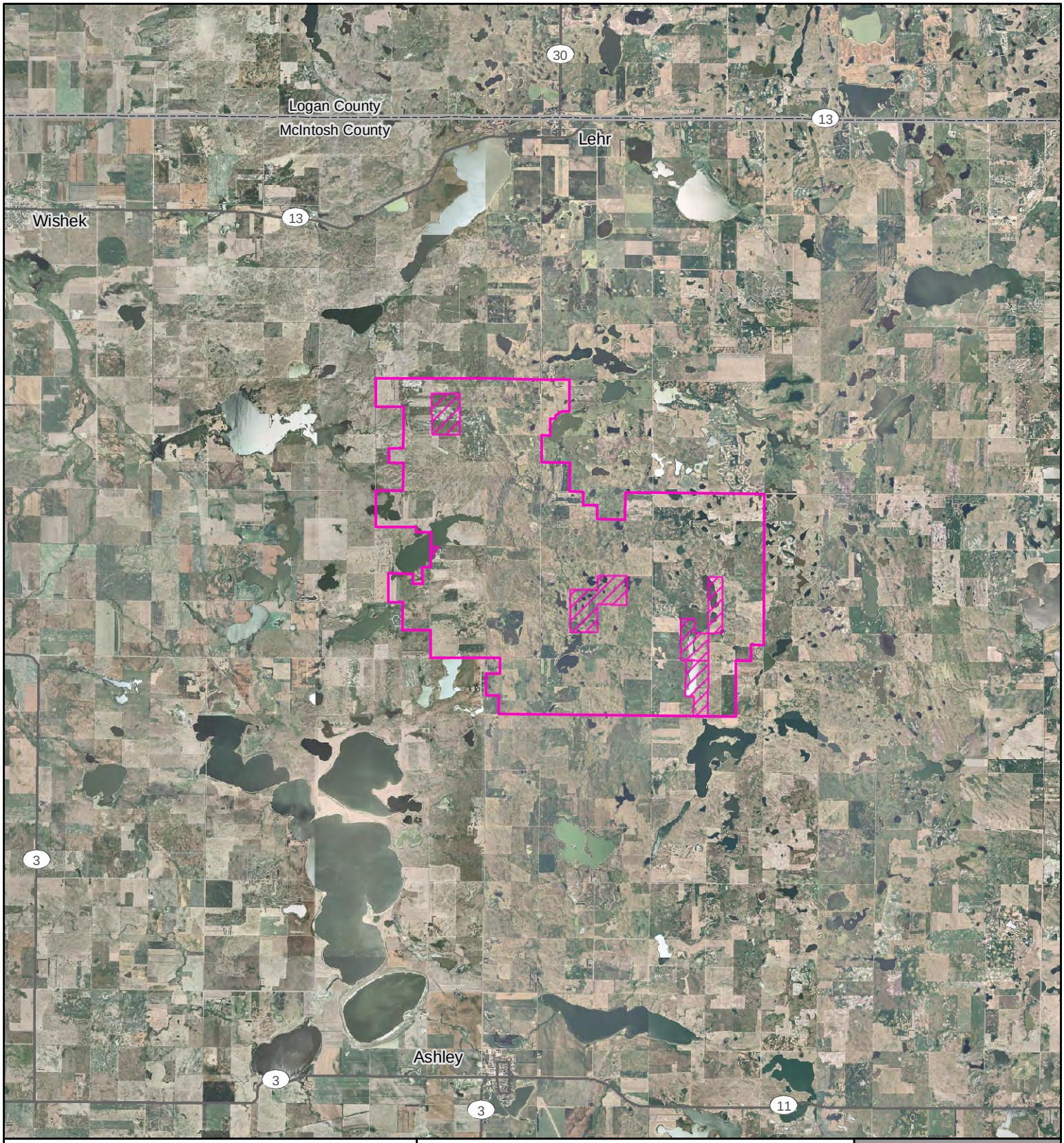
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Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

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Scale 1:150,000

North Dakota

Project Location

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North Dakota Department of Transportation

Francis G. Ziegler, P.E.
Director

John Hoeven
Governor

January 21, 2010

Erika J. Roberts, Project Manager
Tetra Tech EC, Inc.
133 Federal Street – 6th Floor
Boston, MA 02110

ASHLEY WIND ENERGY PROJECT, MCINTOSH COUNTY, NORTH DAKOTA

We have reviewed your January 8, 2010, letter.

North Dakota Highway 13 between Wishek and Lehr is scheduled for reconstruction during 2011 and 2012. The highway reconstruction project may prevent movement of over dimensional loads through the project during this time period. If it is necessary to cross a state highway with a power line, utility permits will need to be obtained.

Additionally, if because of this project any work needs to be done on highway right-of-way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineers, John Thompson at 701-845-8800 and Robert Walton at 701-239-8903.

RONALD J. HENKE, P.E - DIRECTOR, OFFICE OF PROJECT DEVELOPMENT

57:rjh:js

c: John Thompson, Valley City District Engineer
Bob Walton, Fargo District Engineer

TETRA TECH EC, INC.

January 8, 2010

Mr. John Schumacher
Conservation Biologist
North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58501-5095

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Schumacher:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota Game and Fish Department to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

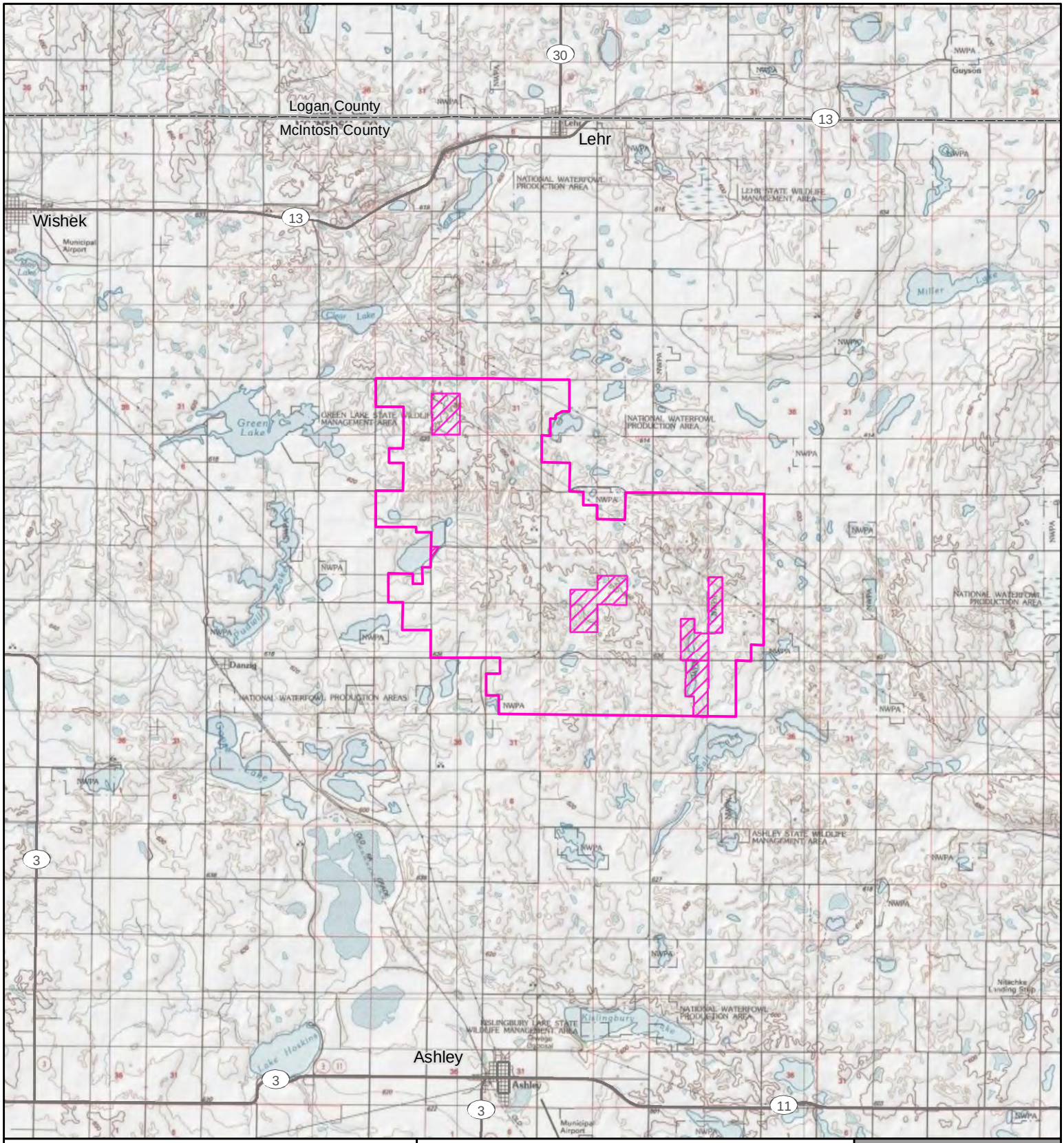
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

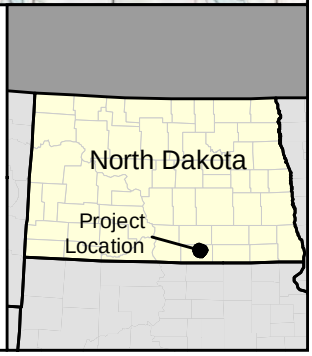
Non-Leased Area

N

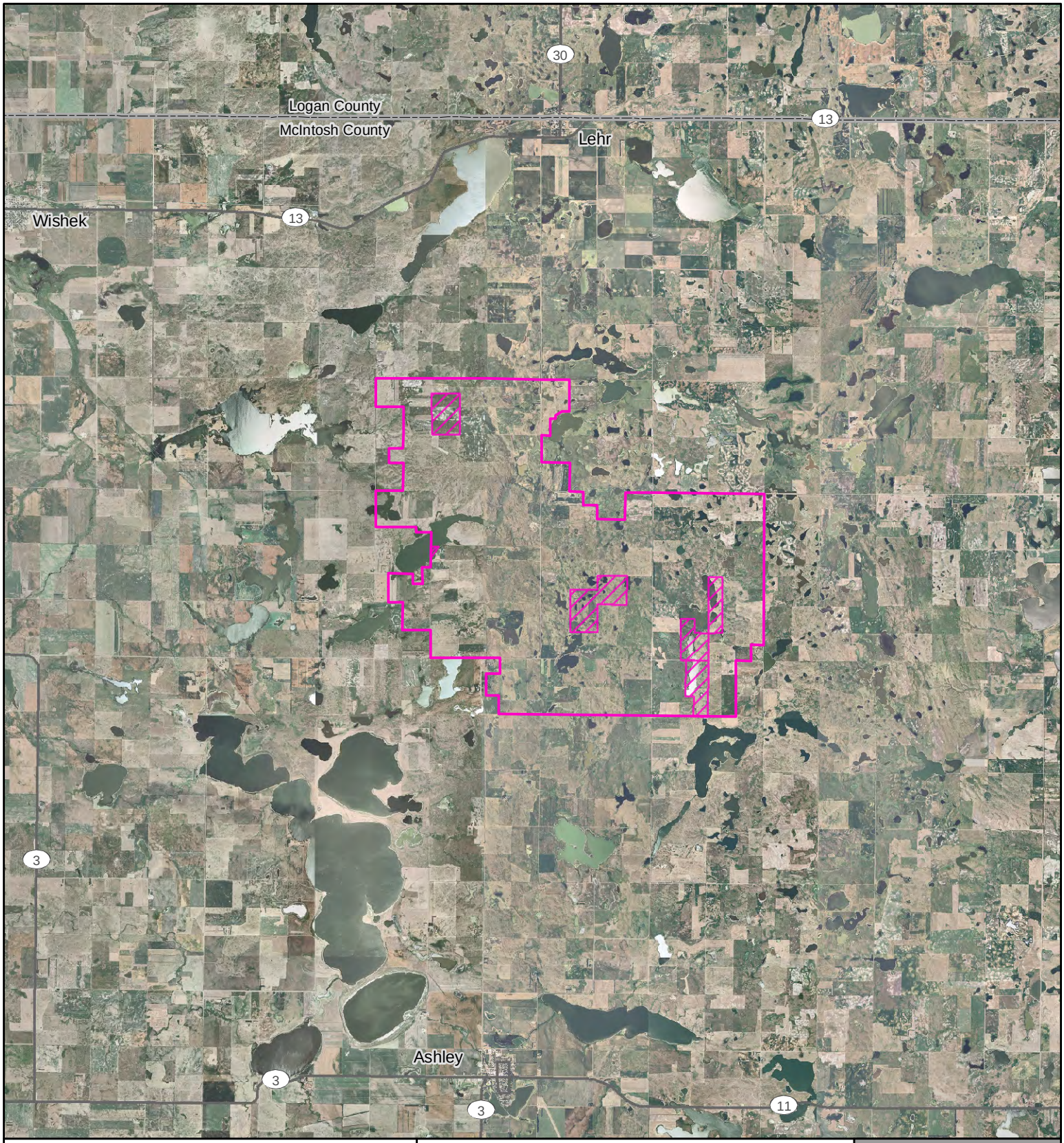
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. Edward Murphy
State Geologist
North Dakota Geological Survey
600 E. Boulevard Ave.
Bismarck, North Dakota 58505-0840

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Murphy:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota Geological Survey to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

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We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

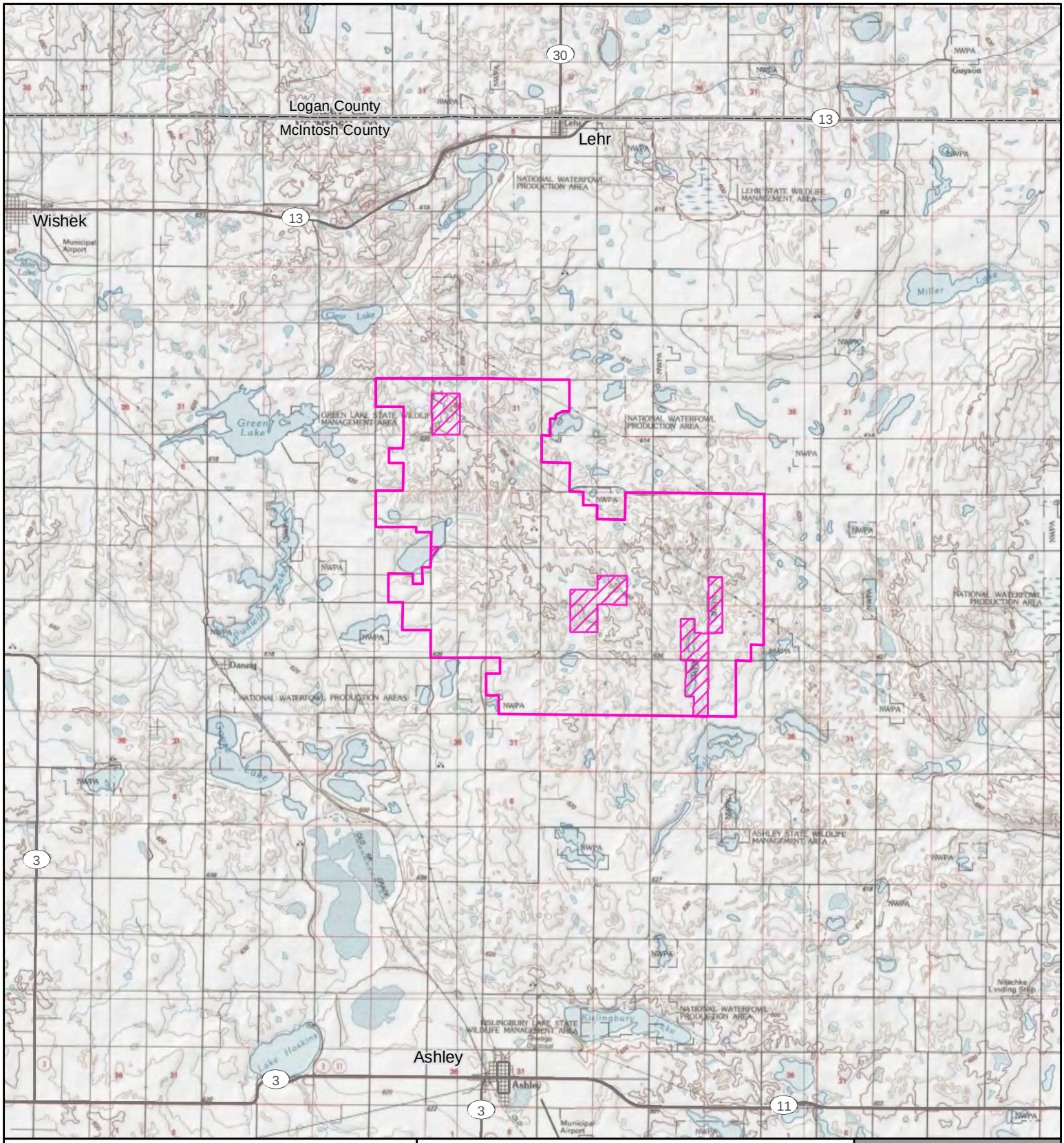
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

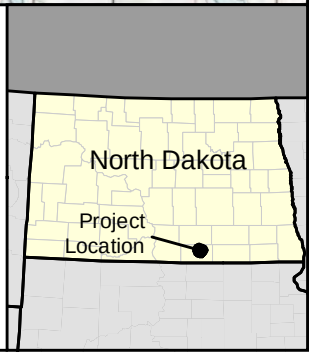
Non-Leased Area

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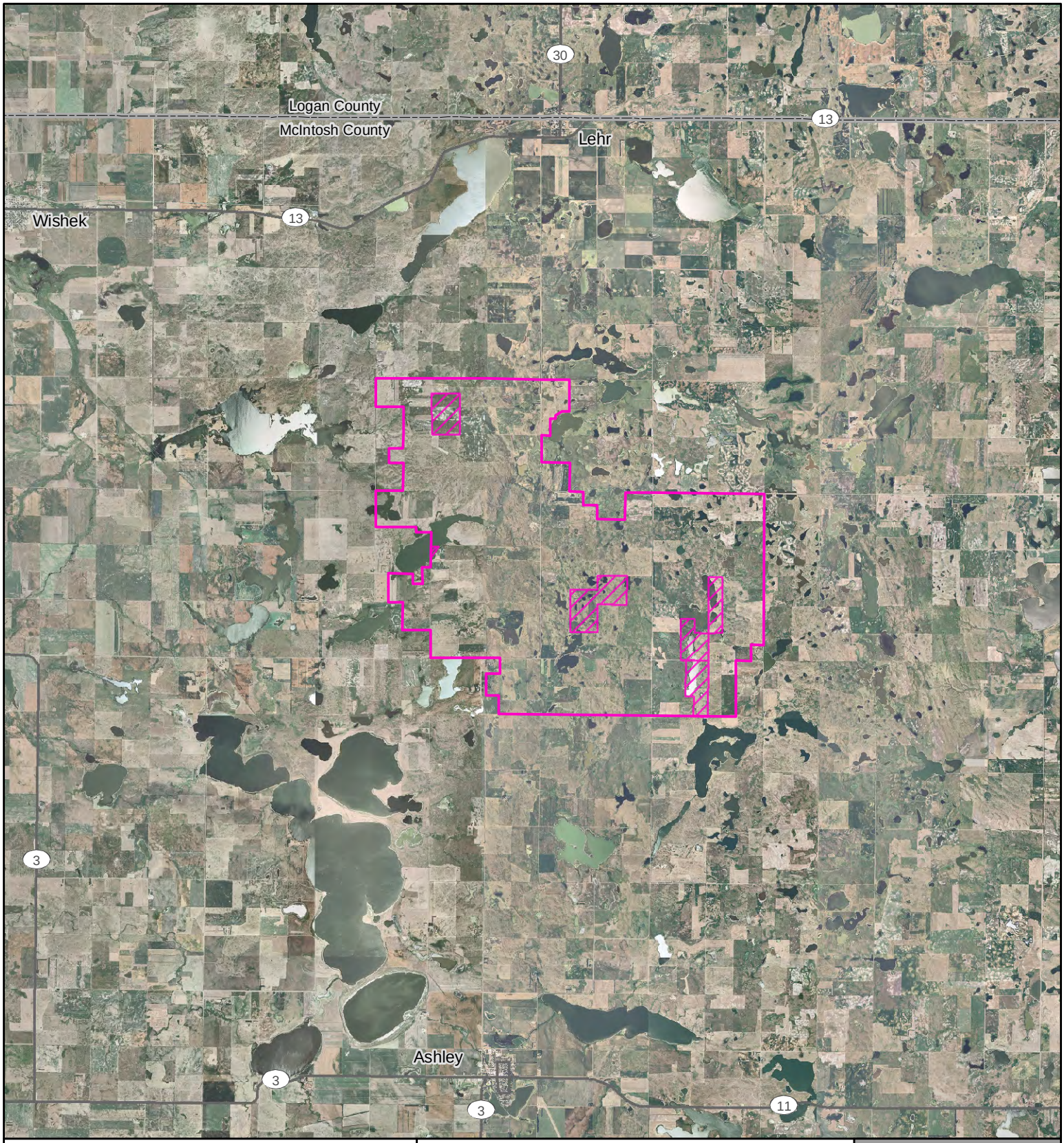
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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North Dakota Geological Survey

Edward C. Murphy - State Geologist

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

https://www.dmr.nd.gov/ndgs/

Erika J. Roberts
Project Manager
Tetra Tech EC, Inc.
133 Federal Street, 6th Floor
Boston, MA 02110

January 12, 2010

Dear Ms. Roberts,

Re: Ashley Wind Energy Project
McIntosh County, North Dakota

In response to your letter of January 8, 2010 concerning a Notice of Intent to obtain a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota, I am writing to apprise you of geologic information available through the North Dakota Geological Survey that may be of interest to you. I also wish to advise you that no permits will be required by the North Dakota Geological Survey for this project.

