minnesota power
AN ALLETE COMPANY

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May 3, 2013

Darrell Nitschke
Executive Secretary
North Dakota Public Service Commission
600 E. Boulevard Ave., Dept. 408
Bismarck, North Dakota 58505-0480

RE: Minnesota Powers Bison 4 Wind Project
Siting Application for a Certificate of Site Compatibility for Bison 4 Wind Project, Oliver and Mercer counties
Case No. PU-13-127

Dear Mr. Nitschke:

Pursuant to N.D.C.C. §§ 49-22-08 and 49-22-08.1, under the Energy Conversion and Transmission Facility Siting Act, and promulgated rules, Minnesota Power has enclosed the following:

An original and ten copies of an Application for a Certificate of Site Compatibility for the Bison 4 Wind Project, Case No. PU-13-127.

In accordance with the North Dakota Public Service Commission's motion on March 27, 2013, please find enclosed the $100,000 filing fee for the Certificate of Site Compatibility application.

If you have any questions, or need additional information, please contact me at the above number.

Sincerely,

David R. Moeller

Enc.
c: Tom Coughlin, Minnesota Power
Barry Gartner, Minnesota Power
Matt Fruedenrich, Minnesota Power
Dan McCourtney, ALLETE

Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility to Construct the Bison 4 Wind Project

Case # PU-13-127

By

Minnesota Power

May 3, 2013

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1.0 Introduction

Minnesota Power, an operating division of ALLETE, Inc., submits this application for a Certificate of Site Compatibility (Certificate) to the North Dakota Public Service Commission (PSC) to construct the Bison 4 Wind Project (Project).

The preliminary Project boundary encompasses approximately 47,062 acres in Oliver and Mercer Counties, North Dakota (Exhibit 1). The Project, when completed, will generate up to 210 megawatts (MW) of electricity, and will use up to 70 wind turbine generators depending on the turbine selected. Associated permanent facilities include access roads, an electrical collection system, operations and maintenance facility and two meteorological towers.

Minnesota Power provides retail electric service to northeastern Minnesota and wholesale service to 16 municipal customers in Minnesota and two private utilities in Wisconsin. Minnesota Power has historically maintained an energy resource portfolio of coal, hydro, and biomass. In an effort to meet Minnesota's Renewable Energy Standard (Minn. Stat. § 216B.1691) and diversify its energy resource portfolio, Minnesota Power has been implementing a renewable development plan that began with 98.6 MW of purchased wind energy from the Oliver I and II Wind Energy Centers, owned by NextERA Energy Resources and located in Oliver County, North Dakota. Minnesota Power's next major project was construction of the 25 MW Taconite Ridge I Wind Energy Center in northeastern Minnesota. Taconite Ridge I began commercial operation in June 2008. In 2009, Minnesota Power began construction on Phase 1A of the Bison 1 Wind Project in Morton and Oliver Counties, and completed construction of Phase 1B of Bison 1 in the first quarter of 2012. In total, Bison 1 consists of 16 2.3-MW and 15 3.0-MW wind turbines generating 81.8 MW of electricity. The Bison 2 Project is adjacent to both the northeast and southwest portions of the Bison 1 Project and consists of 35 3.0-MW wind turbines generating 105 MW of electricity. The Bison 3 Project is adjacent to both the east and the west portions of the Bison 2 project and consists of 35 3.0-MW wind turbines generating 105 MW of electricity. Construction of Bison 2 and Bison 3 was completed in the fourth quarter of 2012.

Over the past several years, Minnesota Power engaged in extensive development efforts to identify technically and economically viable renewable energy projects. Minnesota Power is committed to minimizing the environmental impact of its facilities.

At the time of this application, Minnesota Power has not entered into a contract to purchase and use a specific make, model, and size of wind turbine. However, Minnesota Power is committed to developing this project at this site and is seeking authorization from the NDPSC to proceed in a way that provides the maximum amount of flexibility in developing a competitive project based on costs, customer needs, and economic considerations. As a result, this application assumes the greatest number of turbine locations, project area, and resulting impacts based on the worst case turbine characteristics (i.e. greatest hub height, largest rotor diameter, loudest turbine, etc.). In this way, Minnesota Power will assure compliance with NDPSC regulatory requirements for any turbine selected and the associated layout because all possible project scenarios are included in this worst

case project description.

In general, Minnesota Power will use larger turbine sizes when possible as a way to reduce the total project acres of impact. For this project, Minnesota Power is not considering any turbines with less than a 3 MW capacity. Therefore, this application assumes the maximum 70 wind turbine locations and associated access roads, crane paths and collector lines. The actual turbine size, height and rotor diameter could change depending on the turbine that is selected.

If a turbine with a capacity over 3 MW is selected, fewer turbines will be needed to supply the up to 210 MW of electricity. In addition to decreasing the number of turbines, the turbine change would also decrease the number of associated access roads. As a result, if the turbine size does increase, the project footprint, affected project acres and impacts from an environmental standpoint, will be reduced.

Likewise, the impact calculations provided in this application are based not only on the maximum number of turbines that could be used but also the *maximum* potential hub height, the *maximum* rotor diameter, and other maximum turbine characteristics. These numbers will most likely decrease as the project develops.

The Bison 4 Wind Project will interconnect with a new substation to be built by Minnesota Power in the southeastern corner of Mercer County that is an extension of the existing 230 kV transmission line (already permitted under PU-11-620) and also with the existing 230 kV Bison Substation and then to the Square Butte Substation. The wind energy generated by the Project will then be transmitted via Minnesota Power's existing 250kV DC Line and the AC transmission system as available and is intended to be used to meet Minnesota Power's customer needs. The transmission line extension and new substation are planned for construction as early as the fourth quarter of 2013 or the first quarter of 2014. This schedule for the Project and transmission upgrade, however, is contingent on obtaining all necessary approvals from the PSC and local governments.

Minnesota Power has retained Merjent, Inc. (Merjent) to assist with environmental review, permitting, and preliminary engineering for the Project. Minnesota Power anticipates receiving a Certificate from the PSC in August 2013, so that it may begin construction as early as October 2013.

1.1 Compliance with the Energy Conversion and Transmission Facility Siting Act

This application for a Certificate has been prepared in accordance with the North Dakota Energy Conversion and Transmission Facility Siting Act (the Act), and meets the criteria set forth in North Dakota Century Code (NDCC) 49-22. The Act states 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).

Minnesota Power has considered exclusion areas, avoidance areas, selection criteria, and policy criteria as described in Article 69-06 of the North Dakota Administrative Code (NDAC) in the

design of the Project. In addition, sufficient project design, wind resource, and technical information have been provided for a thorough evaluation of the reasonableness of the proposed site.

Table 1-1 outlines the information necessary to fulfill the requirements for a Certificate with the PSC and notes where these requirements are addressed in this document.

In addition to the Certificate, Minnesota Power will also secure other permits and approvals as required, including a Conditional Use Permit from Oliver and Mercer Counties.

Table 1-1 Certificate Completion Checklist

State Authority	Description	Section
Chapter 49-22	PSC Guidelines: Energy Conversion and Transmission Facility Siting	1.1
Section A	Description	1.2, 1.3, 1.3.3, 1.5, 4.3, 6.0-6.6, 9.0
1.	Type: Describe the type of energy conversion facility proposed and provide a diagram of the major process system or a flow diagram.	1.0, 4.1
2.	Product: Describe in general terms and technical terms the products to be produced by the proposed facility.	1.3.4, 6.1, 6.3
3.	Size and Design: Provide the following description of the production capacity and design	1.3.4, 4.1, 4.2, 4.3, 6.0
a.	Gross design capacity	1.3.4
b.	Net design capacity	1.3.4
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	1.3.3, 4.1, 4.2, 5.1, 7.11.2 10.4
e.	One (1) copy of all design data reports separate from the application	Separate Cover
4.	Time Schedule: Provide the anticipated time schedule for the accomplishment of the following	1.4
a.	Certificate of Site Compatibility	1.4
b.	Land acquisition complete	1.4
c.	Construction start date	1.4
d.	Construction complete	1.4
e.	Test operations	1.4
f.	Commercial production date	1.4
g.	100 percent capacity factor	1.4
h.	Any expansion or additions	1.4
Section B	Studies	Appendix A
	Provide a copy of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal,	Appendix A
Section C	Need for Facility	2.0
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	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

State Authority	Description	Section
Section D	Location	1.3.3
1.	Select a study area, which includes the proposed facility site, of sufficient size to enable the PSC to evaluate the factors addressed in Section 49-22-09, NDCC	1.3.1, 1.3.2, 10.0-10.11, Exhibits 1, 2, and 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	1.0
3.	Identify and map the criteria that led to the proposed facility location within the study area	Exhibits 1 and 4, 1.3.3, 3.0
4.	Discuss in detail the relative value of each criteria and how the proposed facility location was selected giving consideration to all criteria	3.0
5.	The criteria to be evaluated shall include at a minimum all of the following which are within the study area	3.0
a.	Exclusion areas	3.1, Exhibits 4 and 7
b.	Avoidance areas	3.2, Exhibits 4, 5, 8, and 9
c.	Selection criteria	3.3
d.	Policy criteria	3.4
e.	Design and construction limitations	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, 7.18
7.	List the qualifications of the people in the various disciplines that contributed to the facility site location study	11.0
8.	Maps	Exhibits
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 0.5 inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Exhibits

State Authority	Description	Section
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	Exhibits (PSC Staff supports not providing a Mylar map)
NDCC 49-22-	Factors to be considered in evaluating applications and designation of sites, corridors, and routes	10.0
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 on 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 Flexibility in Siting

To develop a project that is both economically and technically feasible, wind energy project owners follow a step-wise siting process that weighs alternatives—both at the level of general location and specific layout. Included below are the siting criteria used in identifying general project locations. Each of these criteria needs to be satisfied for a project to be economically and technically feasible and practical.

- **High Quality Wind Resource.** Given current turbine technologies, the siting of large-

scale wind energy facilities is constrained by the need for a location with sufficient wind speeds on a regular basis throughout the year. The lack of a suitable wind resource could lead to operational problems, a lower return on investment, and higher energy costs for electric customers.

- **Available Land.** Land must be available for a large-scale wind energy project. Land owners and/or administrators must be willing to negotiate lease agreements or otherwise allow the use of the land for wind turbines and associated facilities. Existing land uses must not conflict with wind energy facilities.
- **Suitable Transmission.** Large-scale wind energy facilities must be located within a reasonable distance of an interconnection point on a transmission line with sufficient capacity to allow for the economical delivery of power to customers on the transmission grid. A reasonable distance is determined, in part, by the capital cost of transmission line construction.
- **No Significant Environmental Issues.** Large scale wind energy projects are ideally located in areas that avoid significant environmental issues, areas of particularly sensitive habitats, or conflicting activities (e.g., airports).