The surface geology of McIntosh County has been mapped in its entirety on an approximately 1:125,000 scale as part of the ND State Water Commission's County Ground Water Studies program (Clayton, Lee, 1962, Glacial Geology of Logan and McIntosh Counties, North Dakota: North Dakota Geological Survey Bulletin 37, 84 p.). Hydrologic data for McIntosh County, including lithologic logs of test holes and wells are also available in parts II and III of Bulletin 73 in the same series. All this information is available in paper format from the NDGS offices in Bismarck, and also online at http://www.swc.state.nd.us.

Surface materials within the entire project area consist of up five hundred feet of Pleistocene glacial sediments overlying marine shale of the Cretaceous-age Pierre Formation. The area is characterized by a hilly landscape of end moraine ridges and collapsed glacial sediment (till, glaciofluvial and glaciolacustrine) interspersed with numerous sloughs and small lakes.

If you are interested in any of this information or have questions please let me know. I can be reached at the Survey offices on 701 328 8000 or by e-mail at lmanz@nd.gov.

Sincerely,

Lorraine A. Manz, Ph.D.
Geologist

TETRA TECH EC, INC.

January 8, 2010

Mr. Scott Davis
Executive Director
North Dakota Indian Affairs Commission
State Capitol Building
600 E. Boulevard Ave.
1st Floor, Judicial Wing - Room #117
Bismarck, ND 58505

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Davis:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota Indian Affairs Commission to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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Respectfully submitted,

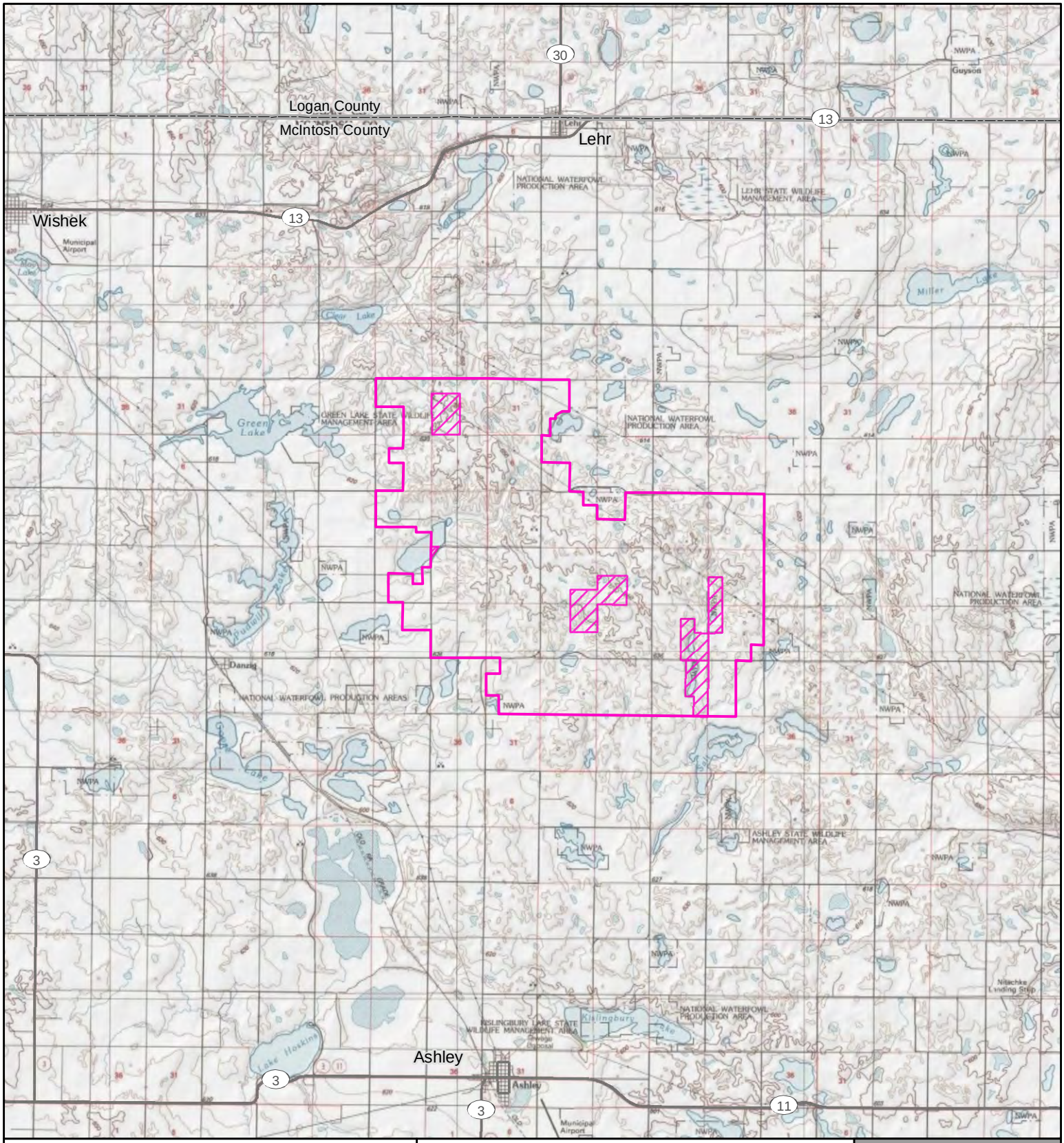
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

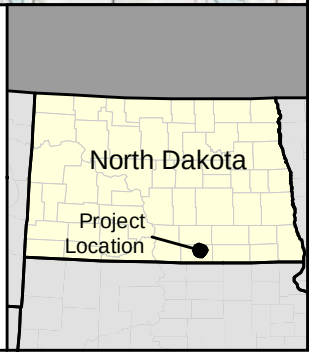
Non-Leased Area

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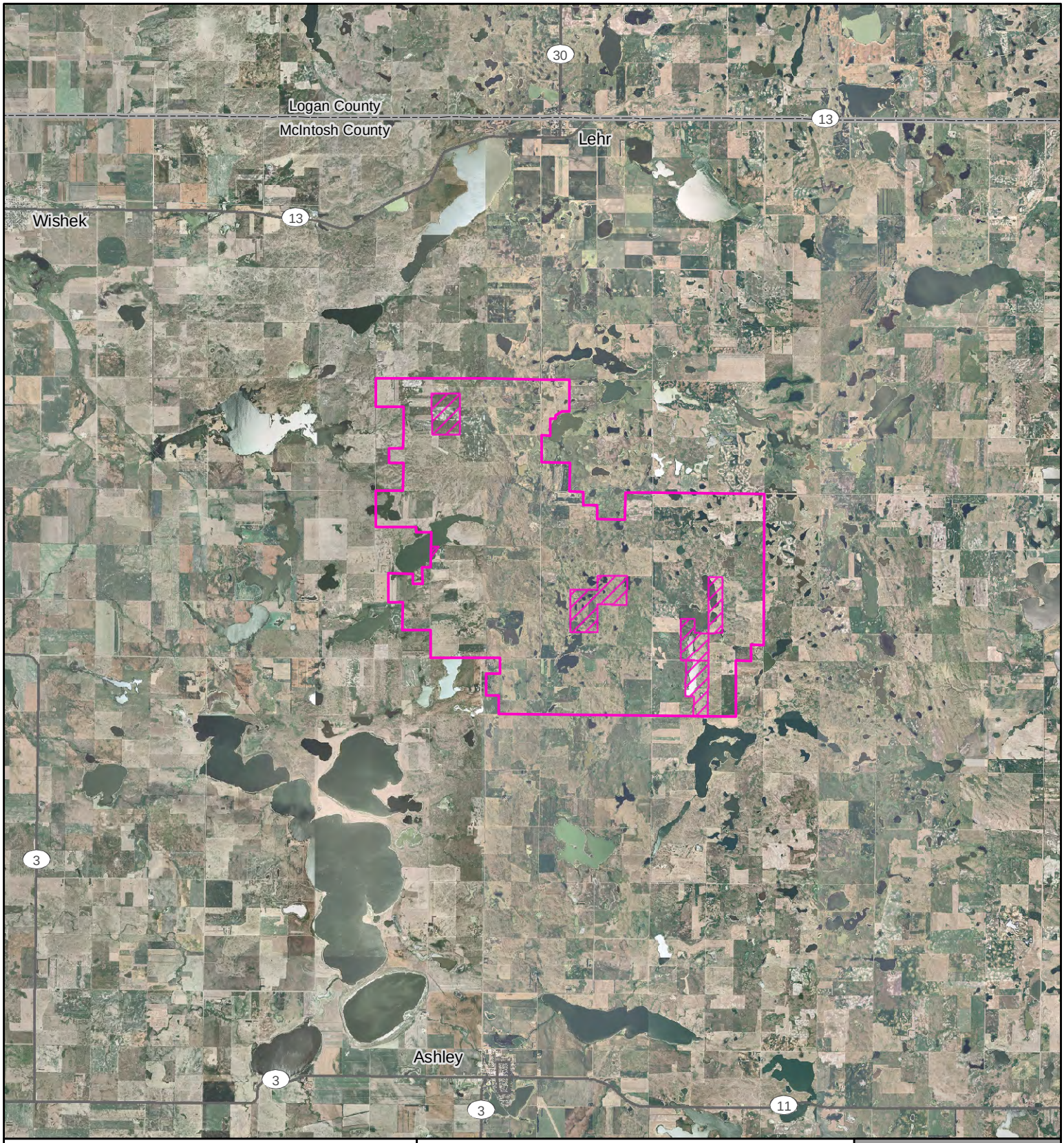
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Source: USGS 24k Quads, 1985.

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North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Ms. Pam Sharp
Director
North Dakota Office of Management and Budget
600 E. Boulevard Ave., Dept. 110
Bismarck, ND 58505-0400

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Ms. Sharp:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota Office of Management and Budget to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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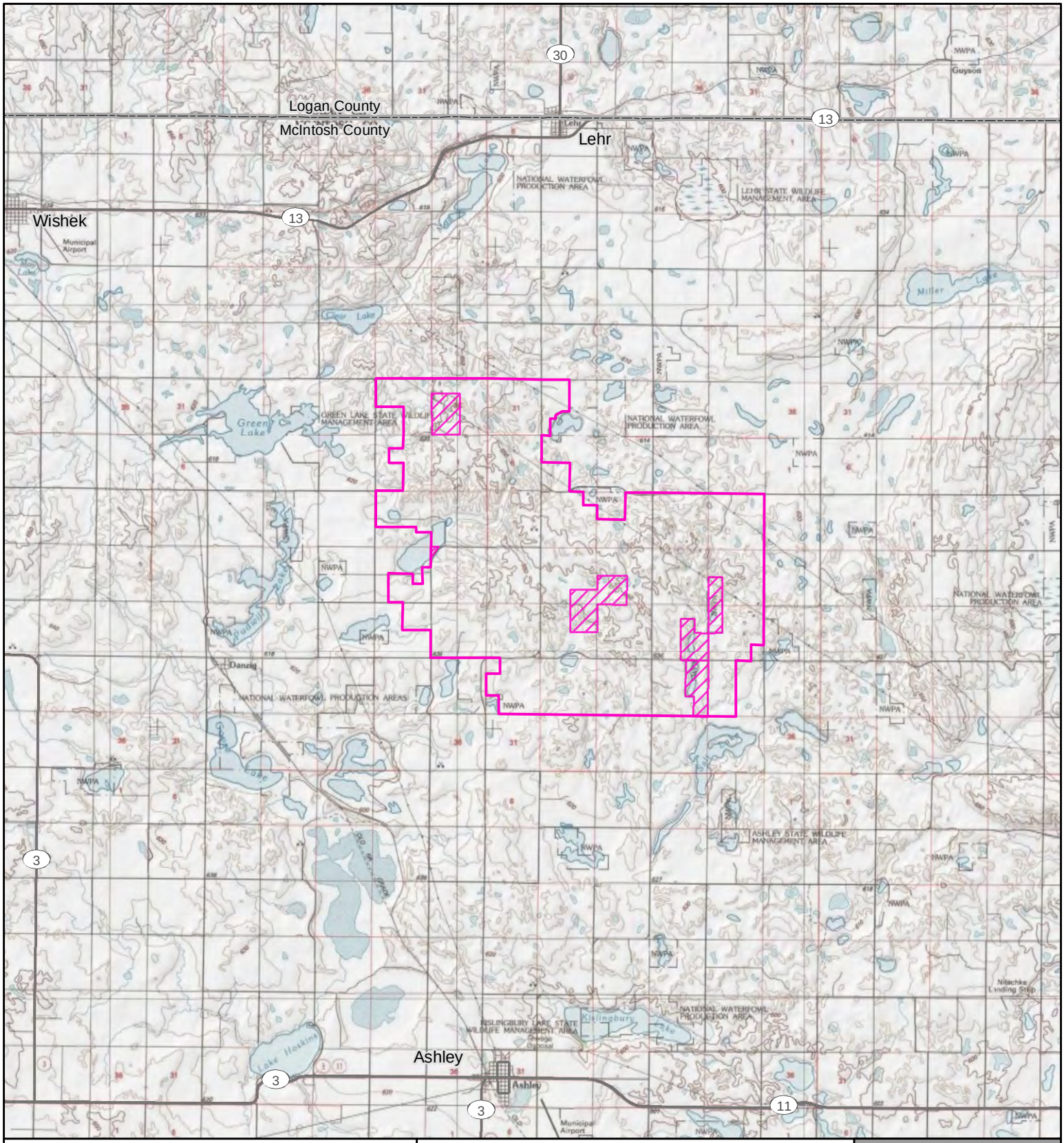
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

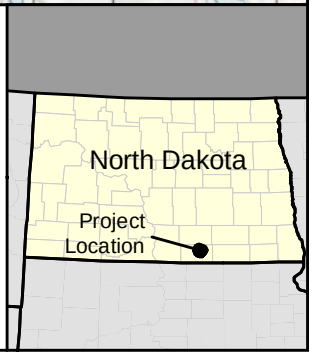
Non-Leased Area

N

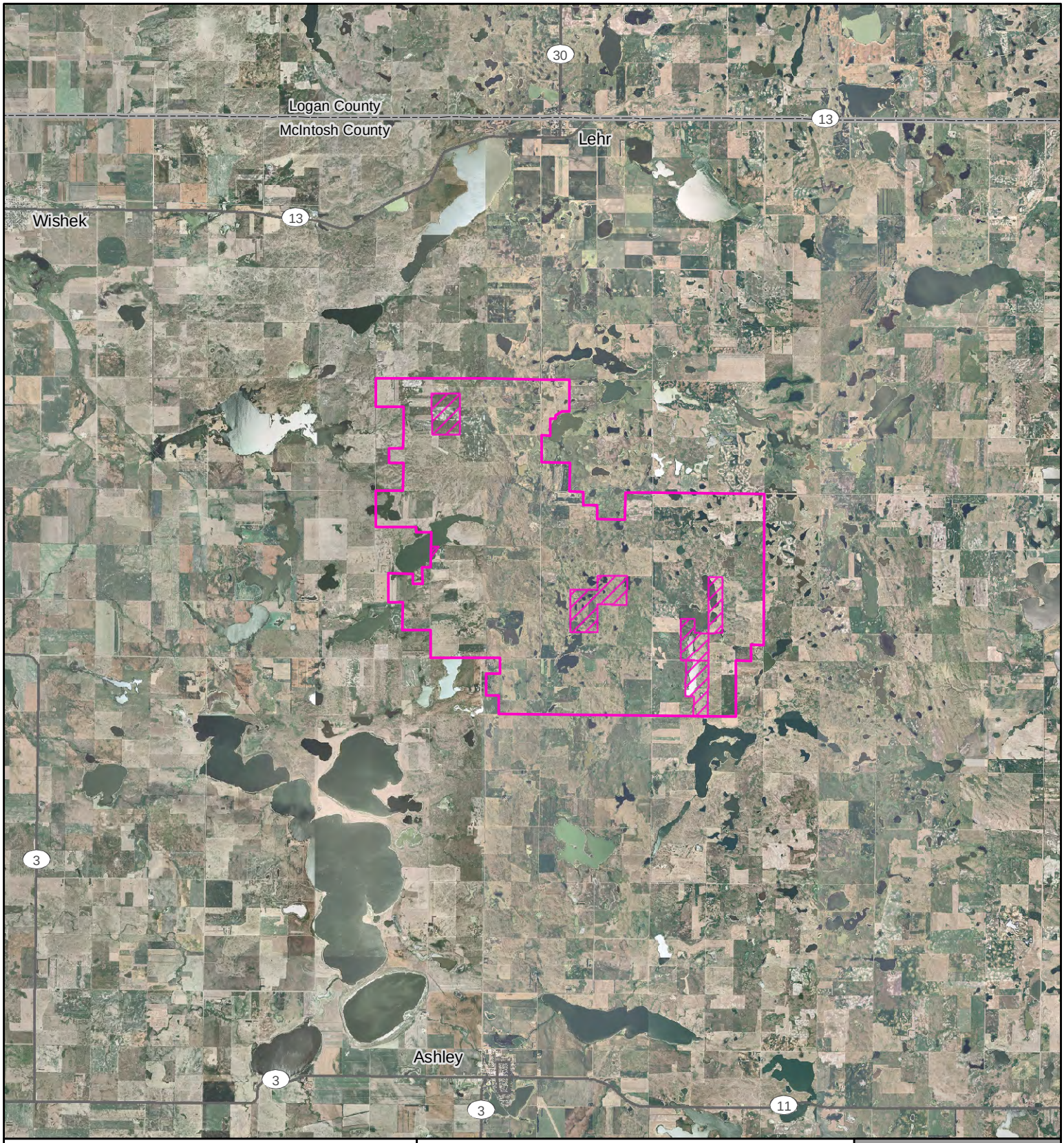
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. Douglass Prchal
Director
North Dakota Parks and Recreation Department
1600 E. Century Ave, Suite 3
Bismarck, ND 58503-0649

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Prchal:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota Parks and Recreation Department to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

The proposed Project has a planned commercial operation date in the 4th quarter of 2012 and would provide approximately 200 megawatts (MW) of wind energy capacity. It is expected that the selected turbine for the Project will range between 1.5 to 3.0 MW in generating capacity, 80 to 90 meters (m) in hub height, and 80 to 103 m in rotor diameter. In addition to the erection of wind turbines, the Project would involve: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an operation and maintenance building; construction of an electrical switchgear facility; erection of three to four 80 to 90 m tall permanent meteorological masts; and construction of an interconnection substation facility. A temporary construction staging and laydown area would also be used during the construction phase of the Project.