The proposed Project location in Oliver and Mercer Counties was found to meet all of the siting criteria. The next step in the development process was to secure the site by entering into agreements with landowners interested in having Minnesota Power place wind turbines and associated facilities on their properties.

Once a site was selected and secured, preliminary turbine locations were identified based on an efficient project design, initial site inspection, topographic maps, known environmentally sensitive areas, review of North Dakota's power plant siting exclusion and avoidance areas, review of Oliver and Mercer Counties' wind siting requirements, and communications with local, state and federal agencies. Minnesota Power is conducting a number of field studies such as wetland, biological, and cultural resource surveys and geotechnical investigations. After these field studies and additional analyses have been completed, Minnesota Power will provide the PSC with proposed final turbine locations prior to the public hearing.

Once the PSC issues the Certificate, Minnesota Power would complete any remaining studies required by the Certificate or Minnesota Power's siting process, including additional geotechnical studies as well as outstanding wetland, biological, and cultural resource surveys. Once these additional studies are completed, preliminary turbine and access road locations will be reevaluated for their appropriateness with Certificate conditions and buffers. A final site plan for the Project will be submitted to the PSC prior to construction.

Minnesota Power believes that the aforementioned siting process is consistent with North Dakota siting rules and provides Minnesota Power the flexibility necessary to develop this Project in a timely, cost-effective, and environmentally responsible manner.

1.3 Project Summary

Minnesota Power studied potential wind resource locations in North Dakota for siting this proposed 210 MW wind generation facility. Based on this review, Minnesota Power selected a study area north Glen Ullin and New Salem, ND for additional study and preparation of this application for a Certificate to the PSC

1.3.1 Project Study Area Alternatives

Minnesota Power used a number of criteria to select a site for the Project (i.e. high quality wind resource, available land, suitable transmission, and no significant environmental issues). See Section 1.2, above. Those alternative areas that do not meet these criteria were quickly dismissed and not studied in detail.

West central North Dakota is well suited for wind development because it features large open terrain without trees. Minnesota Power has identified a number of other areas that meet its siting criteria and could feasibly be developed for wind energy. However, because Minnesota Power intends to develop more than one wind energy project in North Dakota, some of these suitable areas were set aside for future development.

1.3.2 Project Study Area Selection

Exhibit 1 shows the location of the proposed Project boundary, study area, or site. The southwestern portion of the site is approximately 10 to 12 miles north of the cities of Glen Ullin and New Salem. The northeast portion of the site is approximately eight miles southwest of the city of Center. This site was selected based on good land compatibility and accessibility, excellent wind resources, and proximity to a transmission grid interconnection point. In addition, the study area was selected considering the exclusion and avoidance criteria outlined in North Dakota Administrative Code (NDAC) 69-06-08.

The proposed Minnesota Power Bison 4 Wind Project site combines the strength of the strong wind resource with close transmission access. The Project will interconnect with a new substation to be built by Minnesota Power that is an extension of the existing 230 kV transmission line (already permitted under PU-11-620) from the existing 230 kV Bison Substation. From the Bison Substation, the Project will use the existing 230 kV Bison – Square Butte 84 Line to connect into the grid at the Square Butte 230 kV Substation. Finally, from the Square Butte Substation, the wind-generated electricity will be transmitted to Minnesota Power's transmission system via an existing 250kV DC Line and the existing AC transmission system as available.

West central North Dakota has higher average wind speeds than most other buildable areas in the Midwest, as shown in Figure 1, below. In evaluating these wind resources in Oliver and Mercer Counties, Minnesota Power embarked upon a wind assessment process to evaluate the wind energy potential in areas in which Minnesota Power has obtained site control near the western terminus of Minnesota Power's DC Line. This wind assessment has produced over two years of wind data near

the Clean Energy #1 site and indicates annual average wind speeds of over 8.5 meters per second (mps), or 19 miles per hour (mph) in the area, making it an ideal site to build a wind project that can deliver low cost energy to customers.

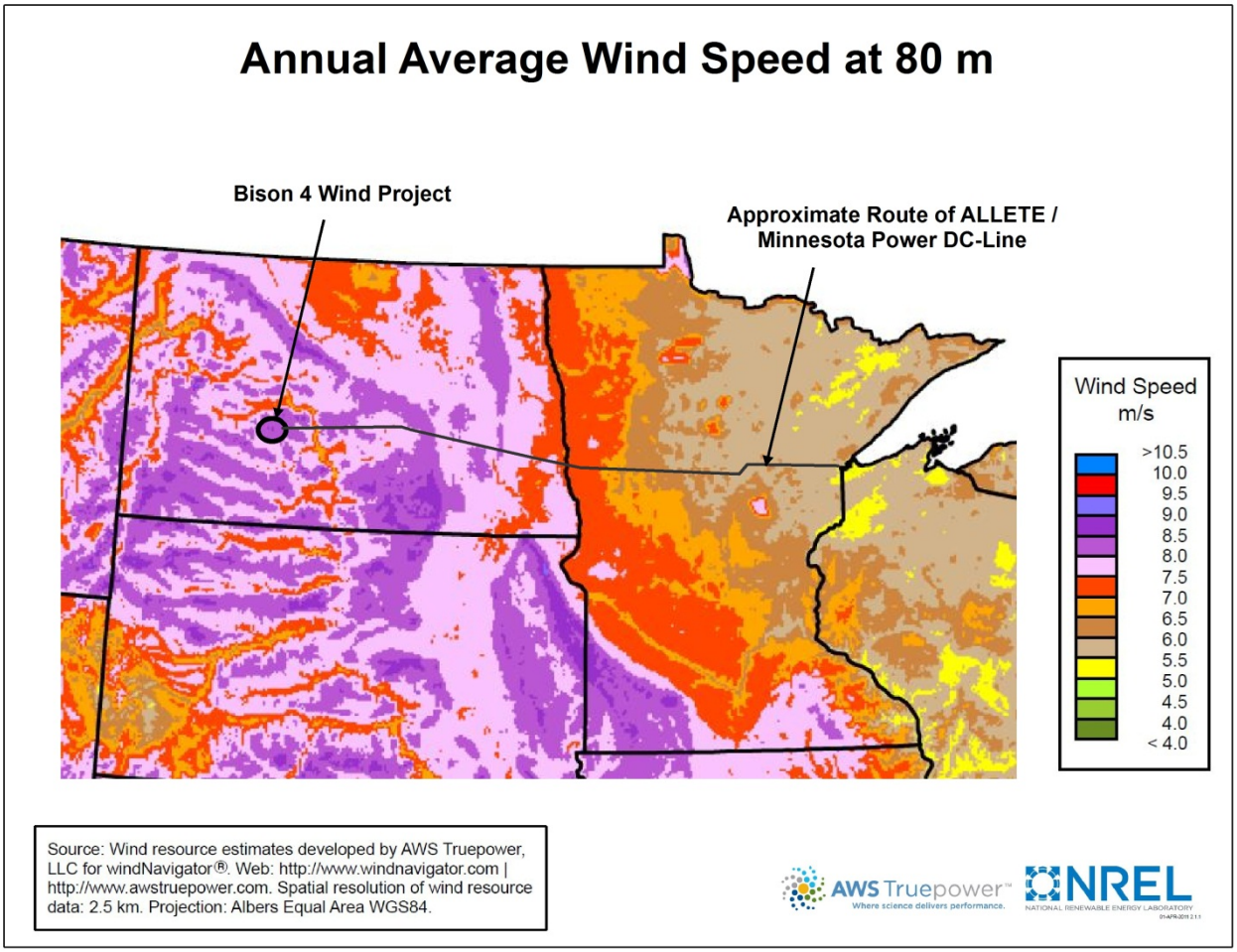

Figure 1. Upper Midwest Wind Resource Map

1.3.3 Proposed Site

Leases from most landowners have been obtained within the preliminary Project boundary. The Project site is located in Oliver and Mercer Counties within the following townships, ranges, and sections (Table 1-2).

Table 1-2 Project Site Location

County	Township	Range	Sections
Mercer	141N	88W	1, 12, 13, 24, 25, 26, 35, 36
Oliver	141N	85W	5, 6, 7, 8, 17, 18, 19, 20, 21, 22, 27, 28, 29
	141N	86W	4, 5, 6, 7, 8, 9, 10, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35
	141N	87W	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34

The Project site encompasses approximately 47,062 acres (74.24 square miles) lying north of Glen Ullin and New Salem, ND and southwest of Center, ND. The turbines will be placed throughout the Project site. The Project's general location is shown in Exhibit 1 and the preliminary Project boundary, with aerial photo and topographical map backgrounds, is shown in Exhibit 2 and Exhibit 3, respectively.

Overall project impacts cannot be accurately estimated until micro-siting of the turbines and the final project design have been completed. However, based on previous projects, the area to be impacted by the completed Project is expected to be approximately 87 acres, or less than 0.2 percent of the entire Project boundary. The remaining area will be left untouched by the project or will be allowed to revert to their former condition after project construction (areas such as those temporarily disturbed for crane paths). Detailed locations of wind turbine generators, access roads, and collector lines will be provided to the PSC a minimum of one week in advance of the public hearing.

1.3.4 Projected Output

As with all wind projects, output is dependent upon wind resource, final design, site-specific features, and equipment. The Project will have a nameplate (gross) capacity of up to 210 MW using up to 70 turbines. These turbines at the selected site will produce a net estimated annual average output of 820,000 to 860,000 MWh.

1.4 Project Schedule

The anticipated schedule, including the commercial operation date, is dependent upon permitting approval and other development activities. With the aforementioned items in place, Minnesota Power plans to begin construction activities in the fall of 2013, provided all pre-construction permits and approvals have been obtained. Other Project-related activities include:

- **Certificate of Site Compatibility**: Minnesota Power anticipates the Certificate will be approved in August 2013.