133 Federal Street, 6th Floor, Boston, MA 02110
Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

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McIntosh	T131N	R69W	5-11, 14-23, 26-30
	T131N	R70W	1, 2, 11-14, 23, 24
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We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

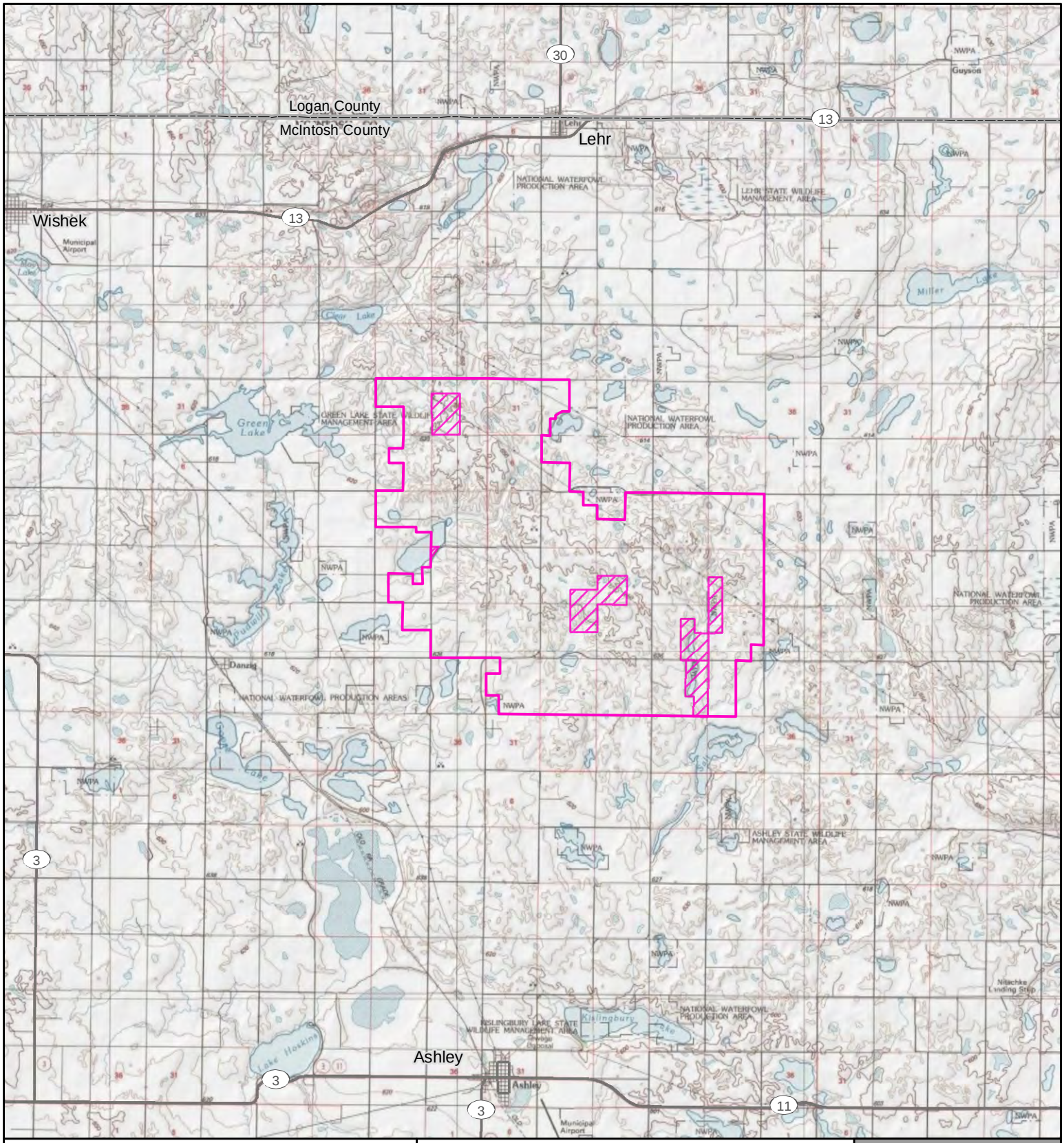
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

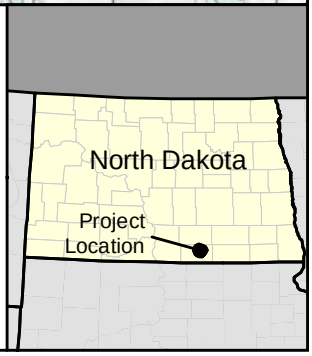
Non-Leased Area

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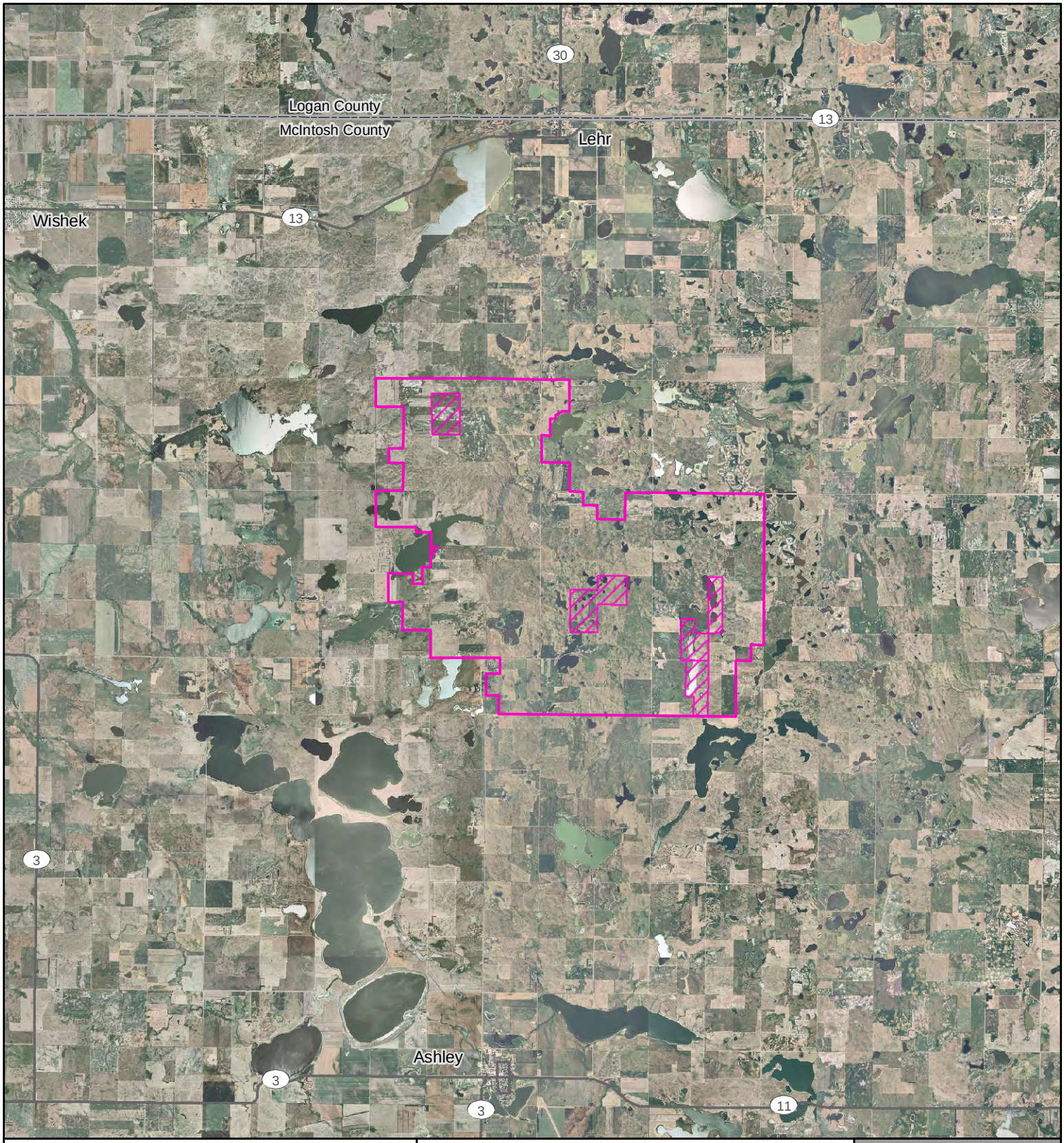
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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

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0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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John Hoeven, Governor
Douglass A. Prchal, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

January 29, 2010

Erika J. Roberts
Tetra Tech EC, Inc.
133 Federal Street, 6th Floor
Boston, MA 02110

Re: Ashley Wind Energy Project

Dear Ms. Roberts:

The North Dakota Parks and Recreation Department (NDPRD) has reviewed the above referenced project proposal to develop a wind energy project located in Sections 5-11, 14-23, and 26-30, T131N, R69W; Sections 1, 2, 11-14, 23, and 24, T131N, R70W; Sections 31 and 32, T132N, R69W; and Sections 35 and 36, T132N, R70W; McIntosh County.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare species and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.

The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any current or historic plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, we do have records for the occurrence of *Charadrius melodus* (piping plover) in a section adjacent to the project area indicating that the habitat in the project area may be suited for this specie or other rare, threatened, sensitive or endangered species. Please see the attached spreadsheet and map for more information on this occurrence. We defer further comments regarding animal species to the North Dakota Game and Fish Department and the United States Fish and Wildlife Service.

Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

Given the potential for not only habitat disturbance and disruption but the threat to nesting, feeding and migratory bird and bats in the area we suggest that all efforts be made to avoid impacts to wildlife species and their habitats. In an effort to avoid or minimize impacts to wildlife and their habitats we encourage proper evaluation of all potential wind energy sites. To identify and assess adverse impacts to wildlife we suggest pre and post construction avian and bat monitoring studies be conducted.

It is our policy to charge out-of-state requests for data services including data retrieval, data analysis, manual and computer searches, packaging and collection of data. An invoice for services provided has been enclosed.

Thank you for the opportunity to comment on this project. Please contact Kathy Duttenhefner (701-328-5370 or kgduttenhefner@nd.gov) of our staff if additional information is needed.

Sincerely,

Jesse Hanson

Jesse Hanson, Coordinator
Planning and Natural Resources Division

R.USNDNHI*2010-022

Play in our backyard!

ND Parks and Recreation Department

ND Natural Heritage Inventory
1600 East Century Ave., Suite 3
Bismarck, ND 58503-0649
(701) 328-5370 FAX: (701) 328-5363

INVOICE NO: 0112
DATE: 1/29/2010

To: Erika J. Roberts
Tetra Tech EC, Inc.
133 Federal Street, 6th Floor
Boston, MA 02110

CONTACT	REFERENCE NO.	DATE SHIPPED	SHIPPED VIA	F.O.B. POINT	TERMS
K.Duttenhefner	R.USNDNHI*2010 -022	1/29/2010			

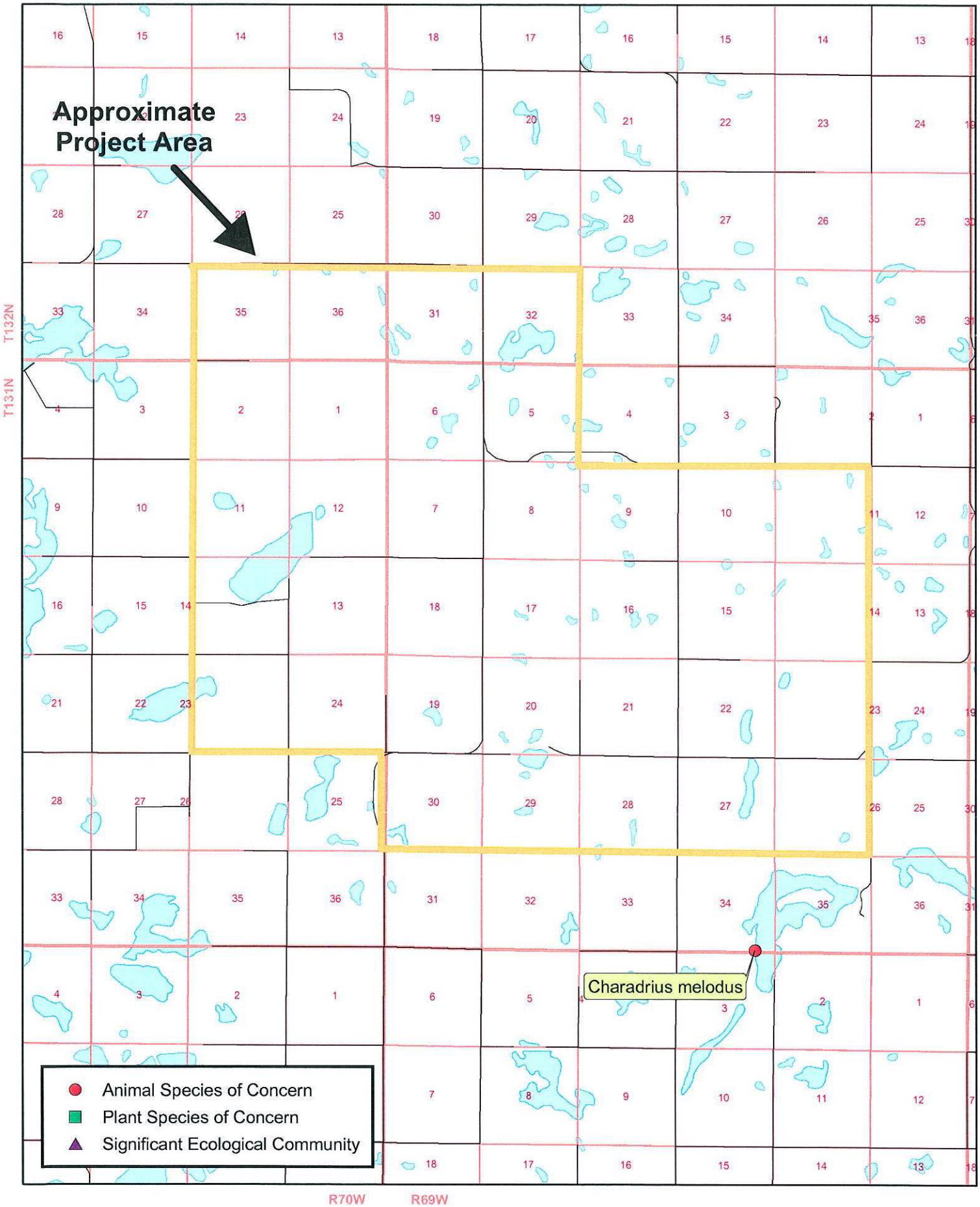
QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT
1	Computer data search, data retrieval, spreadsheet and map creation.	$ 60.00	$ 60.00
		SUBTOTAL	$ 60.00
		SALES TAX	
		SHIPPING & HANDLING	
		TOTAL DUE	$ 60.00

Make all checks payable to: ND Parks and Recreation Department
If you have any questions concerning this invoice, call: Kathy Duttenhefner, (701) 328-5370

THANK YOU FOR YOUR INTEREST IN RARE SPECIES CONSERVATION.

Entry Event	Fund	Dept.	Project	Activity
463021	398	1508	OR15082	15082

North Dakota Parks and Recreation Department
North Dakota Natural Heritage Inventory



January 2010

North Dakota Natural Heritage Inventory

Rare Animal and Plant Species and Significant Ecological Communities

State Scientific Name	State Common Name	State Rank	Global Rank	Federal Status	Township Range Section	County	Last Observation	Estimated Representation Accuracy	Precision
Charadrius melodus	Piping plover	S1S2	G3	LE, LT	131N069W - 34; 130N069W - 03	McIntosh	1995		S

North Dakota Natural Heritage Inventory Biological and Conservation Data Disclaimer

The quantity and quality of data collected by the North Dakota Natural Heritage Inventory are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in North Dakota have never been thoroughly surveyed, and new species are still being discovered. For these reasons, the Natural Heritage Inventory cannot provide a definite statement on the presence, absence, or condition of biological elements in any part of North Dakota. Natural Heritage data summarize the existing information known at the time of the request. Our data are continually upgraded and information is continually being added to the database. This data should never be regarded as final statements on the elements or areas that are being considered, nor should they be substituted for on-site surveys.

Estimated Representation Accuracy

Value that indicates the approximate percentage of the Element Occurrence Representation (EO Rep) that was observed to be occupied by the species or community (versus buffer area added for locational uncertainty). Use of estimated representation accuracy provides a common index for the consistent comparison of EO reps, thus helping to ensure that aggregated data are correctly analyzed and interpreted.

Very high (>95%)
High (>80%, <= 95%)
Medium (>20%, <= 80%)
Low (>0%, <= 20%)
Unknown
(null) - Not assessed

Precision

A single-letter code for the precision used to map the Element Occurrence (EO) on a U.S. Geological Survey (USGS) 7.5' (or 15') topographic quadrangle map, based on the previous Heritage methodology in which EOs were located on paper maps using dots.

S - Seconds: accuracy of locality mappable within a three-second radius; 100 meters from the centerpoint
M - Minute: accuracy of locality mappable within a one-minute radius; 2 km from the centerpoint
G - General: accuracy of locality mappalbe to map or place name precision only; 8 km from centerpoint
U - Unmappable

TETRA TECH EC, INC.

January 8, 2010

Mr. Gary D. Preszler
Commissioner
North Dakota State Land Department
PO Box 5523
Bismarck, ND 58506-5523

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Preszler:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota State Land Department to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

The proposed Project has a planned commercial operation date in the 4th quarter of 2012 and would provide approximately 200 megawatts (MW) of wind energy capacity. It is expected that the selected turbine for the Project will range between 1.5 to 3.0 MW in generating capacity, 80 to 90 meters (m) in hub height, and 80 to 103 m in rotor diameter. In addition to the erection of wind turbines, the Project would involve: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an operation and maintenance building; construction of an electrical switchgear facility; erection of three to four 80 to 90 m tall permanent meteorological masts; and construction of an interconnection substation facility. A temporary construction staging and laydown area would also be used during the construction phase of the Project.

133 Federal Street, 6th Floor, Boston, MA 02110
Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

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We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

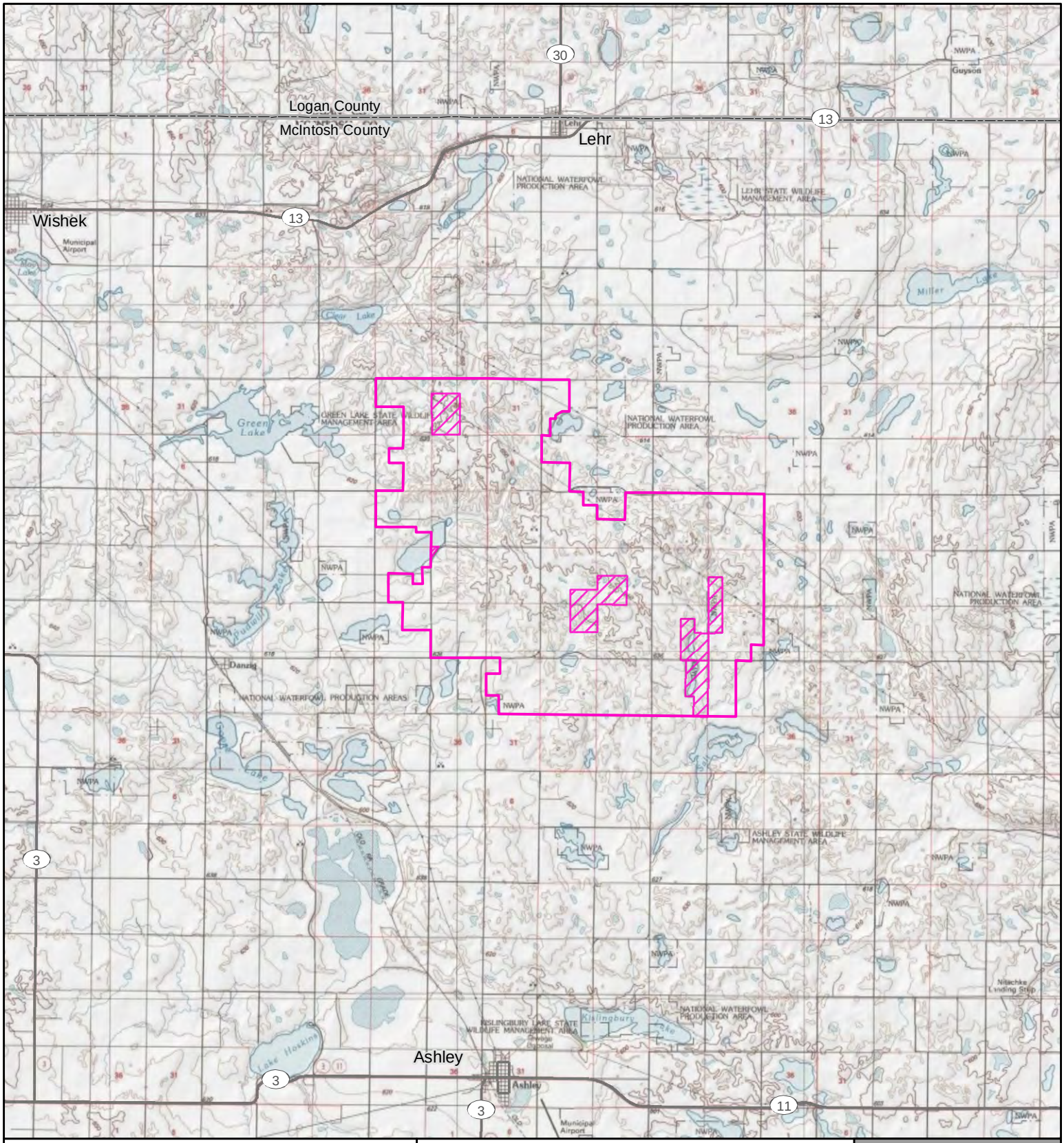
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

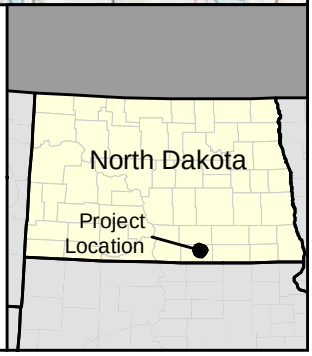
Non-Leased Area

N

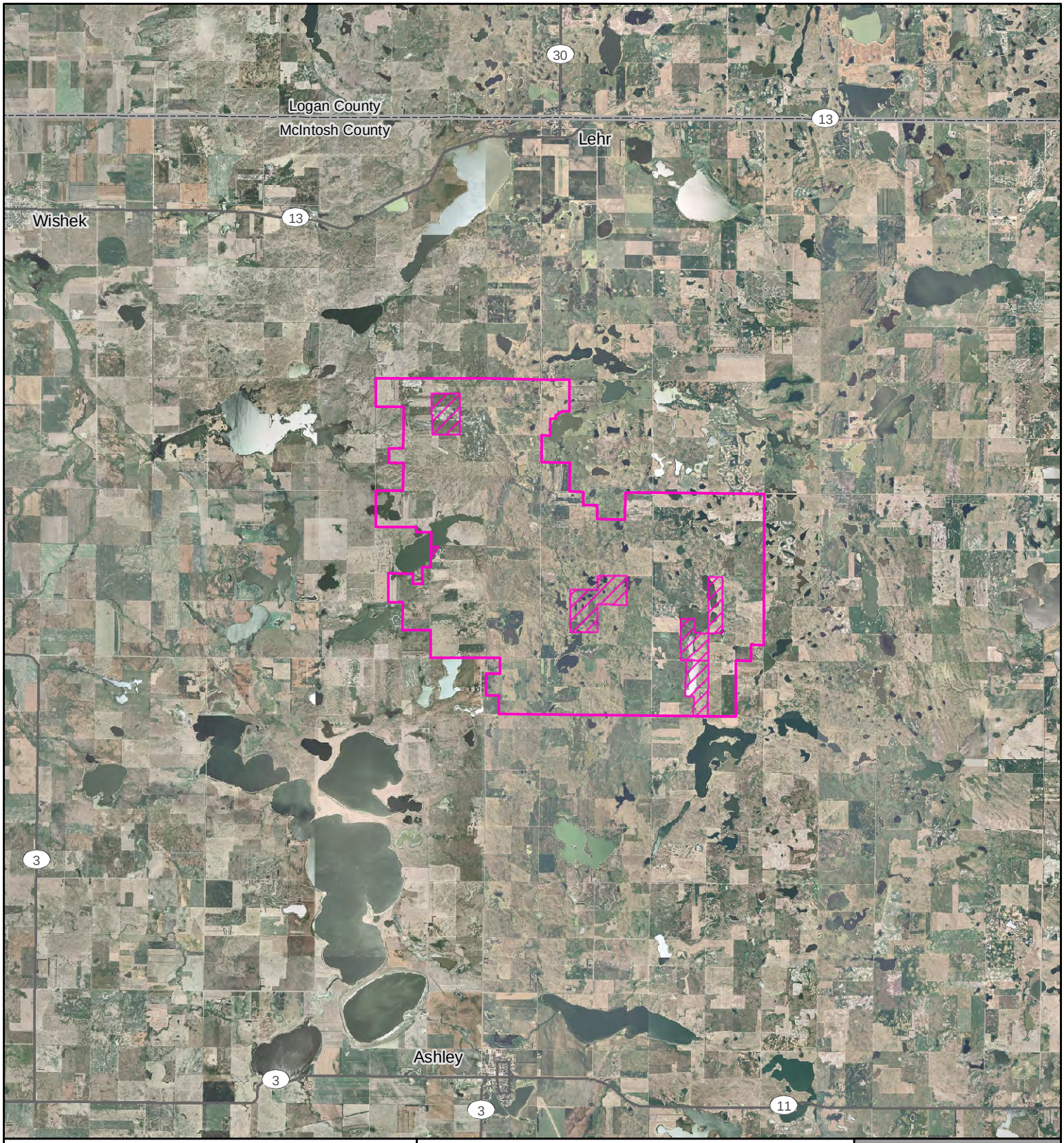
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

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0 2 4 Miles

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Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. Jeff Engleson
Director
North Dakota State Land Department
Energy Development Impact Office
PO Box 5523
Bismarck, ND 58506-5523

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Engleson:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota State Land Department, Energy Development Impact Office to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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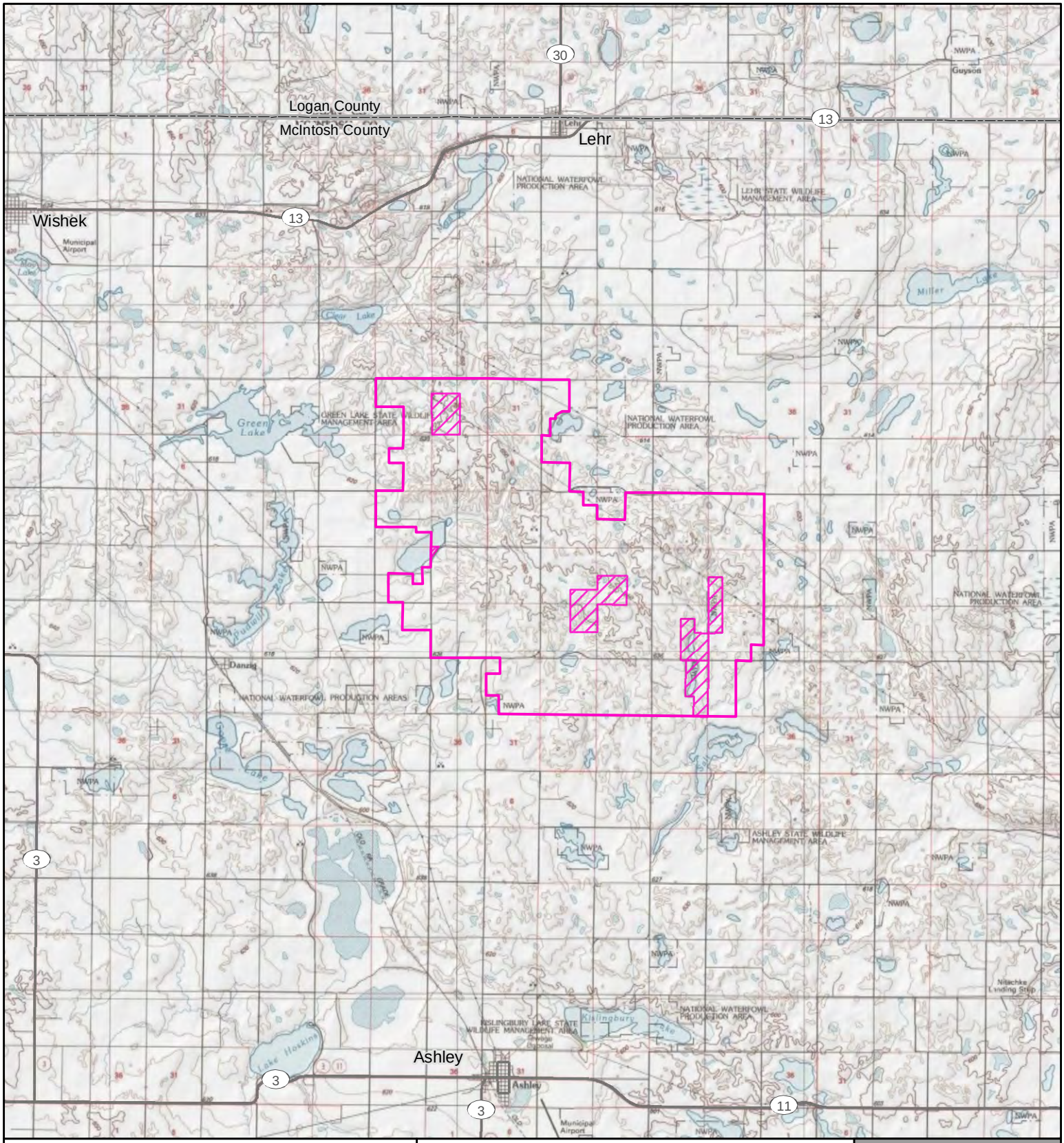
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Erika J. Roberts
Project Manager

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John Hafner – CPV

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McIntosh County, North Dakota

Competitive Power Ventures, Inc.

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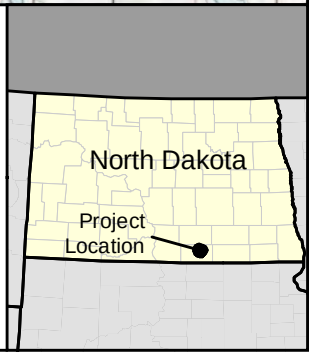
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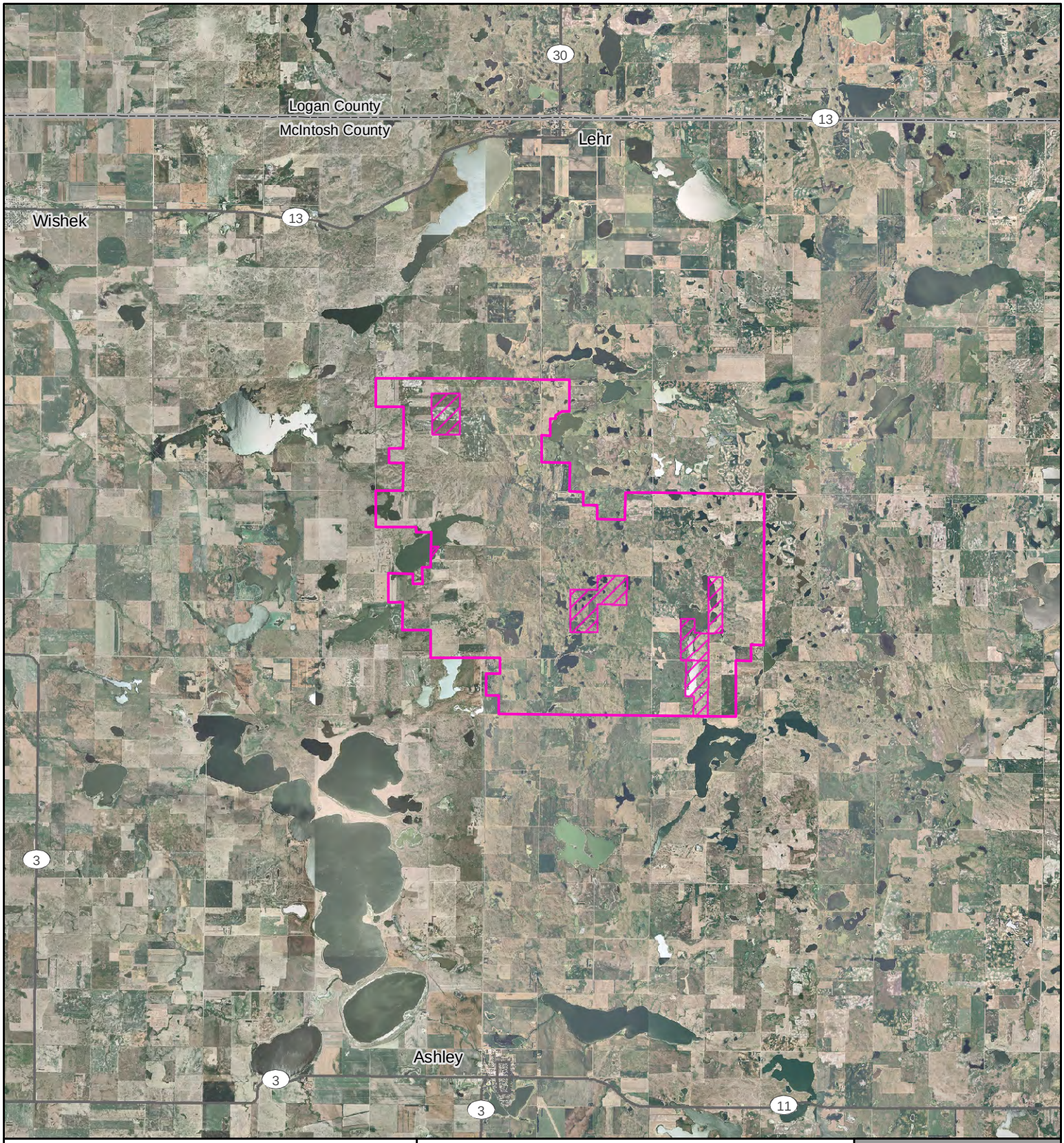
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TETRA TECH EC, INC.

January 8, 2010

Mr. Scott Hochhalter
Soil Conservation Specialist
NDSU Extension Service
North Dakota State Soil Conservation Committee
2718 Gateway Avenue, Unit #104
Bismarck, ND 58503

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Hochhalter:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota State Soil Conservation Committee to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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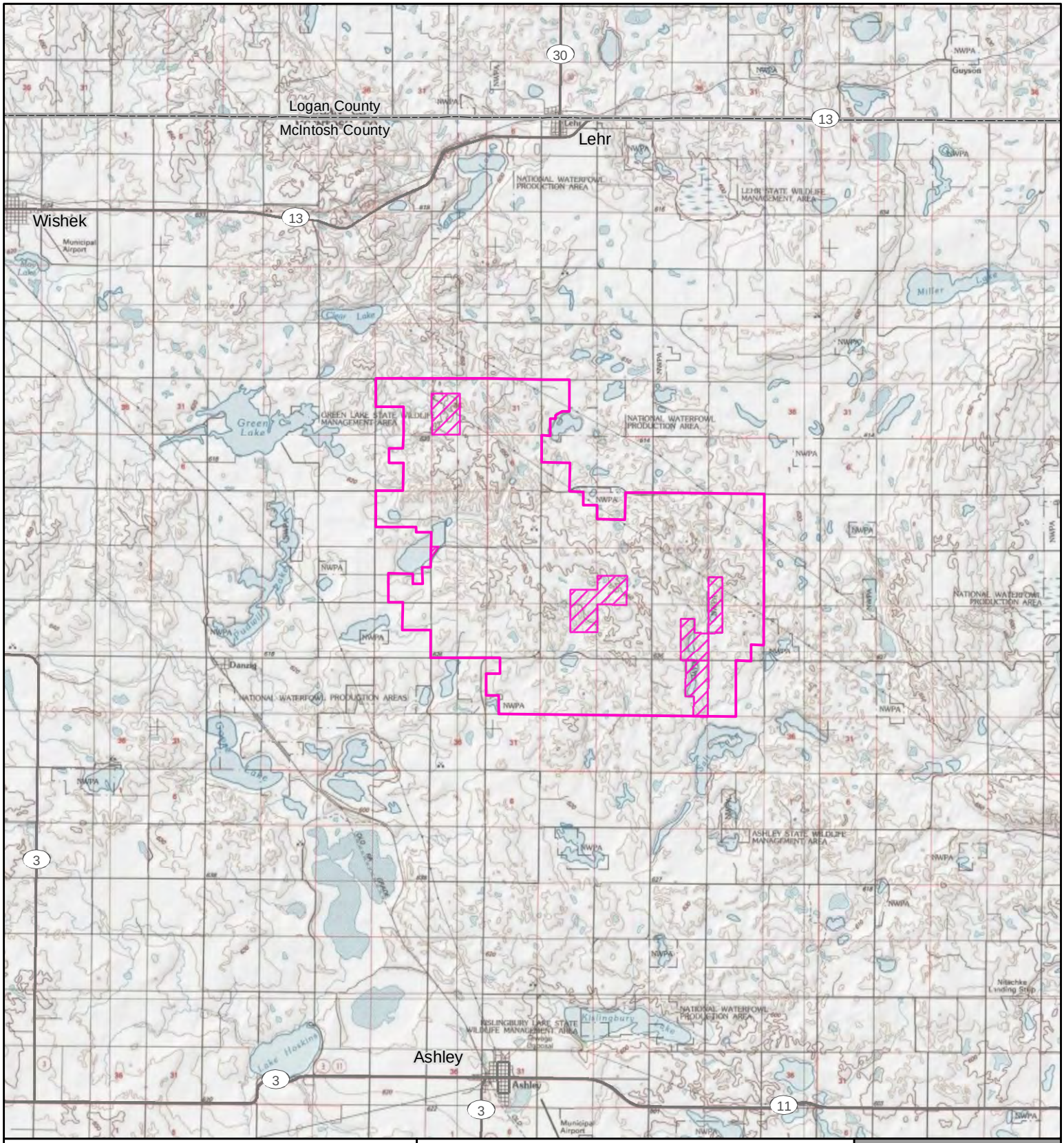
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Erika J. Roberts
Project Manager

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John Hafner – CPV

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McIntosh County, North Dakota

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TETRA TECH EC, INC.