- **Land Acquisition**: Minnesota Power has secured sufficient easement options from landowners to develop up to a 210-MW project in Oliver and Mercer Counties.
- **Permits:** Minnesota Power is responsible for undertaking all required environmental studies, and will obtain all required permits and licenses concurrent with the PSC Certificate review and approval process. Completing permits is on the "critical path" for the Project and will allow Minnesota Power to move forward with other commitments, including ordering long-lead time equipment.
- **Equipment Procurement, Manufacture, and Delivery**: Minnesota Power anticipates securing a contract with a turbine supplier by the end of the third quarter of 2013.
- **Construction:**
  - Project construction may begin in the third quarter of 2013, subject to receipt of the necessary permits and approvals, road restrictions and weather.
  - Construction of the access roads, wind turbine generator foundations, 34.5 kV electrical collector system, operations and maintenance building (if constructed), and communication system for the wind turbine generators, is anticipated to occur the fourth quarter of 2013.
  - Erection of the turbine generators is expected to begin the second half of 2014.
- **Test and Operations**: Testing for the Minnesota Power Bison 4 Project may occur in the fourth quarter of 2014.
- **Commercial Operation**: Minnesota Power expects commercial operation to begin in the fourth quarter of 2014.

No expansions or modifications to the Minnesota Power Bison 4 Wind Project are planned. Minnesota Power will submit applications for any future additional wind generation facilities.

1.5 Project Ownership

Minnesota Power will construct and own the Bison 4 Wind Project, including all equipment up to the interconnection point (Minnesota Power's proposed substation and transmission line extension). Minnesota Power is a Minnesota corporation and public utility in the state under Minnesota Statute 216B.02, subd. 4. The output of the project will be used by Minnesota Power to serve the renewable energy needs of its customers.

2.0 Need for Facility

2.1 Need Analysis

Uncertain long-term energy policies have emphasized the need for new and diverse energy sources. Existing state and potential future federal policy, combined with the declining costs of wind energy generation, have made wind energy more attractive to utilities seeking to diversify their generation portfolios. Several states have implemented Renewable Portfolio Standards (RPS) mandates that require the development of renewable energy projects. Minnesota Power will use the output from the Project to meet the State of Minnesota Renewable Energy Standard (RES) under Minn. Stat. § 216B.1691. Under the Minnesota RES, Minnesota Power is required to generate or procure sufficient electricity generated by an eligible renewable energy technology (which includes wind energy). The following standard percentages of Minnesota Power's total Minnesota retail electric sales must be generated by eligible energy technologies by the end of the year indicated: 17 percent by 2016, 20 percent by 2020, and 25 percent by 2025. Currently, approximately 12 percent of Minnesota Power's total Minnesota retail electric sales are generated by eligible energy technologies.

The Bison 4 Wind Project is an integral part of Minnesota Power's plan for obtaining 25 percent of its electricity for its retail customers from renewable energy sources by the year 2025. When it is fully operational, the Bison 4 Project will make up over 6 percent of Minnesota Power's retail energy supply with approximately 840,000 MWhs being produced per year, and enable Minnesota Power to exceed the 20 percent by 2020 requirement of the Minnesota RES. The Bison 4 Wind Project is also an integral part of resource plans to reshape its generation portfolio.

Electric utilities such as Minnesota Power are instrumental in meeting regional energy needs, stabilizing energy costs, and enhancing energy reliability. North Dakota, with its premier wind resources, has a unique opportunity to help meet these energy needs with clean, efficient, renewable energy.

2.2 Alternatives

No other alternative to the Project was considered.

2.3 Ten-Year Plan

Minnesota Power will file a Ten-Year Plan with the PSC for the Bison 4 Project by July 1, 2013.

3.0 Site Selection Criteria

Minnesota Power is currently evaluating the proposed 47,062-acre site to determine the optimal locations for up to 70 wind turbines. Siting turbines is a process through which input from several different sources is considered. Initially, several study areas were considered based on the expected wind resources and transmission availability. The Bison 4 Wind Project study area was identified as an optimal site from an environmental, wind resource, and economic perspective (Exhibit 1).

Minnesota Power negotiated with landowners to secure wind lease options and has begun to identify preliminary turbine locations based on site inspection, topographic maps, known environmentally sensitive areas, review of North Dakota's power plant siting exclusion and avoidance areas, review of Oliver and Mercer Counties' wind siting requirements, and communications with local, state, and federal agencies. Through this process, Minnesota Power not only addresses environmental issues that commonly arise during project development, but also works within the parameters of state rules. North Dakota has several site selection criteria that are considered by the PSC to determine suitability of the site. Minnesota Power has reviewed the criteria in the NDAC, Chapter 69-06-08, and has factored these criteria into site design. These criteria are discussed in this section.

3.1 Exclusion Areas

Section 69-06-08-01-1 of the NDAC states that specified "geographical areas 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." Minnesota Power Bison 4 Wind Project exclusion areas are listed in Table 3-1 and shown in Exhibit 4.

Table 3-1 Exclusion Areas

Exclusion Area	Present within Preliminary Project Boundary?	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	No		7.9, 7.14, 7.15, Exhibits 1, 4, and 5

Exclusion Area	Present within Preliminary Project Boundary?	Proposed Buffer	Section Addressed
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	14 cultural sites have been previously identified. Buffers will be determined in consultation with North Dakota SHPO	7.8, 7.9, 7.17
County parks and recreational areas, municipal parks, parks owned or administered by other governmental subdivisions, hardwood draws, and enrolled woodlands.	No		7.9
Prime farmland and unique farmland, as defined by the land inventory and monitoring division of the Soil Conservation Service, United States Department of Agriculture, in 7 C.F.R. part 657; provided, however, that if the PSC 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	No buffer is proposed. Prime farmland has been avoided to the extent practicable. Impacts to prime farmland will have a negligible effect on the yearly production for the top five commodities in Oliver and Mercer Counties.	7.10, 7.11, Exhibits 4 and 6
Irrigated land	No		7.10
Areas critical to threatened or endangered animal or plant species	No		7.17
Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged.	No		7.13, 7.14, 7.15, 7.17
Areas within 1,200 feet of the geographic center of an intercontinental ballistic missile (ICBM) launch or launch control facility	To be determined	1,200 feet	7.3

3.2 Avoidance Areas

Section 69-06-08-01-2 of the NDAC states that specified "geographical areas 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. In determining whether an avoidance area should be designated for a facility the commission 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." The Project avoidance areas are listed in Table 3-2 and shown in Exhibit 4.

Table 3-2 Avoidance Areas

Avoidance Areas	Present within Study Area?	Proposed Buffer	Section Addressed
Historical resources which are not designated as exclusion areas	A Class I literature review has been completed, a Class II structure inventory and a Class III pedestrian survey will be conducted for the construction footprint	A report containing the results of the Class I, II, and III investigations will be submitted to the North Dakota State Historic Preservation Office (SHPO). In consultation with the SHPO, a professional archaeologist would establish buffers appropriate to the resource, once historic resources have been identified.	7.8
Areas within the city limits of a city or the boundaries of a military installation	No		7.3, Exhibits 1 and 4
Areas within known floodplains as defined by the geographical boundaries of the hundred-year flood	No		7.13
Areas that are geologically unstable	No		7.12
Woodlands and wetlands	Yes	All wetland resources will be avoided to the extent practicable and no permanent impacts will occur. Woodland impacts are not anticipated. If woodland impacts occur, individual trees or shrubs will be replaced at a 2:1 ratio in accordance with a planting plan approved by the PSC.	7.14, 7.15, Exhibits 5 and 8

Avoidance Areas	Present within Study Area?	Proposed Buffer	Section Addressed
Areas of recreational significance which are not designated as exclusion areas	No		7.9

A wind energy conversion facility site must also not include a geographic area where, due to operation of the facility, the sound levels within one hundred feet of an inhabited residence or a community building will exceed fifty dBA. The sound level avoidance area criteria may be waived in writing by the owner of the occupied residence or the community building. Noise issues are discussed in Section 7.3.

3.3 Selection Criteria

Section 69-06-08-01-3 of the NDAC states that (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 following, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum" (Table 3-3).

Table 3–3 Selection Criteria

Selection	Potential Adverse Effects	Section Addressed
Impact Upon Agriculture:		
Agricultural production	The area required for the maximum 70 turbines would be a total of approximately 87 acres, of which approximately 18 acres would be needed for the turbines, 69 acres for permanent access roads, and an additional 3 acres for an O&M Facility. Of this area, the total that would be permanently removed from agricultural production will be determined pending completion the final design of the Project. However, this total area is expected to have insignificant impact to agricultural production.	7.10
Family farms and ranches	No turbines will be placed within 1,400 feet of occupied residences. The permanent conversion of some land for access roads and turbines, as well as aesthetic changes, are the primary effects to family farms and ranches; however, the permanent effects from roads and turbine sites will be minimal and wind lease payments to farmers will provide a supplemental source of income.	7.2, 7.3, 7.10, Exhibit 4

Selection	Potential Adverse Effects	Section Addressed
Land which the owner demonstrates has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation	No owner of land potentially containing Project infrastructure has expressed concerns related to land that is economically suitable for irrigation.	7.10
Surface drainage patterns and ground water flow patterns	No impacts are anticipated.	7.12, 7.13, 7.14, Exhibit 8
The agricultural quality of the cropland	No impacts to the agricultural quality of the cropland are anticipated. If compaction of soils occurs during construction, Minnesota Power will work with the landowners to alleviate the compaction.	7.10
Impact Upon Availability and Adequacy of:		
Law enforcement	No impacts are anticipated.	7.4
School systems and education programs	No impacts are anticipated.	7.4
Governmental services and facilities	No impacts are anticipated.	7.4
General and mental health care facilities	No impacts are anticipated.	7.4
Recreational programs and facilities	No impacts are anticipated.	7.4
Transportation facilities and networks	During construction an increase in vehicle trips per day is anticipated for approximately 6 months. During facility operation no significant impacts are anticipated.	7.4
Retail service facilities	No impacts are anticipated.	7.4
Utility services	Minnesota Power will utilize station service from the local electrical utility. MISO will suggest appropriate configurations for the electrical system, and Minnesota Power will abide by the recommendations to prevent adverse impacts to the transmission system.	2.0, 7.4
Impact Upon:		
Local institutions	No impacts are anticipated.	7.4

Selection	Potential Adverse Effects	Section Addressed
Noise sensitive land uses	Occupied residences and one cemetery are the only noise sensitive land use within or near the project area. Noise modeling indicates that even for the turbines with the highest noise levels the resulting ambient noise levels will not exceed the 45 dBA (A-weighted decibel) benchmark for residences within 1,320 feet from worst case turbine, and no turbine will be located closer than 1400 feet of a residence per previous PSC permit precedents.	7.6, Exhibits 2, 3, and 4
Rural residences and businesses	No turbines will be placed within 1,400 feet of occupied residences or businesses.	4.1, 7.2, 7.3, 7.5, 7.10,
Aquifers	No impacts are anticipated.	7.12
Human health and safety	If mitigative measures are implemented as discussed in Section 7.5.3 and maintenance schedules are met, no impacts to human health and safety are anticipated.	6.3, 6.5.2, 6.5.3, 7.5
Animal health and safety	No impacts to livestock are anticipated from operation of the facility. Based on biological surveys for similar projects and consultations with the NDGFD and USFWS, there is a potential for avian and bat collisions with the turbines, but the overall impacts are expected to be minimal. Mitigative measures in turbine siting will further minimize the potential for these impacts. Minnesota Power has conducted pre-construction habitat characterizations for selected avian species and will participate in informal post-construction mortality studies for avian and bat species.	7.10, 7.16, 7.17, Appendix A
Plant life	A maximum of approximately 87 acres of land will be permanently impacted for the turbines, building and access roads. The land where the turbines will be sited is primarily tilled and rangeland.	7.10, 7.15, Exhibit 5
Temporary and permanent housing	Temporary housing will be utilized during construction. No impacts are anticipated.	7.2
Temporary and permanent skilled and unskilled labor	No adverse effects are anticipated.	7.2
The cumulative effect of the location of the facility in relation to existing and planned facilities and other industrial development	No impacts are anticipated to existing and planned facilities and other industrial development.	7.3

3.4 Policy Criteria

Section 69-06-08-01-4 of the NDAC stats that "(t)he commission 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. The commission may also give preference to an applicant that will maximize interstate benefits." (See Table 3–4).

Table 3-4: Policy Criteria

Policy Criteria	Suitable Policy or Practice of Applicant	Section
Recycling of the conversion byproducts and effluents	No conversion byproducts or effluents occur as a result of wind energy conversion.	N/A
Energy conservation through location, process, and design	Minnesota Power is developing the site to maximize the energy output. Minnesota Power will develop a site layout that optimizes wind resources while minimizing the impact on land resources and any potentially sensitive areas. Wind-powered electric generation is entirely dependent on the availability of the wind resource at a specific location. The energy available from the wind increases at the third power of the wind speed. In other words, a doubling of the wind speed will increase the available energy by a factor of eight times. In addition, Minnesota Power's proposed use of the DC Line running from the Square Butte Substation to Duluth, Minnesota, affords great efficiencies for the export of the region's wind energy.	4.1
Training and utilization of available labor in this state for the general and specialized skills required	Minnesota Power will use local labor to the extent practicable. Minnesota Power Project management will meet with local labor well in advance of construction to assure the necessary human resources are available.	7.2.2
Use of a primary energy source or raw material located within the state	The energy generated at the site will utilize the wind resources of the state of North Dakota.	5.2
Non-relocation of residents	No residents will be relocated 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 will not interfere with adjacent land uses.	7.3, 7.9, 7.10, 7.16, 7.17, Exhibit 5

Policy Criteria	Suitable Policy or Practice of Applicant	Section
Economies of construction and operation	Minnesota Power will utilize local contractors to the extent practicable.	7.2
Secondary uses of appropriate associated facilities for recreation and enhancement of wildlife	No lands within the Project site will be removed from recreational opportunities that currently exist there.	N/A
Use of citizen coordinating committees	Minnesota Power has and will continue to work with landowners on the development of the Project.	8.0
A commitment of a portion of the energy produced for use in this state	The use of the energy will depend on the offtake counter party.	2.1, 6.1
Labor relations	No labor relations will be affected.	7.2
The coordination of facilities	The potential for future facilities and facility corridors were considered in the location of the Project and its associated facilities. The proposed Project would share a proposed substation and existing transmission infrastructure.	3.0, 3.6
Monitoring of impacts	Minnesota Power and the construction contractor will employ Best Management Practices (BMPs) during construction to monitor soil impacts and segregate topsoil. Minnesota Power will monitor tree and shrub replacement for three years or otherwise in accordance with an approved replanting plan.	7.11, 7.15, 7.16

3.5 Design and Construction Limitations

In general, there are two design and construction limitations when building any wind farm: wind resources and site control. The wind resource is essential to selecting and designing a wind farm. Minnesota Power conducts a thorough analysis of sites they select to ensure that each has ample wind energy to generate revenue for the wind farm. For site control, Minnesota Power negotiates with landowners to secure wind energy options which are later converted to leases after all necessary permits are acquired.

Specific to the Project, there are several additional items that are limiting factors. Oliver and Mercer Counties, and the PSC have established setbacks from property boundaries, road rights-of-way (ROW), and occupied residences. See Section 4.1 for more detailed setback requirements. These setbacks limit the amount of land available for wind development. In addition, as noted in Section 3.6, proximity and access to adequate transmission is critical to wind project siting.

3.6 Economic Considerations

Economic factors were an importation consideration when selecting the proposed Project's size and location. As discussed above, it is important to select a site with a wind resource capable of generating energy at a high capacity factor. Information on the wind resource at the site is discussed in Sections 5.2 and 5.3. The Project will interconnect with the proposed Minnesota Power substation and 230 kV transmission line, which will connect with Minnesota Power's existing 230 kV Bison – Square Butte 84 Line and then to interconnect at the Square Butte 230 kV Substation.

4.0 General Description of the Proposed Facility

4.1 Wind Power Technology

Minnesota Power has not yet selected a turbine manufacturer but is considering turbines in the 3 to 3.3 MW size range. The ultimate turbine rating will drive the number of turbines needed. For example, a 3 MW unit would require 70 locations while a 3.3 MW unit would require 63 locations. So, for example, if Minnesota Power uses a 3.3 MW turbine, the project will have up to 7 alternate turbine locations in its layout for the project depending on the selected turbine capacity.

The maximum rotor diameter will not exceed 117 meters (383 feet), and the maximum nominal hub height for each turbine will not exceed 92.5 meters (303 feet). No turbine model being considered will have a maximum blade height that exceeds 150 meters (492 feet) (Exhibit 10). The turbines begin operation in wind speeds of approximately 3 mps (6.7 mph) and reach their rated capacity at wind speeds of 13 to 15 mps (29.1to 33.6 mph). The turbines are designed to operate in wind speeds of up to 25 mps (55.9 mph) and can withstand sustained wind speeds of more than 59.5 mps (133.1 mph) for a 3-second gust, and a 10-minute average of 42.5 mps (95.1 mph).

Each tower will be secured by a concrete foundation that can vary in design depending on the soil conditions. A control panel inside the base of each turbine tower houses communication and electronic circuitry. Each turbine is equipped with a wind speed and direction sensor that communicates to the turbine control system to signal when sufficient winds are present for operation. The turbine features variable-speed control and independent blade pitch to assure aerodynamic efficiency.

The electricity generated by each turbine is brought to a transformer where the voltage is stepped up to collection-line voltage of 34.5 kV. The electricity is collected by a system of collection lines within the Project site. Typically, this infrastructure is run adjacent to the Project access roads or along public rights-of-way (ROWs) or easements. In cases where such infrastructure must be sited on property that is not governed by the existing wind easement and land lease options, Minnesota Power will obtain easements for the necessary property.

The 34.5 kV collector system will transmit power to a proposed Minnesota Power substation in the southeastern corner of Mercer County as well as Minnesota Power's existing Bison Substation. At the Project's substations, the power will be transformed to a proposed 230 kV transmission line that will parallel the southern boundary of Oliver County, and will connect with Minnesota Power's existing 230kV Bison- Square Butte 84 Line to interconnect at the Square Butte 230 kV Substation.

Electrical energy is converted from AC to DC via a DC converter station within the Square Butte Substation. From there, the electric energy from the Project will be transmitted to customers via the existing Minnesota Power DC Line which extends from the Square Butte Substation to Minnesota Power's Arrowhead Substation located near Duluth, Minnesota. Electrical energy may also reach Minnesota Power customers via the existing AC transmission system, as capacity is available. Each wind turbine will be accessible via all-weather aggregate surfaced roads approximately 16 to 23 feet

wide. Minnesota Power will develop a site layout that optimizes wind resources while minimizing the impact on land resources and any potentially environmentally sensitive areas.

Wind-powered electric generation is entirely dependent on the availability of the wind resource at a specific location. The energy available from the wind increases at the third power of the wind speed. In other words, a doubling of the wind speed will increase the available energy by a factor of eight times. Design of the turbine array and collection system will minimize energy loss due to wind turbine wakes and turbulence and electrical line losses.

Mercer County has established setbacks for wind turbine towers from property boundaries, road ROWs, and occupied residences. Each wind turbine shall be no less than 1,000 feet from the nearest occupied dwelling, commercial building or publicly used structure or facility, unless otherwise negotiated with the landowner. From public roads and aboveground communication or electrical lines, wind turbines shall be set back a distance of not less than one hundred ten (110%) of the height of the wind turbine (measured from the ground surface to the tip of the blade when in a fully vertical position), from the edge of the existing right-of-way. Each wind turbine shall be set back from the wind energy facility perimeter and property lines a distance of not less than one hundred ten percent (110%) the height of the wind turbine. Mercer County requires that the blade tip of any wind turbine shall, at its lowest point, have ground clearance of no less than seventy five (75) feet.

Mercer County requires that Minnesota Power shall place electrical lines and communication cables underground on private property. Collectors and cables shall also be placed within or adjacent to the land necessary for wind turbine access roads. When placing feeders on private property, Minnesota Power shall place the feeder in accordance with the easement negotiated with the affected landowner. If Minnesota Power cannot place overhead feeder lines on private property a request may be made to place them on public ROWs with approval from the governmental unit responsible for the affected ROW.

Oliver County has no established setbacks for wind turbine towers. However, the PSC staff has asked Minnesota Power for a voluntary setback of 1,400 feet from occupied residences. Minnesota Power will voluntarily comply with this setback not only in Oliver County, but also in Mercer County, which is greater than the required minimum setback in that county. Minnesota Power will request a Conditional Use Permit from Oliver County. A Conditional Use Permit may also be needed in Mercer County depending on if the final project layout includes turbines or roads within Mercer County. Table 4–1 identifies the most conservative setbacks applicable to the Project.