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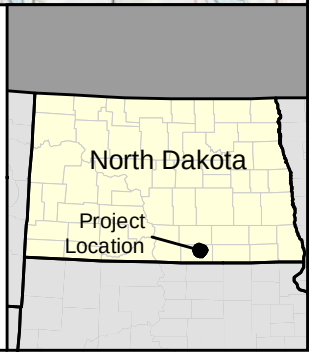
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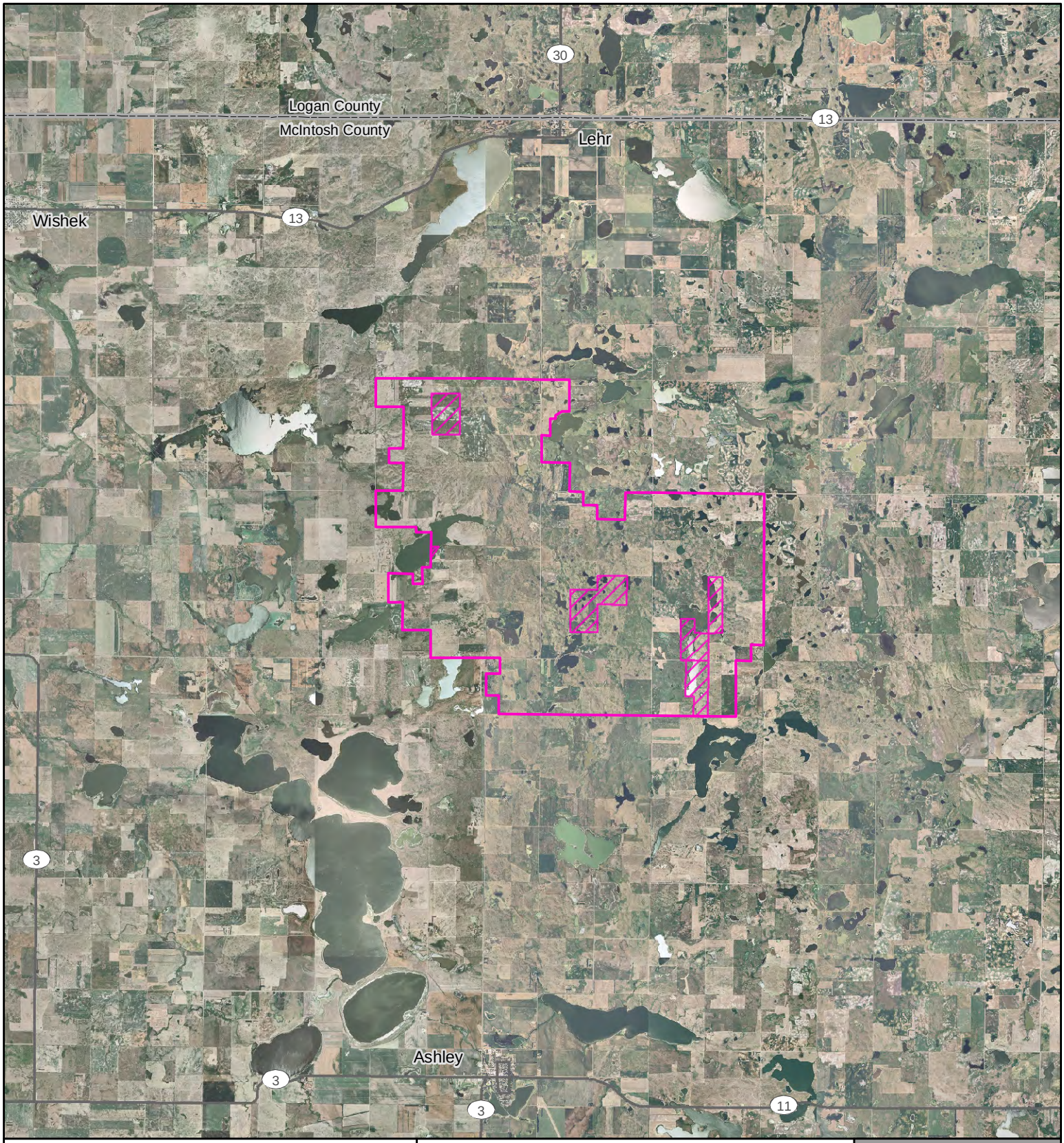
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Source: USGS 24k Quads, 1985.

Scale 1:150,000



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McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

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Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. Dale Frink
State Engineer
North Dakota State Water Commission
900 E. Boulevard Ave., Dept. 770
Bismarck, North Dakota 58505-0850

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Frink:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the North Dakota State Water Commission to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

The proposed Project has a planned commercial operation date in the 4th quarter of 2012 and would provide approximately 200 megawatts (MW) of wind energy capacity. It is expected that the selected turbine for the Project will range between 1.5 to 3.0 MW in generating capacity, 80 to 90 meters (m) in hub height, and 80 to 103 m in rotor diameter. In addition to the erection of wind turbines, the Project would involve: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an operation and maintenance building; construction of an electrical switchgear facility; erection of three to four 80 to 90 m tall permanent meteorological masts; and construction of an interconnection substation facility. A temporary construction staging and laydown area would also be used during the construction phase of the Project.

133 Federal Street, 6th Floor, Boston, MA 02110
Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

County	Township	Range	Sections
McIntosh	T131N	R69W	5-11, 14-23, 26-30
	T131N	R70W	1, 2, 11-14, 23, 24
	T132N	R69W	31, 32
	T132N	R70W	35, 36

We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

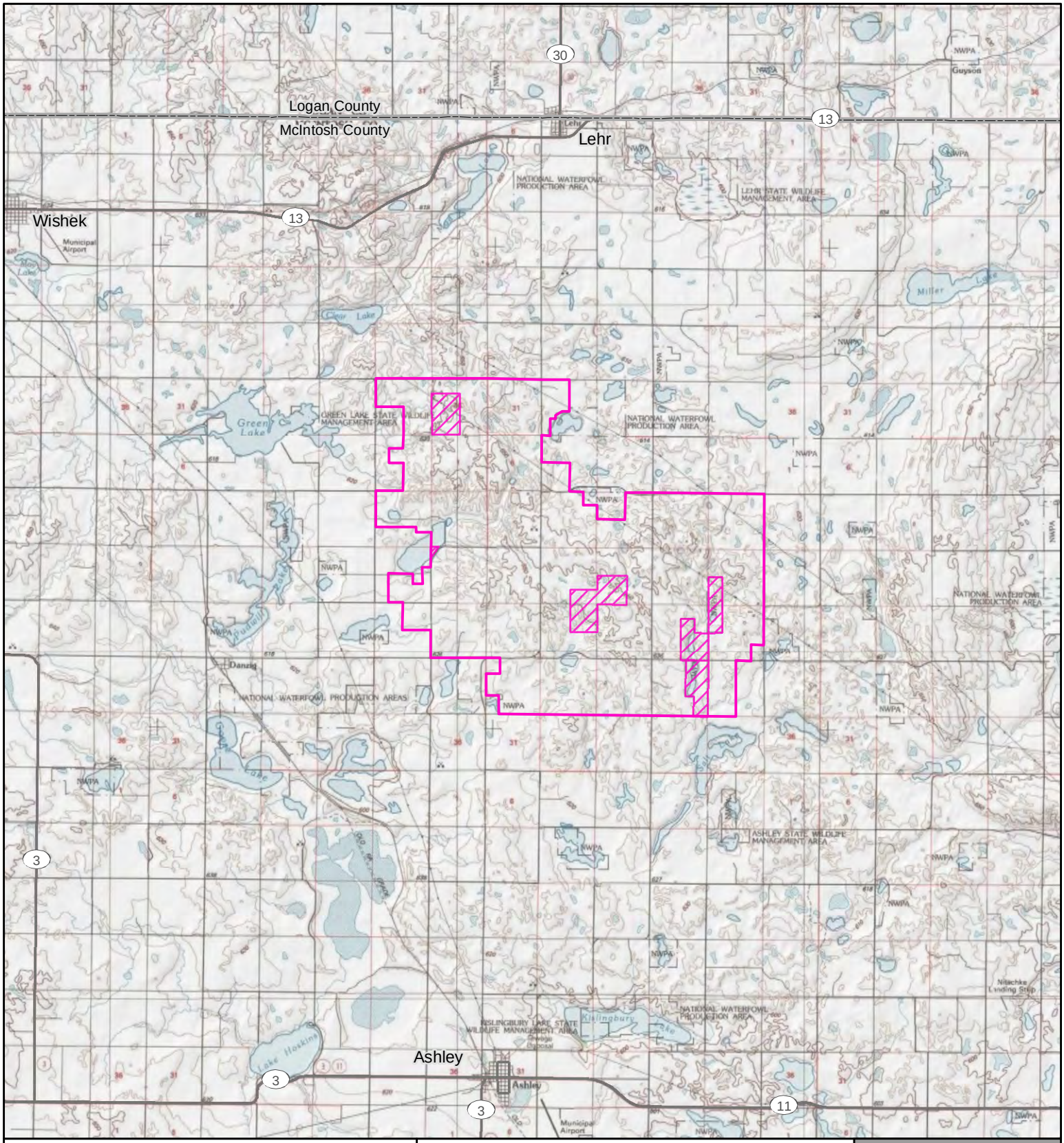
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

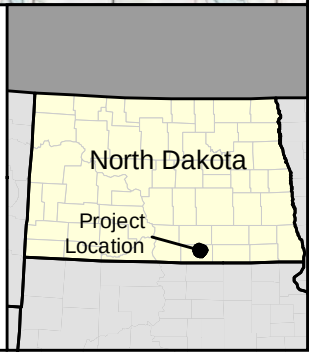
Non-Leased Area

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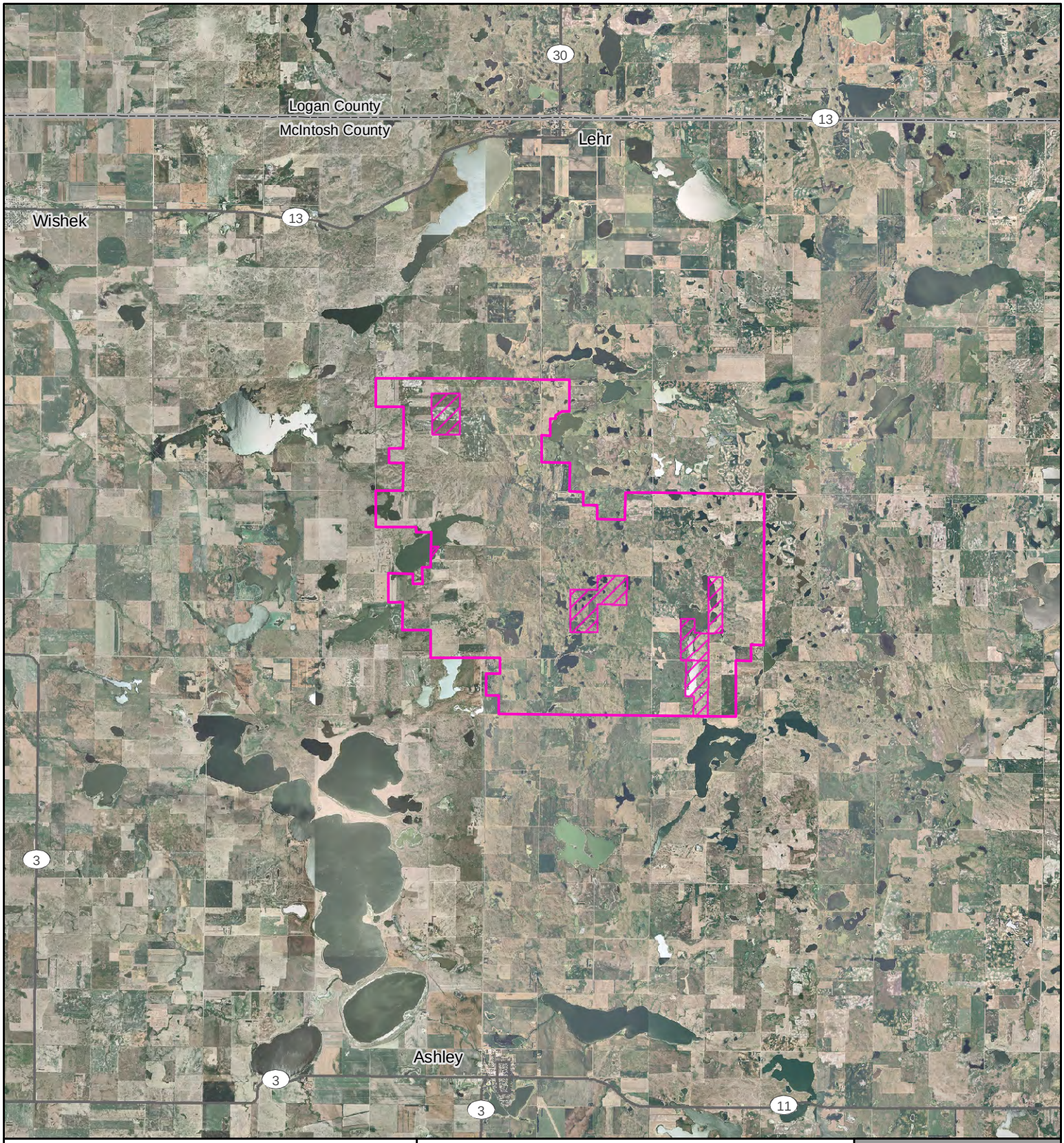
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: http://swc.nd.gov

February 17, 2010

Erika Roberts
Tetra Tech
133 Federal Street
6th Floor
Boston, MA 02110

Dear Ms. Roberts:

This is in response to your request for review of environmental impacts associated with the Ashley Wind Energy Project in McIntosh County, ND.

The proposed project have been reviewed by State Water Commission staff and the following comments are provided:

- The property is not located in an identified floodplain and it is believed the project will not affect an identified floodplain.

- All waste material associated with the project must be disposed of properly and not placed in identified floodway areas.

- No sole-source aquifers have been designated in ND.

There are no other concerns associated with this project that affect State Water Commission or State Engineer regulatory responsibilities.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 328-4969.

Sincerely,

Larry Knudtson
Research Analyst

LJK:ds/1570

JOHN HOEVEN, GOVERNOR
CHAIRMAN

DALE L. FRINK
SECRETARY AND STATE ENGINEER

TETRA TECH EC, INC.

January 8, 2010

Mr. Paul Picha
Chief Archaeologist
State Historical Society of North Dakota
612 E. Boulevard Ave.
Bismarck, ND 58505

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Picha:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the State Historical Society of North Dakota to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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	T132N	R69W	31, 32
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Respectfully submitted,

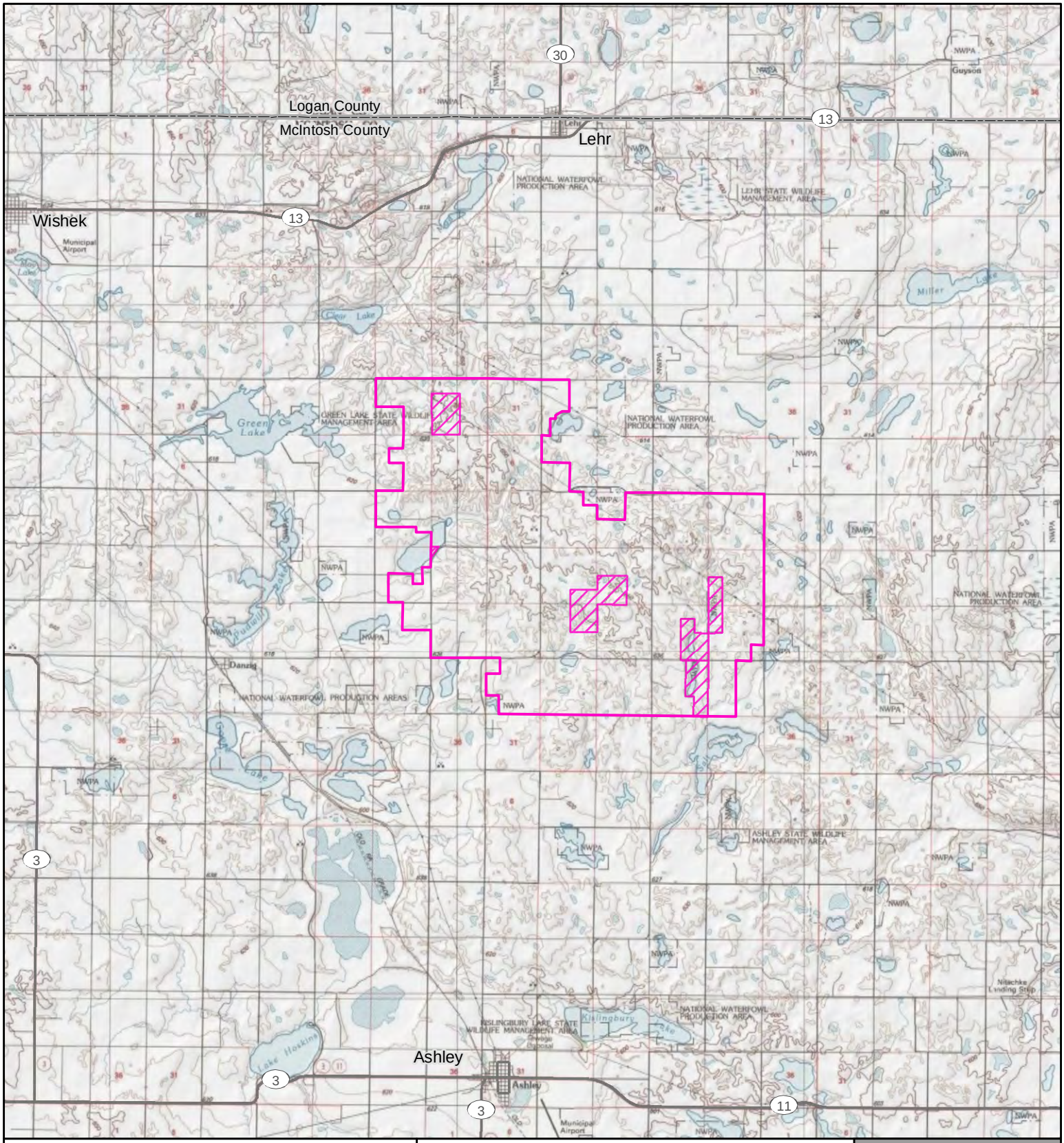
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

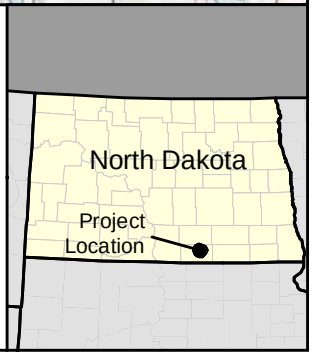
Non-Leased Area

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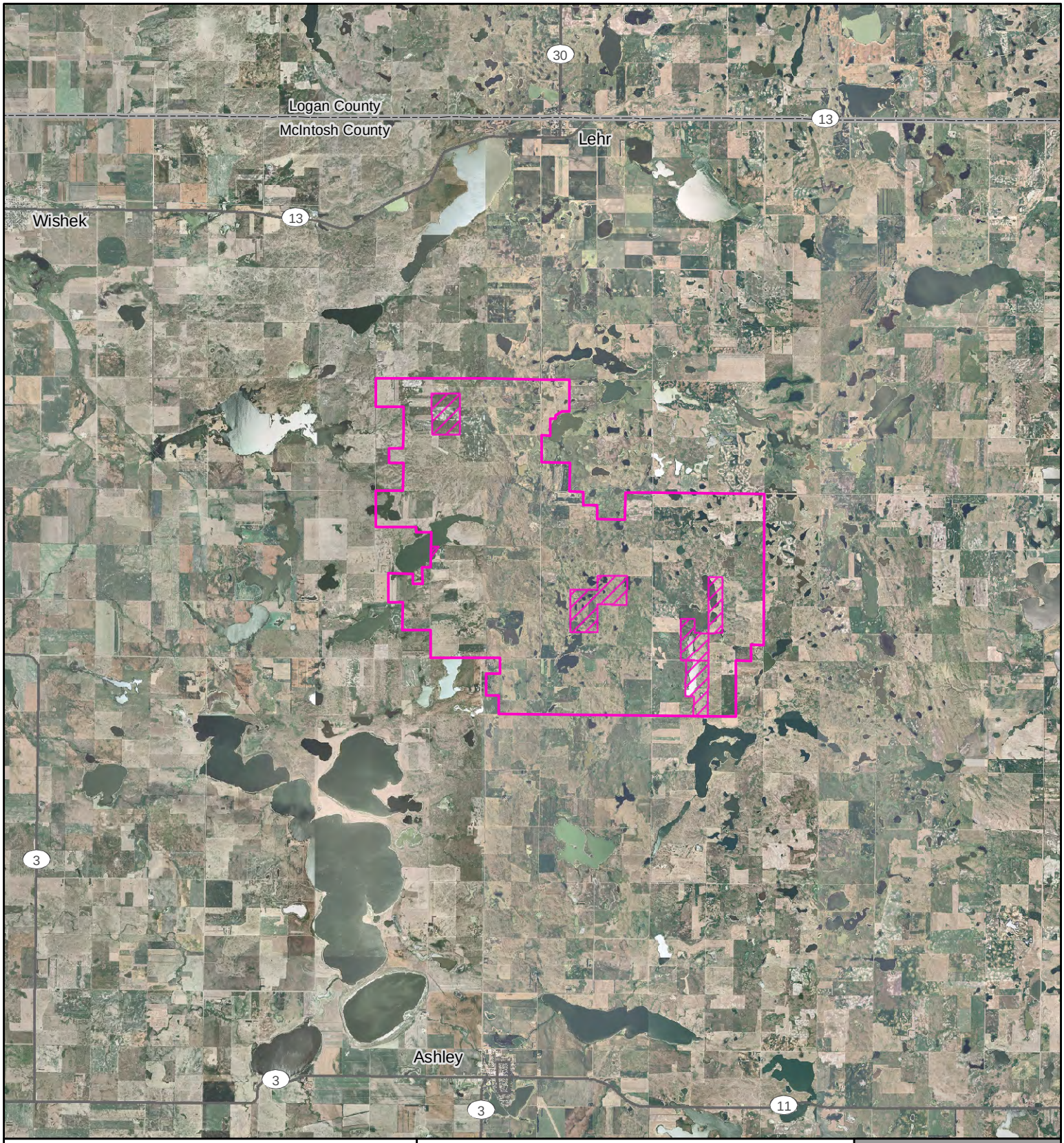
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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STATE HISTORICAL SOCIETY OF NORTH DAKOTA

John Hoeven
Governor of North Dakota

North Dakota State Historical Board

Chester E. Nelson, Jr.
Bismarck - President

Gereld Gerntholz
Valley City - Vice President

Richard Kloubec
Fargo - Secretary

Albert I. Berger
Grand Forks

Calvin Grinnell
New Town

Diane K. Larson
Bismarck

A. Ruric Todd III
Jamestown

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Douglass Prchal
Director
Parks and Recreation Department

Francis Ziegler
Director
Department of Transportation

Merlan E. Paaverud, Jr.
Director

Accredited by the American Association of Museums

January 13, 2010

Ms. Erika J. Roberts
Project Manager
Tetra Tech EC Inc.
133 Federal Street, 6th Floor
Boston MA 02110

NDSHPO REF.: 10-0484 PSC 200 Megawatt (MW) Ashley Wind Energy Project (Wind Farm), McIntosh County

Dear Ms. Roberts:

We have received and reviewed: **10-0484 PSC 200 Megawatt (200 MW) Ashley Wind Energy Project [Wind Farm], McIntosh County,"** correspondence of January 8. There is potential for unrecorded and recorded properties in a variety of physiographic settings in the overall study area near Ashley, McIntosh County. ***If the project requires permits issued by a federal and/or state agency (e.g., COE, USFWS, Reclamation, RUS, ND PSC) then the respective agency(ies) are to be consulted regarding their recommendations on the project. As a potential federal undertaking, we encourage agency consultation as part of the Environmental Assessment process.*** At this point, we recommend and encourage that a Class I Cultural Resources Inventory (file and records search) be prepared and submitted for review to the appropriate agencies (e.g., NDSHPO/SHSND, ND PSC, federal agency), as delineated from the map coverage you provided. Follow-up cultural resource investigations (i.e., Class III Cultural Resource Inventory) will be determined and based on Class I document review, agency consultation, and as project particulars (e.g., turbine siting locations, electrical collection lines, access roads, ancillary facilities, lay-down areas) are identified in the overall project design and layout. Thank you for the opportunity to review the project, and we look forward to further consultation on it. If you have questions please contact either Susan Quinnell at squinnell@nd.gov or (701) 328-3576 or Paul Picha at ppicha@nd.gov or (701) 328-3574. Please include the **NDSHPO REF.: 10-0484** in correspondence regarding the project.

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and
Director, State Historical Society of North Dakota

c: Patrick Fahn, North Dakota Public Service Commission, with map enc.
c: Daniel E. Cimarosti, COE-Bismarck Regulatory, with map enc.

TETRA TECH EC, INC.

January 8, 2010

Mr. Neil Meidinger
McIntosh County Commissioner
2720 89th Street SE
Zeeland, ND 58581-9779

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Meidinger:

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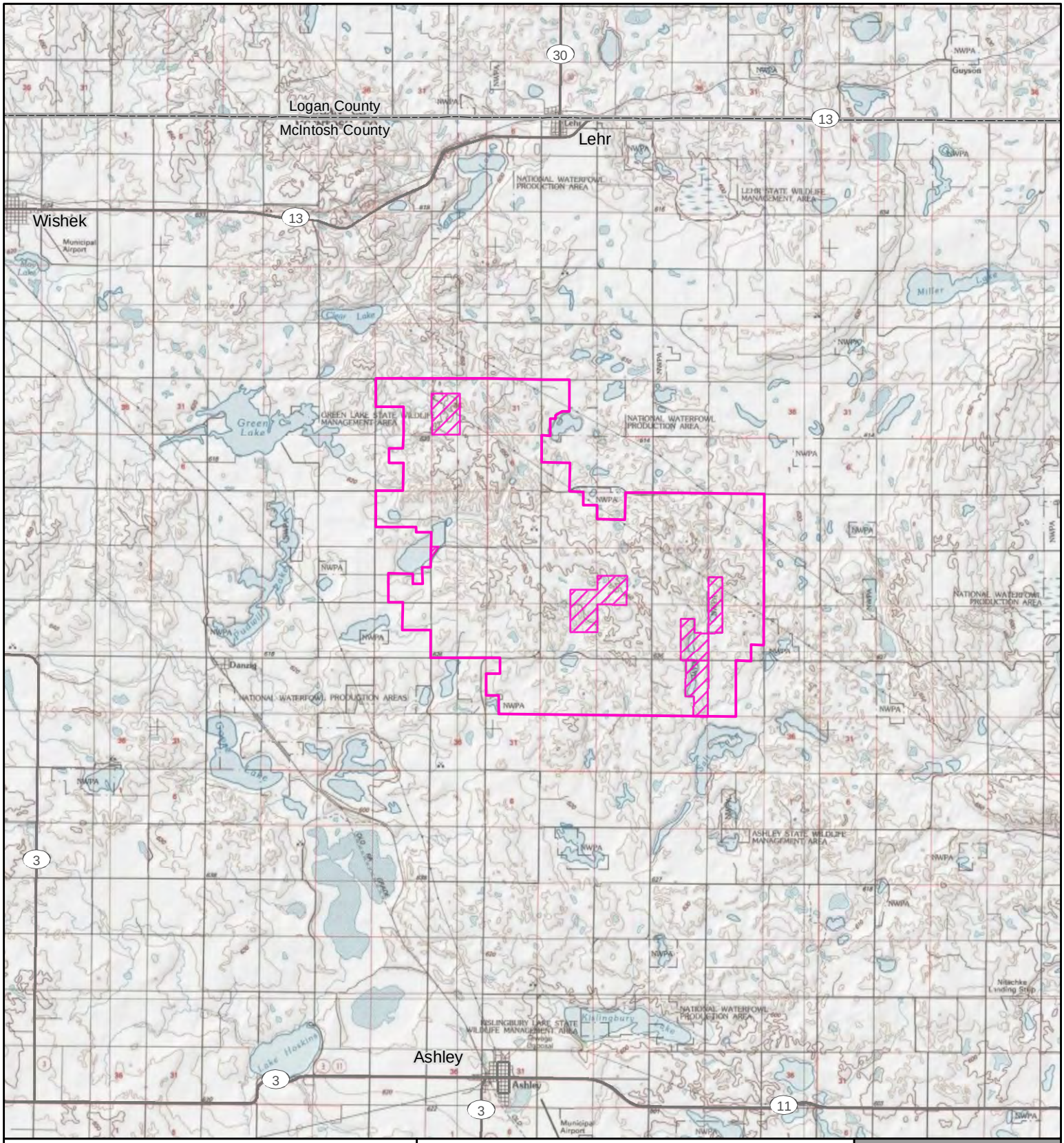
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

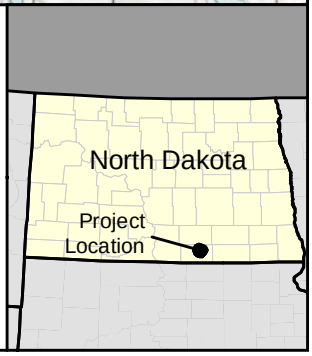
Non-Leased Area

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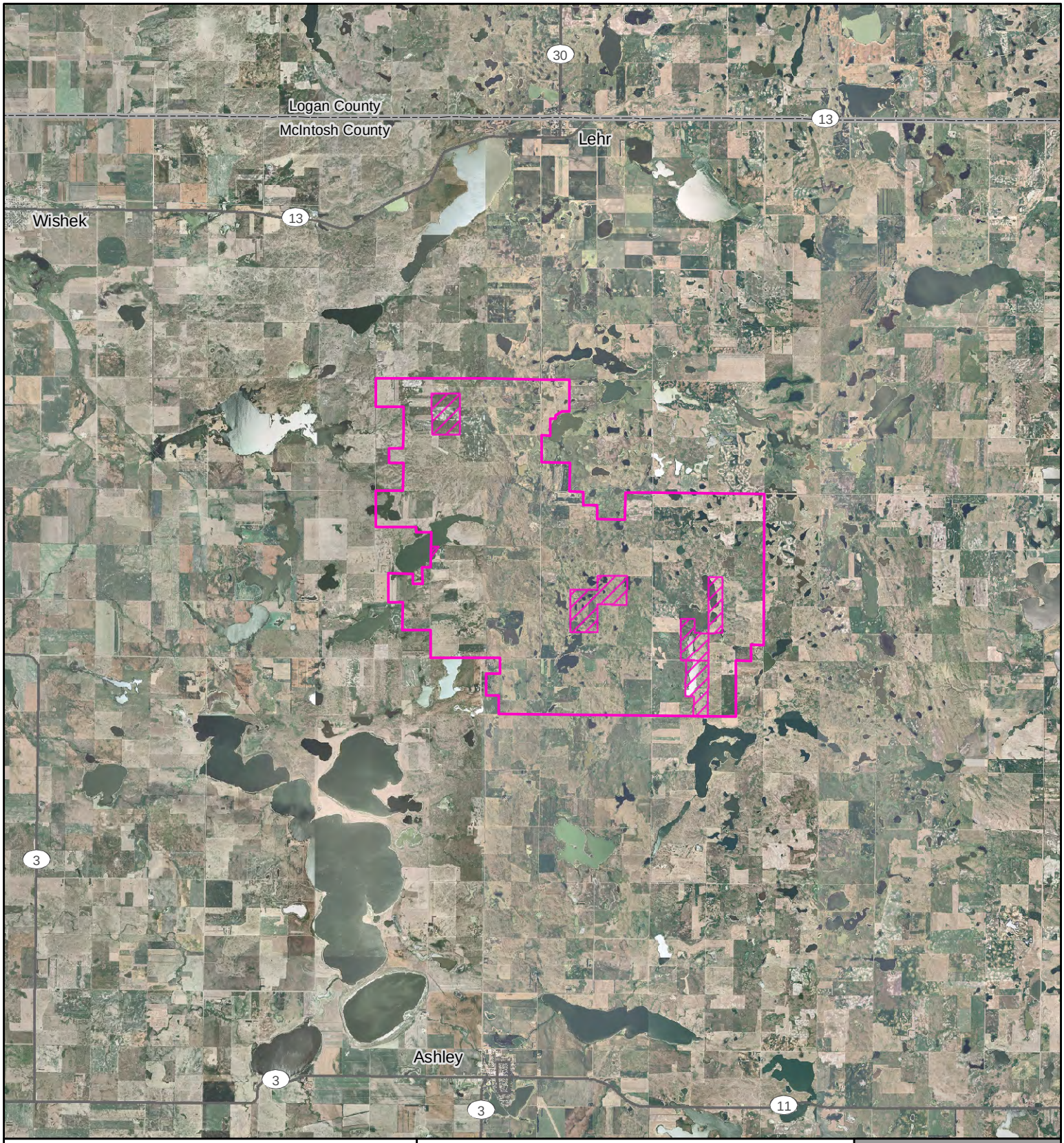
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

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0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. Ron Meidinger
McIntosh County Commissioner
615 Center Avenue N
Ashley, ND 58413-7011

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

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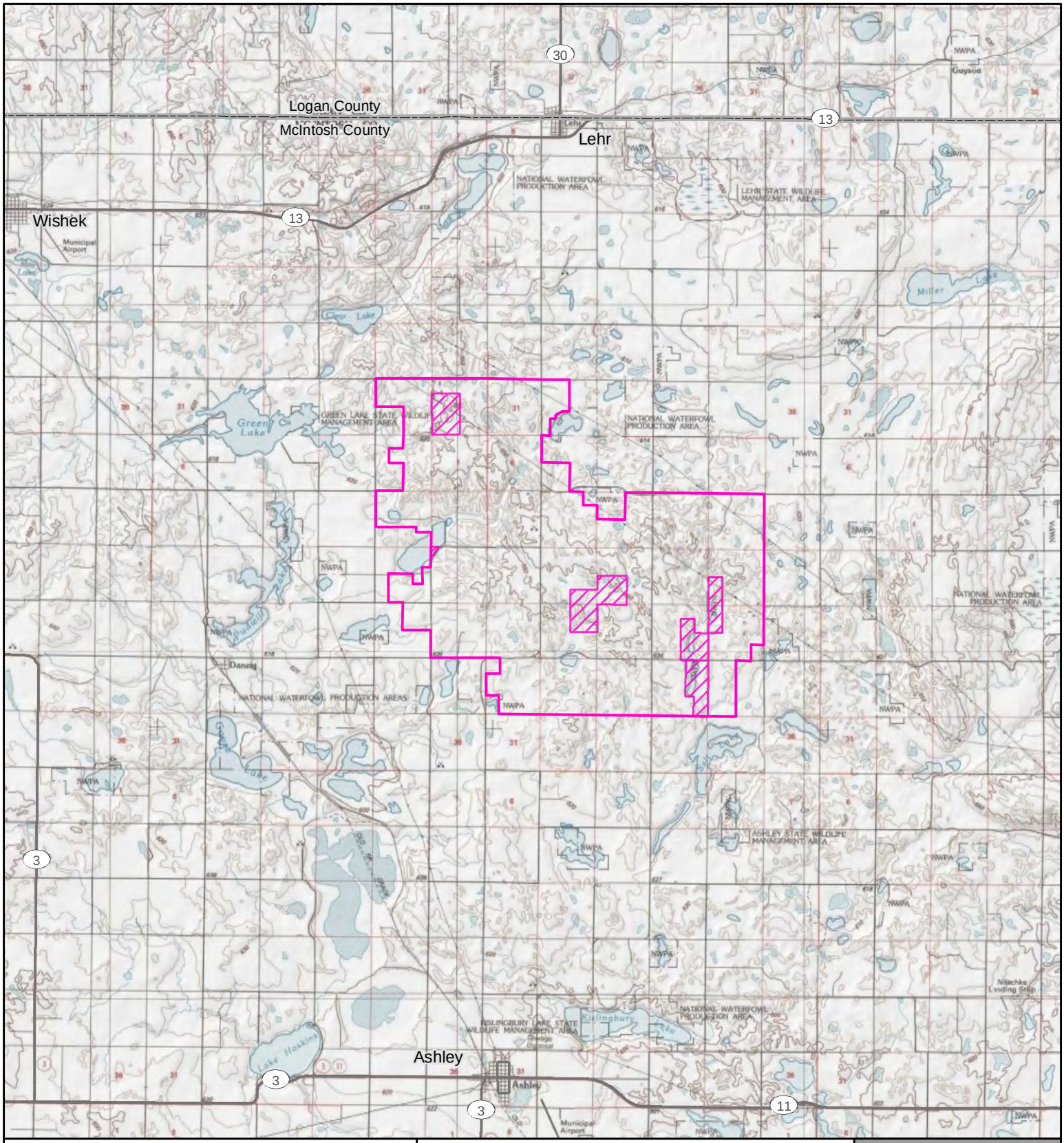
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Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

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McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

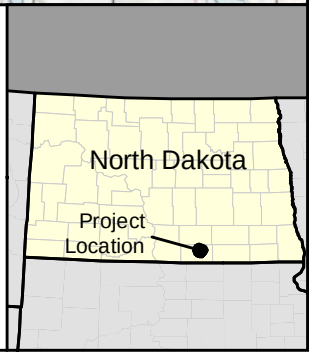
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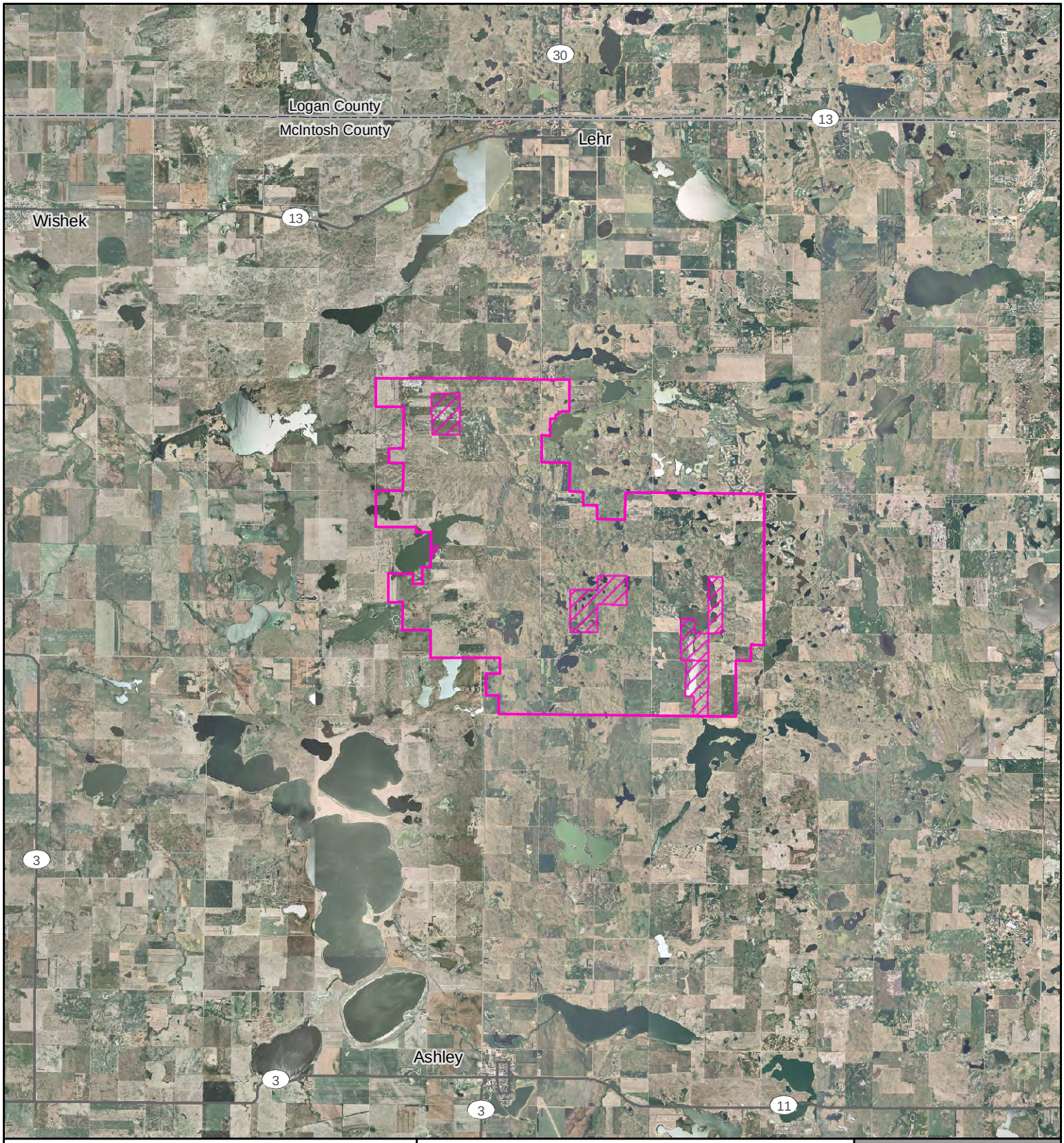
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Source: USGS 24k Quads, 1985.

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McIntosh County, North Dakota

Competitive Power Ventures, Inc.