Table 4-1 Performance Standards, including Setbacks, for Wind Turbines

Standard	ND Public Service Commission	Mercer County
Occupied Residence	• 1,400 ft. (unofficial); • At a distance that sound levels within 100 feet of a residence does not exceed 50 dBA; • 110% of max turbine height from the property line of nonparticipating landowners	1,000 ft.
Wind Energy Facility Perimeter	110% of max turbine height (unofficial)	110% the height of the wind turbine
Interstate or State Road ROW	110% of max turbine height	110% the height of the wind turbine from the edge of the existing ROW
County or Maintained Township Road ROW	110% of max turbine height plus 75 feet from the road centerline	110% the height of the wind turbine from the edge of the existing ROW
Above Ground Transmission Line (for 115 kV or higher)	110% of max turbine height	110% the height of the wind turbine from the edge of the existing ROW
Minimum Ground Clearance	N/A	75 feet from a blade tip, at its lowest point, to the ground
Property Line	N/A (overhang easements required)	At least 110% the height of the wind turbine, unless wind easement has been obtained from adjoining property owner.
Waterfowl Production Area	1,320 ft.	N/A
Railroad Right-of- Way	110% of max turbine height	N/A

4.2 Associated Facilities

In addition to the wind turbines and the step-up transformers, the Project will include approximately 25 to 35 miles of permanent access roads to the wind turbines year-round depending on the number of

turbines constructed. These roads will typically be 16 to 23 feet wide and low profile to allow cross-travel by farm equipment and turbine maintenance equipment. Minnesota Power will work closely with the landowners in locating access roads to minimize land use disruptions. Consideration will be given in locating access roads to minimize effects on current or future row crop agriculture, grazing, and environmentally sensitive areas. The site will also include two permanent meteorological towers.

Minnesota Power will use a new substation already permitted under PU-11-620 in the southeastern corner of Mercer County and its Bison substation to accommodate the Project. An Operations and Maintenance (O&M) building may be needed for the project and its location is still being determined depending on final turbine selection and layout. .

The electricity generated by each turbine is stepped up by a transformer at each turbine to collection-line voltage of 34.5 kV. The electricity generated at each turbine is collected by a system of power collection lines within the Project site and brought to the Project collector substation.

The 34.5/230 kV collector substations will increase the voltage in order to facilitate the efficient transmission of the wind-generated energy to the existing Square Butte Substation along an existing 230 kV transmission line.

4.3 Land Rights

Minnesota Power has obtained wind options for the Project. Land rights will encompass the proposed wind farm and all associated facilities, including but not limited to wind easements, wind turbines, and access roads.

5.0 Proposed Site

5.1 Identification of Project Site

In addition to wind resource considerations, the Project site was selected based on its proximity to existing transmission infrastructure, proximity to an existing substation, and landowners' interest in participating in the Project. Land use patterns and environmentally sensitive features were also considered, as well as the siting criteria previously discussed in accordance with Section 69-06-08-01 of the NDAC. The site boundary encompasses approximately 47,062 acres (74.2 square miles). However, the land that would be permanently occupied by wind farm infrastructure (turbines, access roads, and collector lines) would be less than one percent of this area, assuming up to 70 turbines occupying 0.25 acre each (total of approximately 18 acres), 35 miles of access roads, up to 3 acres for a potential O&M Facility, and the predominant use of underground collector lines. The total area of direct land use for the turbines, access roads, and associated facilities will be determined pending finalization of the Project design. See Section 7.0 for a detailed description of the Project and site impacts. Proposed final locations of wind turbine generators will be provided a minimum of one week in advance of public hearings.

5.2 Wind Resource Areas—General

The National Renewable Energy Laboratory (NREL) wind map for the state of North Dakota indicates that the average annual wind speeds at an 80 meter hub height within the Project area are 8 to 9 mps (17.9 to 20.1 mph) (Figure 2). Minnesota Power has reviewed and analyzed meteorological information for the Oliver and Mercer County areas and the Project site. This information is described next in Section 5.3.

5.3 Wind Characteristics at Project Site

In evaluating these wind resources in Oliver and Mercer Counties, Minnesota Power embarked upon a wind assessment process to evaluate the wind energy potential in areas in which Minnesota Power has obtained site control near the western terminus of Minnesota Power's DC Line and confirmed annual average wind speeds in the range of 9 mps. The location of the Project combines the strength of a strong wind resource with the good proximity to the DC Line to provide lower cost, renewable energy generation to meet customer power needs.

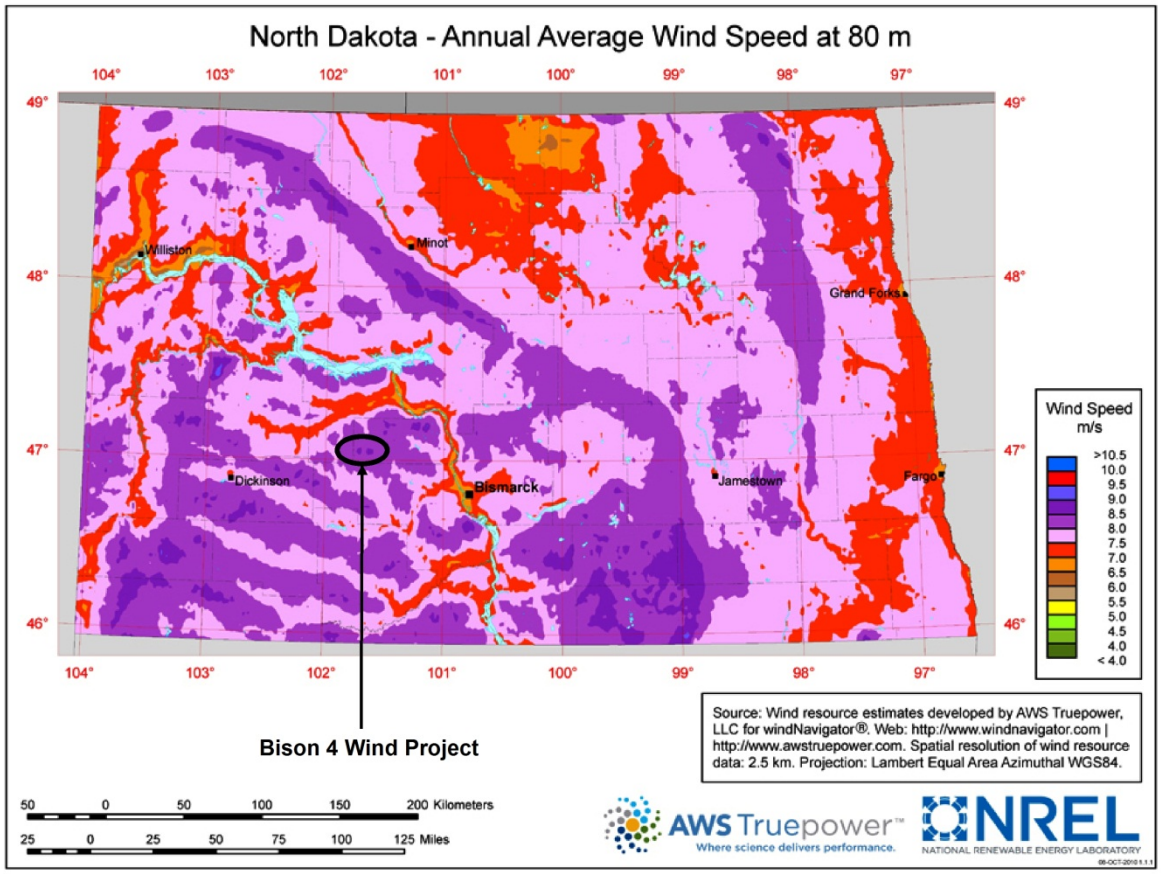

Figure 2. Wind Map for the state of North Dakota

6.0 Engineering and Operational Design Analysis

This section provides a description of the Project, which includes the Project layout, turbines, electrical system, and associated facilities. A summary of this information is included in the Design Data Report, which will be provided under separate cover. Additional information addressed in this section includes project construction, schedule, operation, and decommissioning of the site.

6.1 Project Layout and Associated Facilities

The Project will consist of an array of wind turbines, transformers, underground and/or overhead electrical collector and communication cables, two meteorological towers and access roads. The Project collector system and communication cables will connect to both the existing Bison substation location and an already permitted Minnesota Power substation location (under PU-11-620).

The Project facilities may include the construction of a maintenance and operations facility. The Project will utilize the permitted 230 kV transmission line extension (PU-11-620) and Minnesota Power's existing Bison 230 kV line to deliver the electrical energy to the point of grid interconnection at the existing Square Butte Substation.

Drainage systems, access roads, crane pads, foundations and storage areas will be installed as necessary to fully accommodate all aspects of Project construction, operation, and maintenance.

The Project includes a computer-controlled communications system that permits automatic, independent operation, and remote supervision of each wind turbine. Minnesota Power or its assignee will be responsible for Project operation and maintenance for the life of the Project. Minnesota Power will contract with appropriate qualified supplier of operations and maintenance services at start-up, to assure timely and efficient operations. Minnesota Power will maintain a database for tracking each wind turbine's operational history.

6.2 Description of Wind Turbines

6.2.1 Turbine

Although Minnesota Power has not selected a turbine for the project, turbines ranging in capacity from 3.0 to 3.3 MW are under consideration. The selected turbine will be designed to meet the wind and climatic conditions of the site. Turbines typically begin operation in wind speeds of approximately 3 mps (6.7 mph) and reach rated capacity at a wind speed of 13 to 15 mps (29.1to 33.6 mph). The selected turbine will be designed to operate in wind speeds of up to 25 mps (55.9 mph) and can withstand sustained wind speeds greater than 59.5 mps (133.1 mph) for a 3-second gust, and a 10-minute average of 42.5 mps (95.1 mph).

Any turbine selected will have active yaw and pitch regulation and asynchronous generators. The turbines use a bedplate drive train design where all nacelle components are joined on common structures to improve durability. The turbines will also have Supervisory Control and Data Acquisition (SCADA) communication technology to control and monitor the wind farm. SCADA

systems permit automatic, independent operation and remote supervision, allowing the simultaneous control of many wind turbines. Operations, maintenance, and service arrangements between the turbine manufacturer and Minnesota Power will be structured to provide for timely and efficient operations. The computerized data network will provide detailed operating and performance information for each wind turbine. Minnesota Power will maintain a database for tracking each wind turbine's operational history. Other specifications of the turbines include:

- Rotor-blade pitch regulation
- A full-span pitching aerodynamic braking system
- Electromechanically driven yaw systems

6.2.2 Rotor

The maximum nominal rotor diameter under consideration is 117 meters (383 feet). The rotor consists of three blades mounted to a rotor hub. The hub is attached to the nacelle, which houses the generator, brake, cooling system, and other electrical and mechanical systems. While the rotor speed of the turbines is 15 to 18 rpm at rated power, lower rotor speeds are possible when the turbines operate below this level at lower wind speeds.

6.2.3 Tower

The maximum nominal tower height (hub height) under consideration is for this project is 92.5 meters (303 feet). The turbine towers, on which the nacelles are mounted, consist of three to four sections of conical tubular steel manufactured from certified steel plates. All surfaces are sandblasted and multi-layer coated for protection against corrosion. The towers are uniformly painted with a non-reflective white paint. Access to the turbine is through a lockable steel door at the base of the tower. Four platforms are connected with a ladder and a fall arresting safety system for access to the nacelle. A controller cabinet will be located inside each tower base.

6.2.4 Lightning Protection

Each entire turbine is equipped with a lightning protection system. The turbine is grounded and shielded to protect against lightning. The grounding system will be installed during foundation work, and must be designed for local soil conditions. The resistance to neutral earth must be in accordance with local utility or code requirements. Lightning receptors are placed in each rotor blade and in the tower. The electrical components are also protected.

6.2.5 Lighting

Turbines will be lit per Federal Aviation Administration (FAA) requirements. Per these requirements, turbines would be lit with white or red flashing lights that will be visible from nearby areas at night. The FAA lights will be placed at hub height on the turbine nacelles at the end of and middle of turbine strings, as specified in the FAA determination letters.

6.3 Description of Electrical System

At each turbine a step-up transformer will be installed to raise the voltage to collection-line voltage of 34.5 kV. Power will run through a collection system to the Project's 34.5/230 kV collector substation. Typically, the collector system is run underground and adjacent to the Project access roads or along ROWs or easements. A new 230 kV transmission line will transmit power through the existing Bison substation to the Square Butte Substation, where it will interconnect with the transmission grid.

Electrical energy is converted from AC to DC via a DC converter station within the Square Butte Substation. Electrical energy from the Project will be transmitted to customers via the existing Minnesota Power DC Line which extends from the Square Butte Substation to Minnesota Power's Arrowhead Substation located near Duluth, Minnesota or via the existing AC transmission system as available. All utility protection and metering equipment will meet Minnesota Power and National Electric Safety Code (NESC) standards for parallel operations. The design team will ensure that proper interconnection protection is established.

6.4 Project Construction

Many activities must be completed prior to the proposed commercial production dates. The preconstruction, construction, and post-construction schedule of activities for the Project include the following:

- Order all necessary wind turbine components including towers, nacelles, hubs and blades (proposed for third quarter 2013).
- Complete most environmental and archaeological surveys by June 2013, with follow up studies in autumn 2013 if needed.
- Complete preliminary survey and design to establish locations of wind turbine generators, access roads, and collector system (proposed for spring and summer 2013).
- Complete soil borings, testing, and analysis for proper foundation design and materials (proposed for second quarter of 2013).
- Finalize turbine micro-siting (proposed for second quarter 2013).
- Obtain all required regulatory approvals (proposed for August 2013).
- Complete construction of laydown yards, access roads, and crane hardstandings to be used for construction and maintenance (proposed for second quarter 2014).
- Complete construction of wind turbine generator foundations (proposed for fourth quarter 2013 through early third quarter of 2014).
- Complete construction of electrical collector system and communication system (proposed for fourth quarter 2013 through early third quarter of 2014).
- Delivery of wind turbine components to the site (proposed for third quarter 2014)
- Complete tower placement and wind turbine erection (proposed for fourth quarter 2014 - 2015)

- Complete commissioning and acceptance testing of facility (proposed for fourth quarter 2014 - 2015)
- Begin commercial production (proposed for fourth quarter 2014 - 2015)

Access roads will be built adjacent to the towers, allowing access both during and after construction. The permanent roads will be approximately 16- to 23-feet wide and have aggregate surfacing, adequate to support the size and weight of maintenance vehicles under all weather conditions. The access roads will be designed with curves and vertical grades to accommodate long and heavy loads required for transport of wind turbine components. These roads will meet state and local requirements. The specific turbine placement will determine the amount of roadway that will be constructed for the Project.

Minnesota Power will develop an improved crane-traveling surface that will be integral with the access roads where applicable. The temporary improved surface will be up to 40 feet wide, and consist of compacted earth or aggregate depending on soil conditions, in order to accommodate cranes with approximately 33-foot track width. The driving surface (typically aggregate) will likely be16 to 23 feet in width (roads will have to be wider at turns). The access road impacts calculated in this application assumes a 23-foot permanent width.

The grading design and construction will also include preparation of working surfaces for assembly and erection of the wind turbine generators.

Foundations for the wind turbine generators will likely be cast-in-place reinforced-concrete spread foundations. Construction will include excavation; formwork; placement of anchor bolts, reinforcing steel, and other embedded items; and placement and finishing of the ready-mix concrete. Minnesota Power anticipates that ready-mix concrete will be available from existing suppliers in the area.

The 34.5 kV electrical collector system and fiber optic communication system will likely be installed in a common trench.

The proposed 34.5/230 kV collector substation will require construction of additional cast-in- place reinforced-concrete foundations, erection of structural steel supports for electrical bus work and equipment, and installation of one transformer, circuit breakers, switches, instrument transformers, and other electrical equipment.

During the construction phase, several types of light, medium, and heavy-duty construction vehicles will travel to and from the site, along with private vehicles used by construction personnel. Minnesota Power estimates that there will be up to 300 personnel onsite, plus wind turbine generators will add 20 trucks per day during peak construction periods, when the majority of the foundation and tower assembly is taking place. At the completion of each construction phase, heavy duty equipment will be removed from the site or reduced in number.

6.4.1 Construction Management

Minnesota Power anticipates designating an on-site construction manager with responsibility for scheduling and coordination of Project construction activities. The construction manager will use the services of local contractors, where possible, to assist in Project construction. The on-site construction manager will schedule and coordinate the following activities:

- Site development, including roads
- Foundation excavation
- Concrete foundations
- Electrical collector system and communications installation
- Tower assembly and machine erection
- Bison collector substation additions
- System commissioning and testing

Throughout the construction phase, ongoing coordination occurs between the Project development, design, and construction teams. The on-site construction manager helps to coordinate all aspects of the Project, including quality control, site security, and ongoing communication with local officials, citizen groups, and landowners.

The construction manager will work with Minnesota Power's operations and maintenance staff and the turbine supplier's erection, commissioning, and maintenance personnel to ensure a smooth transition from construction to testing and commissioning and on through to commercial operation of the Project.

6.4.2 Foundation Design

The wind turbines' freestanding tubular towers will be connected by anchor bolts or an equivalent system to a cast-in-place reinforced-concrete foundation. Geotechnical investigations will be conducted to determine the engineering properties of the soils at the Project site. The design of the turbine foundations will accommodate turbine tower load specifications provided by the turbine supplier. The final dimensions of the foundations are dependent on soil conditions encountered at the site; however, foundations for similar sized turbines are typically 45 to 65 feet across and 7 to 10 feet deep.

6.4.3 Civil Works

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

- Improvement of existing access roads to the Project site
- Construction of roads adjacent to the wind turbine strings to allow construction and continued servicing of the wind turbines

- Clearing and grading for wind turbine tower foundation installations
- Installation of 34.5 kV electrical collector cables and fiber optic cables for connecting the individual wind turbines to the collector substation
- Clearing and grading for pad-mount transformers and other installations

Improvements to existing public roads may include increasing width, modifying/improving subgrade, adding aggregate surfacing, and installation of approaches and culverts to transition to new Project access roads. Improvements to existing public roads will be performed in coordination with and with the consent of county highway department officials. No asphalt or other paving is anticipated. Access roads will be designed and constructed along turbine strings or arrays to provide all-weather access for delivery of turbine components and erection equipment. These roads will be sited in consultation with local landowners and completed in accordance with local building requirements. They will be located to facilitate both construction (cranes) and continued operation and maintenance. Siting roads in areas with unstable soil will be avoided wherever possible. All roads will include appropriate drainage and culverts while allowing for the crossing of farm equipment wherever practical. The roads will be approximately 16 to 23 feet wide and will be covered with aggregate surfacing designed to provide a stable driving surface under all weather conditions. The roads will likely consist of compacted subgrade covered with geotextile and compacted aggregate surfacing. Once construction is completed, the roads will be regraded, resurfaced, or dressed as needed.

6.4.4 Commissioning

The Project will be commissioned in one phase and is anticipated to occur during the fourth quarter 2014 - 2015. This will include up to 70 turbines. Bison 4 Wind Project turbines will undergo detailed inspection and testing procedures. Inspection and testing occurs for each component of the wind turbines, as well as the communication system, meteorological system, electric collection system, and the SCADA system.

6.5 Project Operation and Maintenance

Each wind turbine in the Project will communicate directly with the SCADA system for the purposes of performance monitoring, energy reporting, and trouble-shooting. Under normal conditions each wind turbine operates autonomously, making its own control decisions. Minnesota Power will enter into a contractual agreement with the turbine supplier to provide several years of on-site service and maintenance for the Project.

6.5.1 Project Control, Management, and Service

Minnesota Power and the turbine supplier will control, monitor, operate, and maintain the Project by means of a SCADA system. In addition to regularly scheduled site visits, the Project will be continuously monitored via the SCADA system.

The SCADA system offers access to wind turbine generation or production data, availability, meteorological and communications data, as well as alarms and communication error information. Performance data and parameters for each machine (generator speed, wind speed, power output, etc.) can also be viewed, and machine status can be changed. There is also a "snapshot" facility that collects frames of operating data to aid in diagnostics and troubleshooting of problems.

The primary functions of the SCADA system are to:

- Monitor wind farm status
- Allow 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
- Monitor field communications
- Provide diagnostic capabilities of wind turbine performance for operations and maintenance personnel
- Collect wind turbine and wind farm material and labor resource information
- Provide information archive capabilities
- Provide inventory control capabilities
- Provide information reporting on a regular basis

6.5.2 Maintenance Schedule

Minnesota Power and the turbine supplier will remotely monitor the Project on a daily basis. This will be accompanied by periodic visual inspections by qualified technicians. More frequent inspections will be made in the first three months of commercial operation to verify that the Project is operating within expected parameters.

Actual maintenance intervals and tasks are subject to the requirements of the specific turbine selected. However, in general, turbine service and maintenance can be generally divided into the following intervals:

A. First Service Inspection. The first service inspection will take place one to three months after the turbines have been commissioned. At this inspection, particular attention is paid to tightening 100 percent of all bolts in conjunction with a general inspection.

B. Semi-Annual Service Inspection. Regular service inspections begin six months after the first inspection. The semi-annual inspection consists of lubrication and a safety test of the turbine.

C. Annual Service Inspection. The yearly service inspection consists of semi-annual inspection tasks, plus a full component check. Bolts are checked with a torque wrench. The check covers 10 percent of every bolt assembly. If any bolts are found to be loose, all bolts

in that assembly are tightened 100 percent and the event is logged.