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Project Area

Non-Leased Area

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North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mr. James Raile
McIntosh County Commissioner
907 7th Avenue S
Wishek, ND 58495-7531

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Raile:

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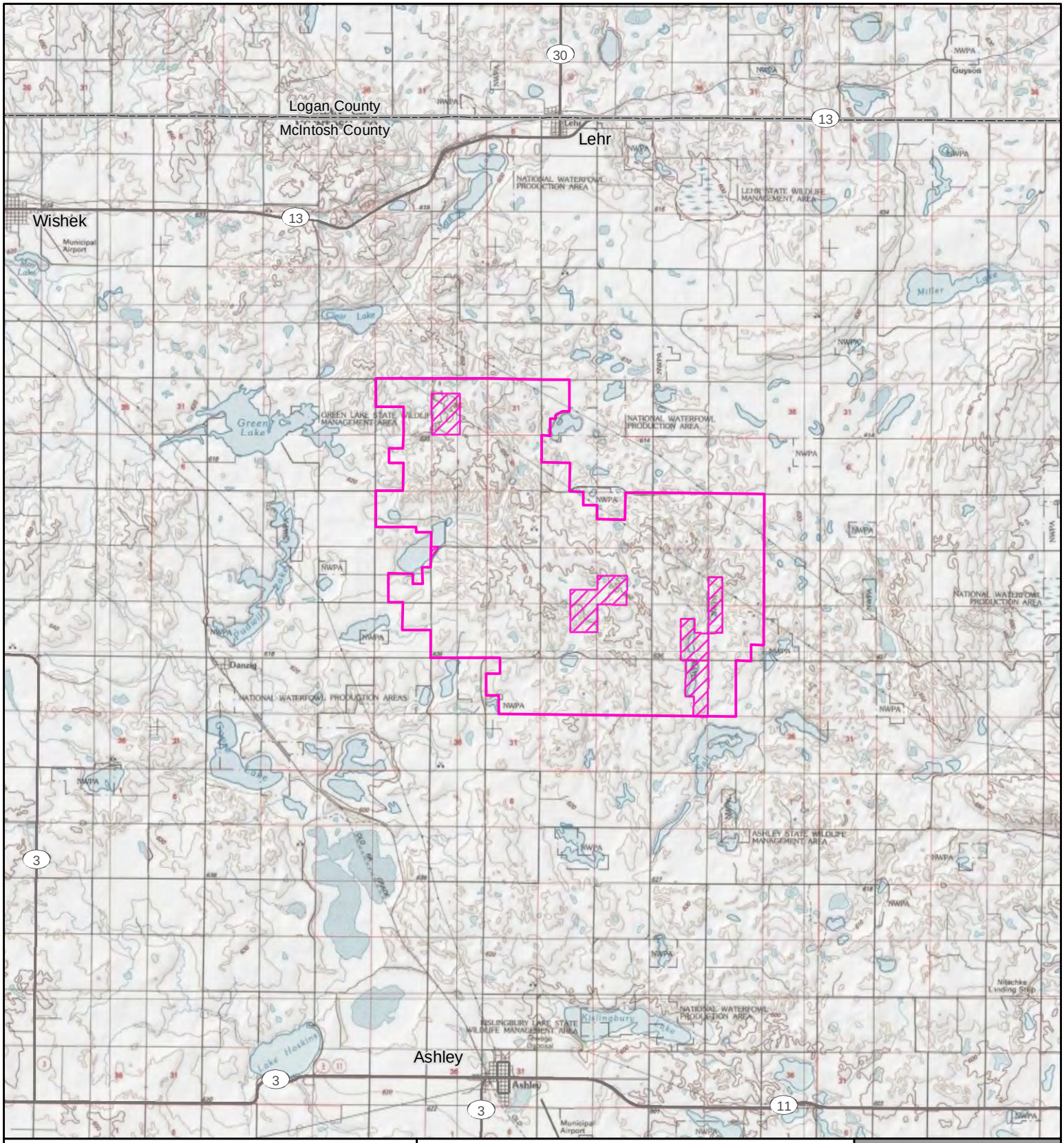
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

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McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

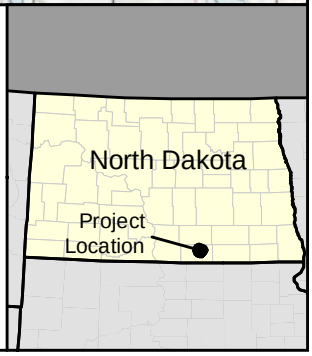
Non-Leased Area

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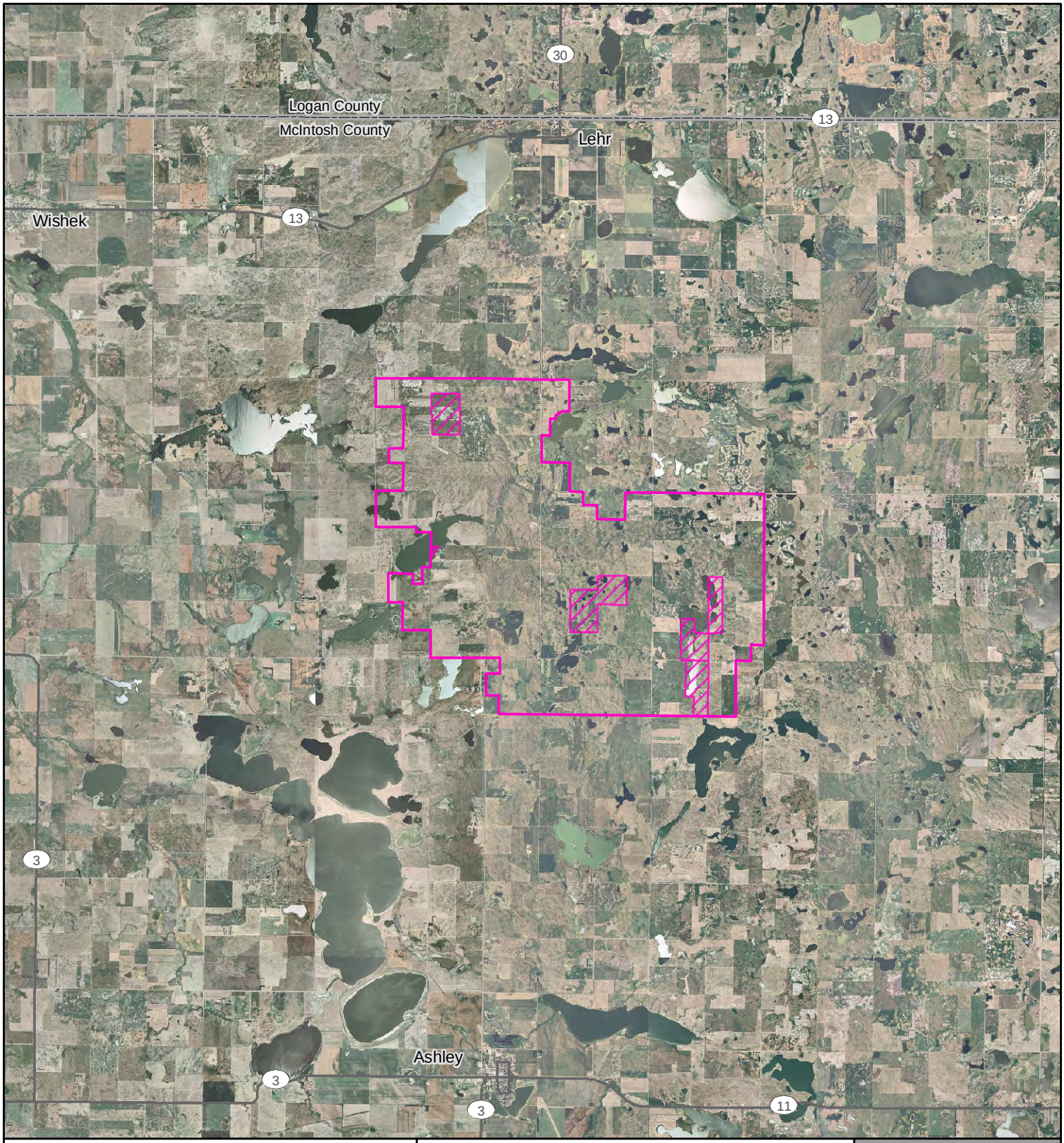
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TETRA TECH EC, INC.

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North Dakota

Project Location

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BOARD OF COUNTY COMMISSIONERS:
Neil Meidinger
Ronald J. Meidinger
James Raile

AUDITOR: Gina Ketterling
TREASURER: Donna Heupel
STATE'S ATTORNEY: Terry Elhard
SHERIFF: Laurie Spitzer
CLERK OF COURT/COUNTY RECORDER: Carol Fey
TAX DIRECTOR: Delbert Heil
SUPT. OF SCHOOLS: Coreen Schumacher
VETERANS SERVICE OFFICER: Leo P. Keaveny
DISASTER EMERGENCY MANAGER: DeLoris Rudolph



McINTOSH COUNTY
112 1ST St. NE
PO Box 39
Ashley, ND 58413

February 3, 2010

John Hafner
CPV Ashley Renewable Energy Company, LLC
50 Braintree Hill Office Park, Suite 300
Braintree, MA 02184

RE: WIND ENERGY PROJECT PREMITTING IN MCINTOSH COUNTY, ND

Dear John:

Please be advised that McIntosh County does not have any zoning regulations or permitting requirements related to the development, construction, or operation of wind energy projects. These wind energy projects include, but are not limited to, wind turbines, meteorological towers, concrete foundations, warehouse and maintenance buildings, substations, electrical collection systems of various voltages, roads, pads and any other structure or civil work related to the operation and maintenance of a wind energy project.

Sincerely,

James Raile
McIntosh County Commissioner

Ron J. Meidinger
McIntosh County Commissioner

Neil Meidinger
McIntosh County Commissioner

TETRA TECH EC, INC.

January 8, 2010

Mr. Donavon Bender
Chair
McIntosh County Soil Conservation District
118 East Main Street, Box 389
Ashley, ND 58413

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mr. Bender:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the McIntosh County Soil Conservation District to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

Your assistance is being requested as the Project Developer, CPV Ashley Renewable Energy Company, LLC (CPV), has contracted Tetra Tech to begin the preparation of an application requesting the issuance of a Certificate of Site Compatibility from the North Dakota Public Service Commission (the Commission) for the Project in accordance with Section 49-22-07 of the North Dakota Century Code. In support of that application, Tetra Tech is performing an investigation of the Project Area, located approximately six miles north of the City of Ashley, on approximately 17,400 acres of private land under agreement with CPV. The attached figure to this transmittal provides a map of the Project Area.

The proposed Project has a planned commercial operation date in the 4th quarter of 2012 and would provide approximately 200 megawatts (MW) of wind energy capacity. It is expected that the selected turbine for the Project will range between 1.5 to 3.0 MW in generating capacity, 80 to 90 meters (m) in hub height, and 80 to 103 m in rotor diameter. In addition to the erection of wind turbines, the Project would involve: improvements to existing roads; construction of new gravel access roads; installation of underground electrical collection lines; construction of an operation and maintenance building; construction of an electrical switchgear facility; erection of three to four 80 to 90 m tall permanent meteorological masts; and construction of an interconnection substation facility. A temporary construction staging and laydown area would also be used during the construction phase of the Project.

133 Federal Street, 6th Floor, Boston, MA 02110
Tel 617.457.8200 Fax 617.457.8498/8499
www.tteci.com

The Project would include portions of the following sections:

County	Township	Range	Sections
McIntosh	T131N	R69W	5-11, 14-23, 26-30
	T131N	R70W	1, 2, 11-14, 23, 24
	T132N	R69W	31, 32
	T132N	R70W	35, 36

We would appreciate a response by February 5, 2010. Please contact me at (617) 457-8223 if you have any questions. Thank you for your assistance.

Respectfully submitted,

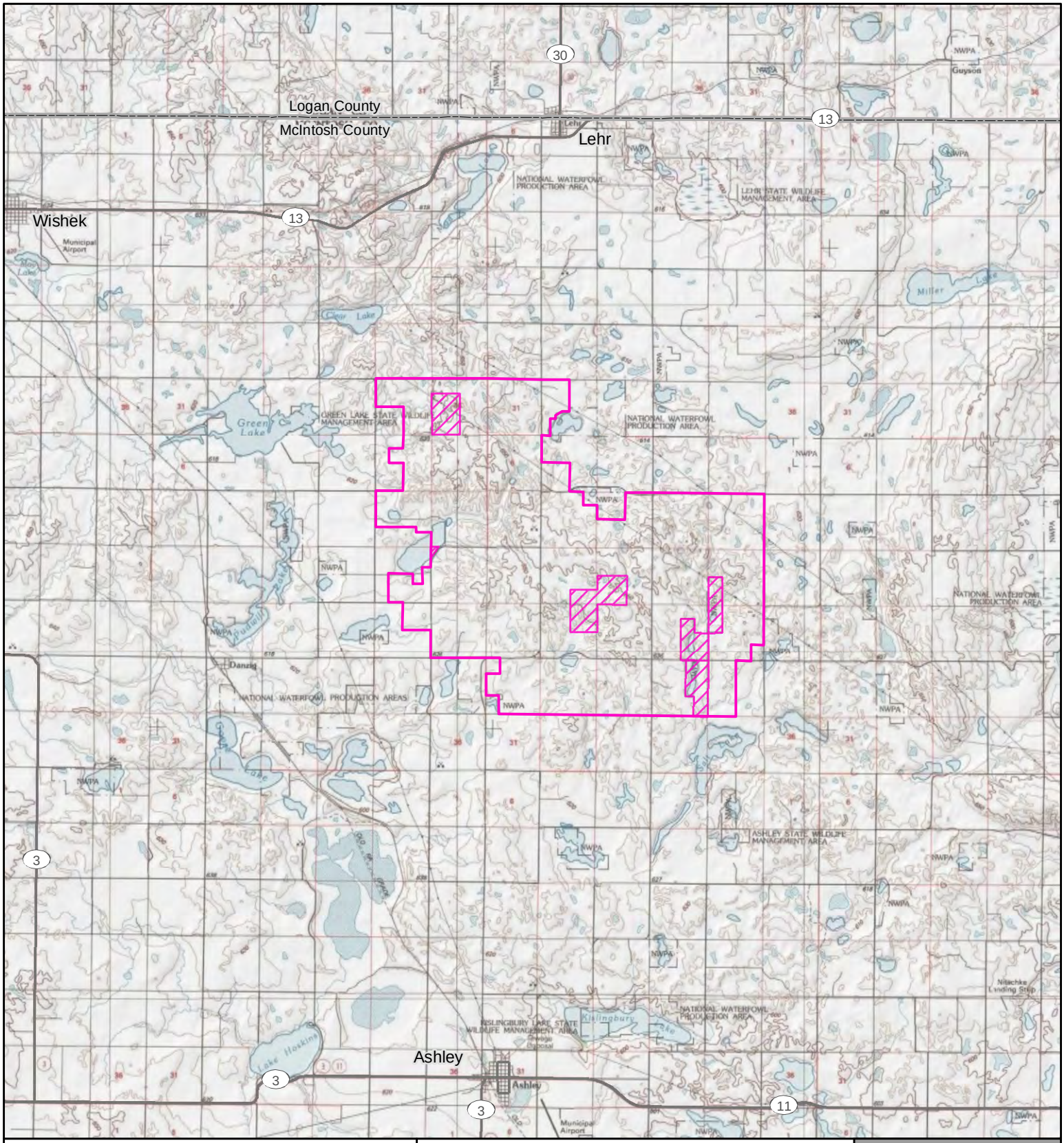
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

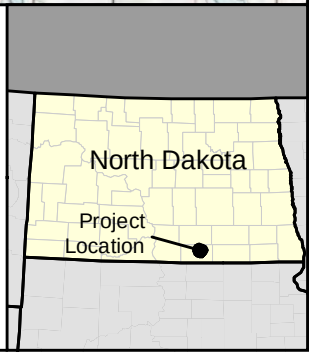
Non-Leased Area

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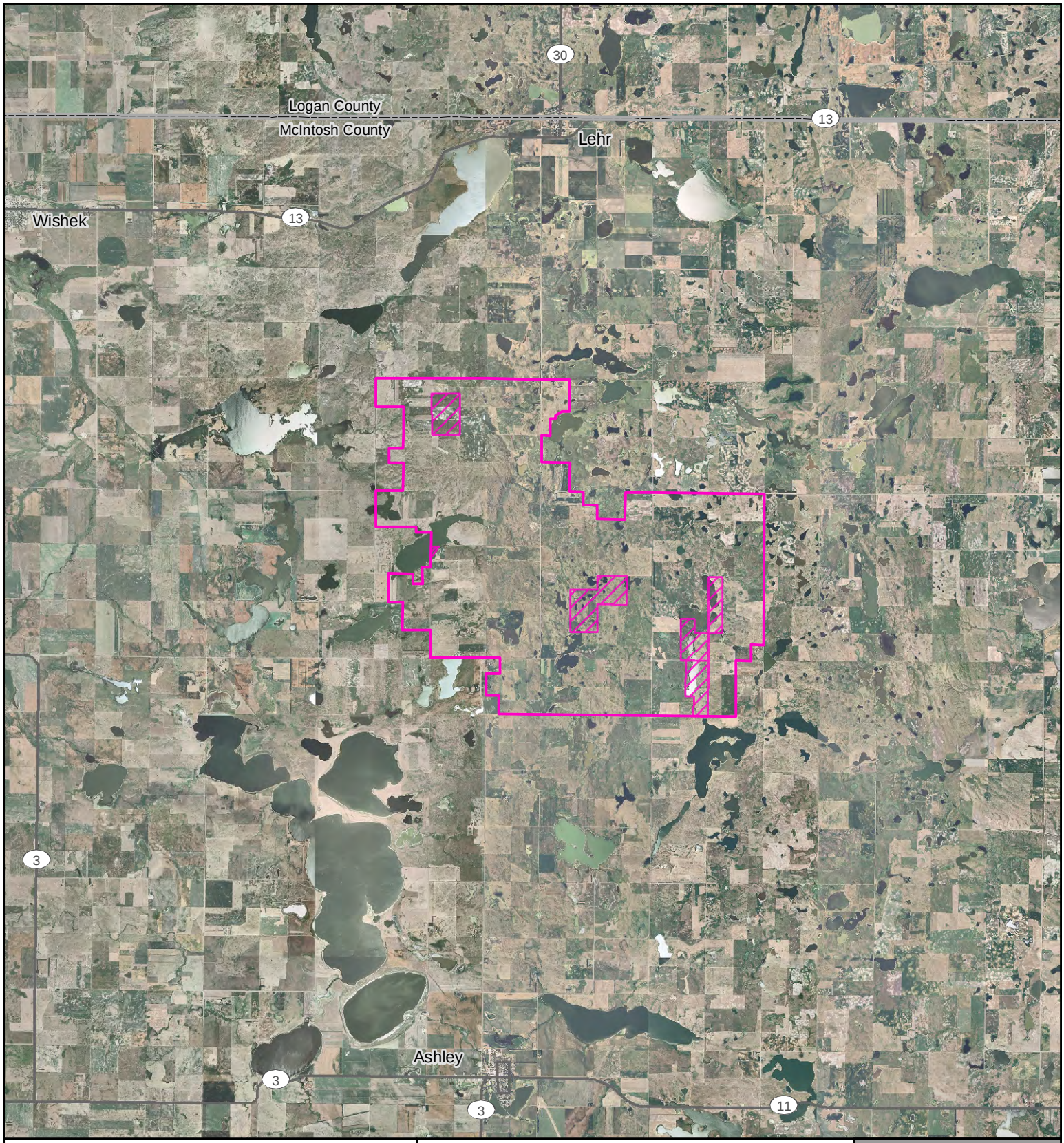
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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TETRA TECH EC, INC.

January 8, 2010

Mayor Donald Kosel
City of Ashley
113 1st Street NW
Ashley, ND 58413

RE: Notice of Intent to Submit an Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota

Dear Mayor Kosel:

In regard to the Ashley Wind Energy Project (the Project) in McIntosh County, North Dakota, Tetra Tech EC, Inc. (Tetra Tech) is consulting the City of Ashley to request assistance in identifying issues within the Project Area that would influence a decision regarding the use of the land and applicable permits that may be required from your office in the development of this Project. This information will be used to help guide the Project development through identification and avoidance of impacts to sensitive resources where practicable. We have requested similar input from other federal, state, and local agencies, including all those identified in Section 69-06-01-05 of the North Dakota Administrative Code.