D. Two Year Service Inspection. The two year service inspection consists of the annual inspection tasks, plus checking and tightening of terminal connectors.

E. Five Year Service Inspection. The five year inspection consists of the annual inspection tasks, an extensive inspection of the wind braking system, checking and testing of hydraulic oil and grease, balance check, and testing the tightness of terminal connectors.

6.5.3 General Maintenance Duties

The O&M field duties include performing all scheduled and unscheduled maintenance, including periodic operational checks and tests, and regular preventive maintenance on all turbines, related plant facilities and equipment, safety systems, controls, instruments, and machinery. Preventive maintenance includes such tasks as:

- Maintenance on the wind turbines and on the mechanical, electrical power, and communications system
- Performance of all routine inspections
- Maintenance of all hydraulic oil levels
- Maintenance of the control systems, all Project structures, access roads, drainage systems, and other facilities necessary for operation
- Maintaining all O&M field maintenance manuals, service bulletins, revisions, and documentation for the Project
- Maintenance of all parts, price lists, and computer software.
- Providing all labor, services, consumables, and parts required to perform scheduled and unscheduled maintenance on the wind farm, including repair and replacement of parts and removal of failed parts
- Cooperating with avian and other wildlife studies as may be required, to include reporting and monitoring
- Managing lubricants, solvents, and other hazardous materials as required by local and/or state regulations
- Maintaining appropriate levels of spare parts in order to maintain equipment; ordering and maintaining spare parts inventory
- Providing all necessary equipment including industrial cranes for removal and reinstallation of turbines
- Hiring, training, and supervising a work force necessary to meet the general maintenance requirements
- Implementing appropriate security methods

Minnesota Power will enter into a contractual agreement with the turbine supplier to provide several years' operations and maintenance services for the Project. The service and maintenance activities

will be performed by qualified technicians.

6.5.4 Operations and Maintenance Facility

An O&M facility may be needed to for the project, and it location is still being determined depending on final turbine selection and layout. This building would house all the necessary equipment to operate and maintain the Project.

6.6 Decommissioning and Restoration

At the end of its useful life, Minnesota Power will remove the wind facilities in accordance with North Dakota Wind Turbine Decommissioning guidelines (ND Chapter 69-09-09). This includes:

- Dismantling and removal of all towers, turbine generators, transformers, and overhead cables
- Removal of underground electrical cables to a depth of twenty-four inches(60.96 centimeters)
- Removal of foundations, buildings, and ancillary equipment to a depth of 3 feet below existing ground surface
- Removal of surface road material and restoration of the roads and turbine sites to substantially the same physical condition that existed immediately before construction
- Grading, adding topsoil, and reseeding according to natural resource conservation service technical guide recommendations and other agency recommendations, areas disturbed by the construction of the facility or decommissioning activities, unless the landowner requests in writing that the access roads or other land surface areas be retained.

Minnesota Power also reserves the right to explore alternatives regarding Project decommissioning at the end of the Project Certificate term. Retrofitting the turbines and power system with upgrades based on new technology may allow the wind facility to produce efficiently and successfully for many more years. Based on estimated costs of decommissioning and the salvage value of decommissioned equipment, the salvage value of the wind facility will exceed the cost of decommissioning. Minnesota Power will file a decommissioning plan with the PSC in accordance with ND Decommissioning Guidelines (69-09-09-06).

7.0 Environmental Analysis

This section provides a description of the environmental conditions that exist within the Project area. Consistent with the North Dakota Energy Conversion and Transmission Facility Siting Act, the exclusion and avoidance criteria were considered as well as selection and policy criteria 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 highlighted in NDAC 69-06-08. See Exhibit 4.

7.1 Description of Environmental Setting (Introduction)

The Project is located in an area that is entirely rural with an agricultural and service-based economy. The economy is driven primarily by crop-based agricultural products. Spring wheat is the predominant crop in Oliver and Mercer Counties according to the U.S. Department of Agriculture's National Agricultural Statistics Service (NASS 2009). The landscape in the Project area is primarily rolling hills with multiple isolated wetlands throughout the site. Elevations within the Project area range from 628 to 739 meters (2,060 to 2,425 feet) above mean sea level (MSL).

7.2 Demographics

7.2.1 Description of Resources

The Project is located within a lightly populated rural area in west-central North Dakota. There is no indication of any new residential construction on the site. Information on population and economics for this section was taken from the 2010 U.S. Census and 2009 census estimates.

The populations of Oliver and Mercer Counties are 1,846 and 8,424, respectively. Table 7.2–1 summarizes the population and economic characteristics within the Project area. According to the 2010 U.S. Census, the largest industry employing residents of Oliver County is Agriculture, Forestry, Fishing, Hunting, and Mining, while the second largest industry is Educational, Health, and Social Services. The largest industry employing residents of Mercer County is Agriculture, Forestry, Fishing, Hunting, and Mining, with the second largest industry being transportation and warehousing, and utilities.

Table 7.2-1 Population and Economic Characteristics

Location	Population	Per Capita Income (dollars)	Percentage of Persons Below Poverty Level
Oliver County	1,846	29,348	9.8
Mercer County	8,424	30,616	6.2
North Dakota	672,591	25,803	12.3

U.S. Census Bureau, 2010 Population; 2009 Demographic Estimates

7.2.2 Impacts

Short-term impacts to socioeconomic resources will be relatively minor. The acreage of agricultural land to be removed from production due to conversion to turbine sites and associated access roads will be determined pending final Project design, but will amount to less than 0.3 percent of the Project area. Landowner compensation will be established by individual lease agreements. In general, areas surrounding each turbine can still be farmed or used for grazing. In addition, in an environment of uncertain agricultural prices and yields, the supplemental income provided to farmers from wind energy leases will provide stability to farm incomes and thus support the continued viability of farming on the Project site. Project construction will not cause additional impacts to leading industries. There is no indication that any minority or low-income population is concentrated in any one area of the Project, or that the wind turbines will be placed in an area occupied primarily by any minority group.

To the extent that local contractors are used for portions of the construction, total wages and salaries paid to contractors and workers in Oliver and Mercer Counties will contribute to the total personal income of the region. Additional personal income will be generated for residents in both counties and the state by circulation and recirculation of dollars paid out by Minnesota Power as business expenditures and by state and local taxes. Expenditures made for equipment, energy, fuel, operating supplies, and other products and services benefit businesses in the counties and the state.

It is likely that general skilled labor is available either in the county or the state to serve the basic infrastructure and site development needs of the Project. Specialized labor will be required for certain components of the wind farm development; it is likely that this labor will be imported from other areas of the state or from other states as the relatively short duration of construction does not warrant special training of local or regional labor. Balancing the use of local contractors and imported specialized contractors would likely alleviate any labor relation issues.

No effects on permanent housing are anticipated. During construction, out-of-town laborers will likely use lodging facilities in and around the cities of Glen Ullin, Hebron, Center, or New Salem. Operation and maintenance of the facility will require few laborers; sufficient permanent housing is available within the counties to accommodate these laborers.

Long-term beneficial impacts to the counties' tax base as a result of the construction and operation of the wind farm will contribute to improving the local economy in this area of North Dakota. The development of wind energy in this region will be important in diversifying and strengthening the economic base of central North Dakota.

Continuing to establish the west-central region of North Dakota as an important producer of alternative energy sources, such as wind, may spur the development of wind-related businesses in the area, in turn contributing to the economic growth in the region.

7.2.3 Mitigative Measures

Socioeconomic impacts associated with the Project will be primarily positive, with an influx of wages and expenditures made at local businesses during Project construction and an increase in the counties' tax base from the construction and operation of the wind turbines and associated infrastructure. In addition, lease payments paid to landowners will offset potential financial losses associated with removing the land from agricultural production.

7.3 Land Use

7.3.1 Description of Resources

Land use within the project site is rural/agricultural, primarily used for cultivating crops and grazing cattle. None of the area is within the city limits of Glen Ullin, New Salem, or Center, or within an area of military installation. The development of the Project will not displace any residences or existing or planned industrial facilities. Wind turbines will be sited a minimum of 1,400 feet from occupied residences.

Based on a review of aerial photographs, land use database information, database information, and visits, the majority of the project area is cropland (42 percent) or open grassland/herbaceous (42 percent). Pasture/hay land constitutes about 11 percent of the area, and the remaining area is either developed (e.g., roadways, structures), forested/shrub land, or wetland/water resources. Table 7.3–1 identifies current land use based on the National Land Cover Dataset.

Table 7.3-1 Major Habitats and Their Relative Abundance in the Project Site

Habitat	Acreage	Percent of Project Site
Mixed Forest	1.6	0.003%
Evergreen Forest	5.1	0.01%
Developed, Low Intensity	6.8	0.01%
Barren Land	14.5	0.03%
Shrub/Scrub	41.2	0.09%
Open Water	141.3	0.30%
Deciduous Forest	147.4	0.31%
Emergent Herbaceous Wetlands	216.1	0.46%
Woody Wetlands	333.4	0.71%
Developed, Open Space	1,585.1	3.37%
Pasture/Hay	5,339.0	11.34%
Grassland/Herbaceous	19,549.4	41.54%
Cultivated Crops	19,681.0	41.82%

The U.S. Department of Defense (DoD) will be consulted pending finalization of turbine siting to determine whether any turbine sites lie within 1,200 feet of the geographic center of an Intercontinental Ballistic Missile (ICBM) launch or launch control facility. The results of this consultation will be provided in a supplemental filing.

7.3.2 Impacts

The development of the Project will not result in a significant change in land use. The area would retain its rural character. Wind turbines would be sited a minimum of 1,400 feet from occupied residences. At other wind developments in the upper Midwest, landowners frequently plant crops and/or graze livestock to the edge of the access roads and turbine pads. Wind farm access roads will be 16 to 23 feet wide and low profile, so they can be easily crossed by farming equipment. Minnesota Power will work closely with the landowners in locating access roads to minimize land use disruptions to the extent possible. Considerations will be taken to locate access roads to minimize impact on current or future row crop agriculture and environmentally sensitive areas. During the construction of the wind power facilities, additional areas may be temporarily disturbed for contractor staging and power lines. These areas will be graded to original contour and if necessary reseeded with appropriate vegetation.