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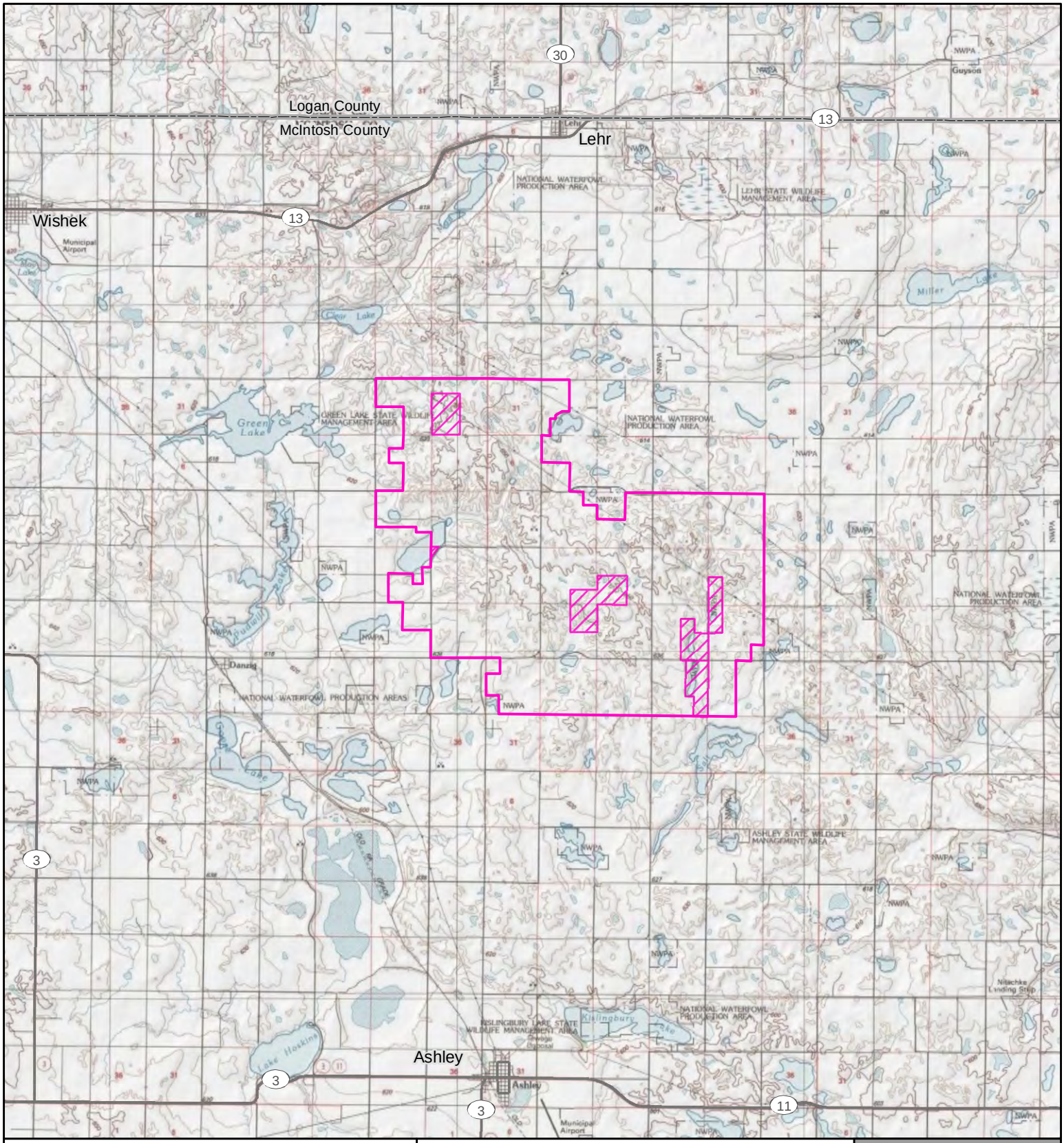
Tetra Tech EC, Inc.



Erika J. Roberts
Project Manager

cc Gener Gotiangco – CPV
John Hafner – CPV

Attachment



Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

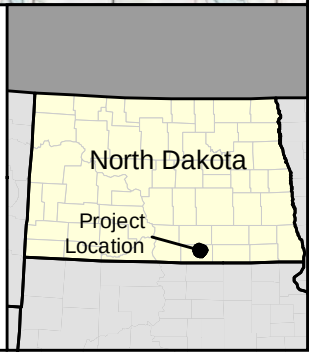
Non-Leased Area

N

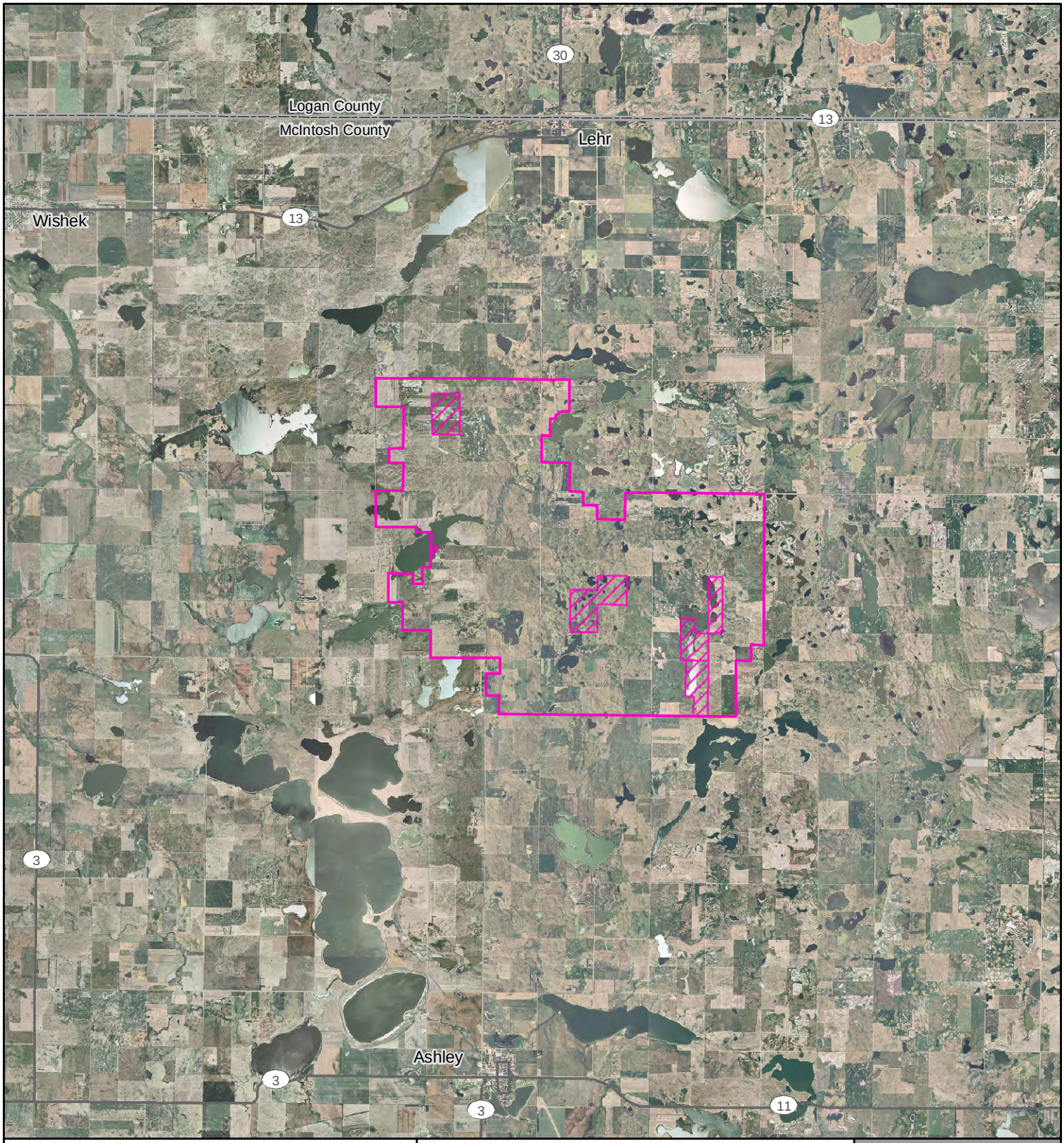
0 2 4 Miles

Source: USGS 24k Quads, 1985.

Scale 1:150,000



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Project Area Map

Ashley Wind Energy Project
McIntosh County, North Dakota

Competitive Power Ventures, Inc.

TETRA TECH EC, INC.

Project Area

Non-Leased Area

N

0 2 4 Miles

Source: USDA NAIP, 2006.

Scale 1:150,000

North Dakota

Project Location

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Appendix F
Pre-Construction Investigation Protocols

2010 Spring Avian Point Count Survey

This protocol is designed to be responsive to the level of effort recommended in the National Wind Coordinating Committee (NWCC) Guidance Document and the United States Fish and Wildlife Service (USFWS) Interim Guidelines. The NWCC Guidelines call for an initial reconnaissance survey. The goal is to identify sites early in the planning process that have a high probability of substantial avian issues. The survey is designed to quantify the species, and activity of birds in the Project Area. The following point count survey protocol has become industry standard across the United States as part of environmental due diligence.

Point count surveys of large circular plots will be conducted to provide baseline information on both resident and migratory avian species within Project boundaries during the spring. The same points surveyed in fall 2009 will be surveyed in the spring 2010 survey. The avian point count survey will be conducted weekly from late March (weather permitting) through mid-June 2010. This survey period will be early enough in the year to account for spring migration of all major bird groups, raptor nesting, and songbird breeding. The study timing will also be designed to capture the three major migration waves within the season (e.g., waterfowl, shorebird, songbird). Surveys will be conducted during daylight hours. The radius of each circular plot will be 800 meters. Birds observed beyond 800 meters will be recorded, but not included in the site use calculations for comparison to other sites. In-transit observations of birds will be made while traveling between survey points.

A qualified biologist will conduct observations for 20 minutes at each observation point; all birds observed will be recorded. Species observed, number of birds (single or in a flock), flight height range, flight direction, habitat, distance from observer at closest approach, and activity will be recorded to determine how species are using the Project Area. This sampling strategy gives an assessment of the overall use of the Project Area by birds, as well as details on the specific locations of birds relative to topographic features and turbine locations. Environmental conditions (cloud cover, ceiling, temperature, precipitation, and wind speed) will be recorded at each observation point. The Universal Transverse Mercator (UTM) coordinates will be documented in the field using a global positioning system (GPS) unit.

Flight paths of large birds and sensitive species will be mapped. The distance at closest approach to the observer will be used to standardize the data for 800-meter radius plots, so the use data can be compared to that from other wind projects throughout the country. The number of birds counted will be summarized by observation point and count date. Wildlife observed while in the Project Area, but not during a 20-minute observation session, will be recorded as incidental observations and used to supplement the data.

Bird flight heights and distance from the observation point will be summarized by percent of observations to quantify the location of birds in the Project Area relative to the turbine locations. These data will be summarized to create a description of the behavior of birds in and around wind turbines.

Raptors Nest Surveys

A raptor nest survey will be conducted to gain an understanding of resident raptor use and make micro-siting recommendations. An initial survey will be conducted while the biologist is on-site establishing the point count locations in early spring; this will allow for easier detection of nest in trees as this survey will be conducted prior to leaf-out. Any detected stick nests will be revisited later in the spring during the point count surveys to determine nest activity and species presence. The biologist will also pay close attention to raptors detected during the point counts to glean clues about the locations of nests not detected during the initial survey. The Project Area will be searched by driving along roads and stopping to scan with binoculars and a spotting scope. All suitable nesting habitat within the Project Area will be searched. Particular attention will be given to areas where raptor nests are likely to occur, such as rock outcrops, cliff ridges, power lines, and areas near bodies of water. All nests will be photographed and a GPS will be used to record nest locations. The biologist will also record activity status, nest condition, nest height, nest substrate, and any other relevant data. Care will be taken to not approach active nests too closely to avoid disturbing nesting birds. However, if no birds are observed on the nest, the nest will be approached to look for signs of nesting such as whitewash, downy feathers, and pellets.

Reporting of Survey Results

A report will be prepared for the spring avian survey and raptor nest survey. The final report will incorporate information from the 2009 fall avian survey report and include a comparison between the results for the two survey seasons. The report will also document active raptor nests at the Project Area.

Appendix G
Ten-Year Plan

TEN YEAR PLAN: 2010-2020
CPV Ashley Renewable Energy Company, LLC

In accordance with Section 49-22-04 of the North Dakota Century Code and Chapter 69-06-02-01 of the North Dakota Administrative Code, CPV Ashley Renewable Energy Company, LLC ("CPV"), submits the following Ten Year Plan for years 2010 through 2020.

(1) A description of the general location, size, and type of all facilities to be owned or operated by the utility during the ensuing ten years, as well as those facilities to be removed from service during the ten-year period.

CPV does not currently own or operate any generation or transmission facilities in North Dakota. The only facility that CPV plans to construct in the next ten years is the Ashley Wind Energy Project, an up to approximately 200.1 megawatt ("MW") wind energy conversion facility. The Ashley Wind Energy Project site consists of approximately 17,400 acres of privately owned land located approximately six miles north of the town of Ashley in McIntosh County, North Dakota. The Ashley Wind Energy Project's output will be sold to the Tennessee Valley Authority ("TVA") pursuant to a 20-year power purchase agreement. Construction on the Ashley Wind Energy Project is anticipated to begin as early as mid-2011 and the facility is expected to be commercially operational by the end of 2012. CPV has filed with the Commission an Application for a Certificate of Site Compatibility for the Ashley Wind Energy Project in McIntosh County, North Dakota (Case No. PU-09-370).

As noted above, CPV does not currently own or operate any facilities and, as such, does not own or operate any facilities that will be removed from service during the next ten years.

(2) An identification of the location of the tentative preferred site for all energy conversion facilities and the tentative location of all transmission facilities on which construction is intended to be commenced within the ensuing five years and such other information as may be required by the commission. The site and corridor identification shall be made in compliance with the criteria published by the commission pursuant to section 49-22-05.1.

The Ashley Wind Energy Project is the only energy conversion facility that CPV plans to construct during the next five years. As noted previously, construction on the Ashley Wind Energy Project is anticipated to begin as early as mid-2011. The proposed location of the Ashley Wind Energy Project is depicted in Figure 1, attached hereto. As set forth in CPV's Application for a Certificate of Site Compatibility, the proposed location for the Ashley Wind Energy Project will comply with all siting criteria set forth in Section 69-06-08-01 of the North Dakota Administrative Code. Additional information regarding the proposed location of the Ashley Wind Energy Project is set forth in Sections 1.3.1 and 5.1 of the Application for a Certificate of Site Compatibility.

CPV does not plan to construct any transmission facilities within the next five years.

(3) A description of the efforts by the utility to coordinate the plan with other utilities so as to provide a coordinated regional plan for meeting the utility needs of the region.

CPV has an application pending before the Midwest Independent Transmission Systems Operator ("MISO") for interconnection of 200 MW of wind generation at the Montana-Dakota Utilities ("MDU") 230 kilovolt ("kV") transmission line, which crosses the site proposed for the Ashley Wind Energy Project. Construction of a new high voltage transmission line will not be required in order to interconnect the Ashley Wind Energy Project, since the Project substation will be able to tie directly into the existing MDU 230 kV transmission line. The CPV Interconnection Application has been filed per the MISO Business Practice Manual 015 for Generator Interconnection. This application and MISO's administration of the application is consistent with its Open Access Transmission, Energy and Operating Reserves Market Tariff, as approved by the Federal Energy Regulatory Commission, and per the operating policies of the Electric Reliability Organization designed to facilitate the administration of efficient energy markets.

(4) A description of the efforts to involve environmental protection and land-use planning agencies in the planning process, as well as other efforts to identify and minimize environmental problems at the earliest possible stage in the planning process.

Since early in the planning process for the Ashley Wind Energy Project, CPV has been working with Local, State and Federal agencies and authorities to identify and minimize any potential environmental, cultural resource and/or land-use planning concerns. CPV is currently seeking regulatory approval for the Ashley Wind Energy Project at both the State and Federal levels. As noted previously, at the State level, CPV has submitted an Application for a Certificate of Site Compatibility for construction of the Ashley Wind Energy Project. At the Federal level, CPV is undergoing a Federal review process. TVA is the lead agency for this Federal review process, which will include a National Environmental Policy Act review, Endangered Species Act Section 7 consultation, and a National Historic Preservation Act Section 106 consultation.

Additional information regarding CPV's agency contacts and efforts to identify and minimize any environmental issues presented by the Ashley Wind Energy Project is set forth in Sections 8.0 and 10.11 of its Application for a Certificate of Site Compatibility.

(5) A statement of the projected demand for the service rendered by the utility for the ensuing ten years and the underlying assumptions for the projection, with that information being as geographically specific as possible, and a description of the manner and extent to which the utility will meet the projected demands.

CPV responded to a Request for Proposals issued by TVA, whereby TVA sought output from renewable generation sources to satisfy its need for additional renewable energy. TVA selected CPV's proposal, and the entire output of the Ashley Wind Energy Project will be sold to TVA pursuant to a power purchase agreement.

Additional information regarding the need for the Ashley Wind Energy Project is set forth in Section 2.0 of CPV's Application for a Certificate of Site Compatibility.

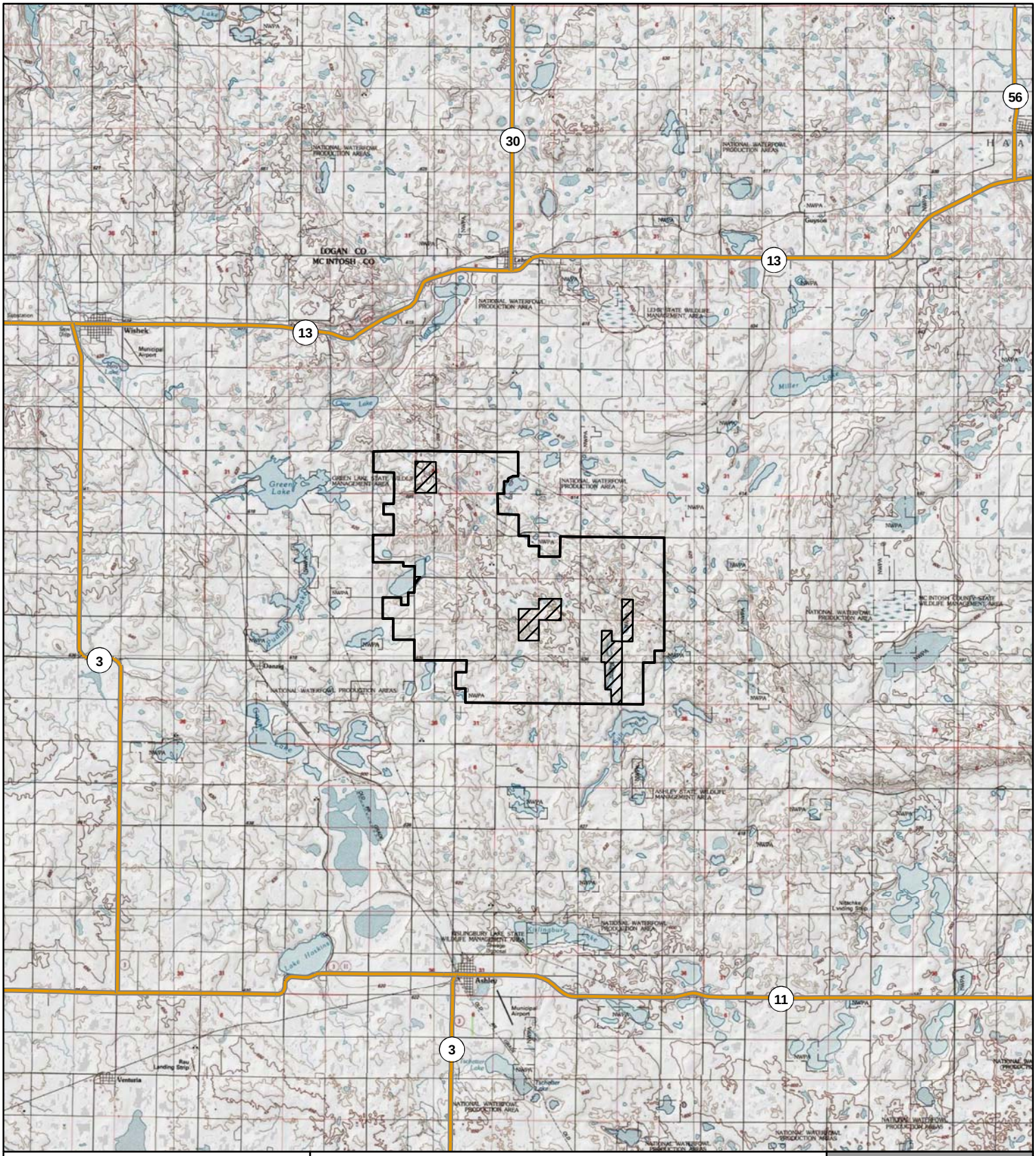


Figure 1
Project Vicinity

Ashley Wind Energy Project
McIntosh County, North Dakota

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

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