The permanent site layout has not been determined, but a facility generating up to 210 MW of energy would result in a conversion of approximately 18 acres of land for the turbines, 3 acres for a potential O&M Facility, and up to 69 acres for access roads. Up to two temporary lay down areas may be required during Project construction. One would be located at the existing Bison O&M Area and second would be at the Tri County Substation Area in the southeastern corner of Mercer County. The exact size and location of the areas affected will be determined prior to construction. There is limited literature available on the effect of wind farms on property values. A 2002 study of a proposed wind farm in Kittitas County, Washington, indicated that the proposed wind farm will not negatively impact property values in the vicinity, as did a 2005 study that reviewed property transactions in the vicinity of wind farms in the State of Wisconsin (Poletti and Associates, 2005; EcoNorthwest, 2002). A 2003 study that reviewed sales data for properties in the vicinity of wind farms (Sterzinger et al., 2003) showed a small positive correlation in the value of properties sold within 5 miles of wind developments when compared to properties sold in comparable communities. A 2006 study done on the potential impacts of the visibility of wind turbines on property values in Madison and Oneida Counties, New York, and Wayne and Somerset Counties, Pennsylvania, found no measurable effects of the presence of turbines in the viewshed on property values (Hoen, 2006). No significant effects (either positive or negative) on property values are anticipated as a result of the proposed Project.

Turbines will be sited to ensure that they do not lie within 1,200 feet of any ICBM facility.

7.3.3 Mitigative Measures

Minnesota Power is working to minimize land use disruptions and impacts to environmentally sensitive areas to the extent possible. Operation of the wind farm will not change the land use in the Project site. The proposed land use would not involve any ongoing industrial use of non-renewable resources or emissions into the environment. Following consultation with DoD, any turbine determined to be sited within 1,200 feet of an ICBM facility, will be moved to ensure that that setback is maintained.

7.4 Public Services

7.4.1 Description of Resources

Local Services

The Project is located in a sparsely populated, rural area in west-central North Dakota. There is an established transportation and utility network that provides access and necessary services to light industry, small cities, homesteads, and farms existing near the Project site. The closest town to the Project site is the city of Center, which is located approximately 8.5 miles northeast of the northeastern corner of the Project boundary. The city is incorporated and has one pre-K through 12 school, and recreational facilities that include an indoor pool, a golf course, and several parks (Center 2013).

Glen Ullin, which lies approximately 11.5 miles south of the southwestern corner of the Project boundary. The city has recreational facilities such as parks, baseball and softball fields, skate parks, and a golf course (Glen Ullin 2013). The Glen Ullin Municipal Airport is located just west of Glen Ullin and has one runway (Glen Ullin 2013). Several retail, food, and lodging amenities are available (Glen Ullin 2013).

The City of New Salem is located approximately 10 miles south of the southeastern corner of the Project boundary. The city has recreational facilities, including parks, a public pool, a golf course, a history museum, tennis and basketball courts, a fishing pond, bike trails, and an elementary and high school (New Salem 2013). There are also several local civic organizations and retail service facilities and institutions (New Salem 2013).

Electrical Service

One high-voltage electric transmission corridor is located within the Project site (see Exhibit 2). Minnesota Power will adhere to county and state setbacks to avoid impacts to the transmission line.

Roads

County and section line (two-track) roads characterize the existing roadway infrastructure in and around the Project site. Highway 49 runs north-south through the western portion of the Project site and Highway 31 runs north-south through its eastern portion. Interstate 94 runs approximately two miles south of the southern boundary of the southwestern portion of the Project.

Traffic

In general, the state highways near the Project site carry higher levels of traffic for rural North Dakota, but represent only a fraction of the capacity of the roadways. Additional county and township roads run through the Project site.

Water Supply

Townships typically have limited public infrastructure services, with homes using septic systems and water wells for their household needs.

Telephone, Fiber Optic, and Microwave Communications

In March 2013, Minnesota Power completed a microwave telecommunication study to assess the presence of microwave beam paths in Project area (Appendix A, Comsearch 2013). The study concluded that no microwave beam paths cross the Project area. Since the Project will have no impacts to microwave communication in the area, no further consideration of this issue is required for siting the turbines.

A number of telephone lines serve residences in the Project area.

7.4.2 Impacts

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

Local Services

No impact is expected to local services.

Electrical Service

The Project will require electrical station service from the proposed Minnesota Power substation when the Project is not generating electricity.

Roads

Constructing the Project will require the construction of approximately 25 to 35 miles of new access roads. In addition, during operation of the Project, the access roads will be used by operation and maintenance crews while inspecting and servicing the wind turbines. One road will be required for each turbine string. The permanent access roads will be approximately 16 to 23 feet wide to accommodate construction and maintenance equipment, and will have a low profile to allow cross-travel by farm equipment.

Traffic

The maximum construction workforce of 300 personnel is expected to generate approximately 20 additional trucks per day during delivery of the wind turbine generators. Using any combination of state and county highways and other township roads throughout the Project site, the traffic impacts are considered negligible. Since many of the area roadways have minimal average daily traffic (ADT) currently, the addition of 20 trucks per day represent a large percentage increase (and likely would be perceptible), but would still be less than seasonal variations such as autumn harvest. The capacity of any route and service level to the traveling public would not be impacted.

Truck access to the Project site is served by Interstate 94. From I-94, Highways 31 and 49 will serve as the primary truck access into the Project site. Specific additional truck routes will be dictated by the location required for delivery. Additional operating permits will be issued by the state, county, and/or township for oversized truck movements.

Water Supply

Construction and operation of the Project will not significantly impact the water supply. No wells are required to be abandoned for the Project. The Project will not require appropriation of surface water or permanent dewatering; temporary dewatering of groundwater may be required during construction of turbine foundations.

Telephone, Fiber Optic and Microwave Communications

Construction and operation of the Project will not impact telephone and/or fiber optic service to the Project site. Since no microwave beam paths cross the project area, as illustrated in Exhibit 4, no further constraints are required for siting the turbines with respect to avoidance of potential impacts to microwave communication in the area.

7.4.3 Mitigative Measures

Construction and operation of the wind farm Project will be in accordance with all associated federal and state permits and laws, as well as industry construction and operation standards. Due to the minor impacts expected on the existing infrastructure during Project construction and operation, extensive mitigation measures are not anticipated.

Local Services

No impact to local services is anticipated, and no mitigation is required.

Electrical Service

No additional electric service is required for the Project. No additional mitigation is necessary.

Roads

Minnesota Power is working closely with the landowners to locate access roads to minimize land-use disruptions to the extent possible.

Traffic

No impacts are anticipated; as such no mitigation is necessary.

Water Supply

In the event wells are abandoned, they will be sealed as required by North Dakota law. If temporary dewatering of groundwater is required during construction activities, discharge of dewatering fluid will be conducted under the requirements of the National Pollutant Discharge Elimination System (NPDES) permit and Storm Water Pollution Prevention Plan (SWPPP).

Telephone, Fiber Optic and Microwave Communications

Utilities Underground Location Center will be contacted prior to construction to locate and avoid underground facilities. To the extent Project facilities cross or otherwise affect existing telephone or fiber optic lines or equipment, Minnesota Power will enter into agreements with service providers so as to avoid interference with their facilities. Since no impacts to microwave or land based telecom systems are anticipated, no mitigation should be required.

7.5 Human Health and Safety

7.5.1 Description of Resources

Air Traffic

There are eleven airports within 25 miles of the Project site. See Table 7.5–1 for a description of their locations, elevations, and runway information (FAA, 2013).

Electromagnetic Fields

The term electromagnetic field (EMF) refers to electric and magnetic fields that are present around any electrical device. Electric fields arise from the voltage or electrical charges, and magnetic fields arise from the flow of electricity or current that travels along transmission lines, power collection (feeder) lines, substation transformers, house wiring, and electrical appliances. The intensity of the electric field is related to the voltage of the line and the intensity of the magnetic field is related to the current flow through the conductors (wire). EMF can occur indoors and outdoors. However, there are no discernible health impacts from power lines. Turbines will be no closer than 1,400 feet from occupied residences.

Table 7.5-1 Airports within 25 Miles of the Project Site

Airport Name	ND City	ND County	Distance[a]	Runway Elevation (feet) [b]
Minnkota (Private)	Center	Oliver	8.5	2110
Letzring	Center	Oliver	3.5	2230
Glen Ullin Regional	Glen Ullin	Morton	12.5	2089
Fitterer's Strip	Glen Ullin	Morton	16.1	2180
Z.P. Field	Mandan	Morton	19.4	1840
Chase Airstrip	Hebron	Morton	11.5	2140
Brecht Strip	Golden Valley	Mercer	23.6	1990
Sakakawea Medical Center	Hazen	Mercer	15.9	1756
Beulah	Beulah	Mercer	12.8	1791
Mercer County Regional	Hazen	Mercer	15.3	1813
Lorentzen	Washburn	McLean	24.9	1790

[a] Distance in miles from the nearest portion of the Project boundary.

[b] Elevation in feet at the highest point on the centerline of the useable landing surface. Measured to the nearest foot with respect to mean sea level.

Hazardous Materials/Hazardous Waste

The site is located in a relatively rural area of west-central North Dakota. Hazardous wastes from large industrial or commercial activities are not likely. Potential hazards may exist in rural areas from old gasoline facilities, landfill sites, and private activities.

A Phase I Environmental Site Assessment (ESA) of the Project site is being conducted to identify any Recognized Environmental Conditions (RECs) that may exist.

Security

The Project site is located in an area that has a low population density. Construction and operation of the Project will have minimal impacts on the security and safety of the local populace.

7.5.2 Impacts

Air Traffic

The installation of wind turbines creates a potential for air traffic collision. If site conditions require, aboveground electrical collection lines are expected to be similar to distribution lines that are already present (located along the edges of fields and roadways), and the wind turbines and meteorological towers would be visible from a distance, and will have lighting and markings that comply with FAA requirements. In addition, the FAA's review will include evaluation of any potential interference with air traffic.

The FAA's DoD Preliminary Screening Tool will be reviewed for potential impacts due to obstructions on Air Defense and Homeland Security radars (Long Range Radars), Weather Surveillance Radar-1998 Doppler radars (NEXRAD), and military operations. The DoD Preliminary Screening Tool will be completed once exact turbine locations are known.

Electromagnetic Fields

The Project will have no impact to public health and safety due to EMF.

Hazardous Materials/Hazardous Waste

Minnesota Power is in the process of evaluating the potential for hazardous materials and/or hazardous waste sites within the Project site. This work will be completed during the spring 2013 and the locations of any sites, if identified, will be provided in a supplemental filing. Since no significant findings are anticipated, no mitigation is proposed at this time.

Security

Project construction and operation will have minimal impacts to security and safety of the local community.

7.5.3 Mitigative Measures

Air Traffic

Minnesota Power will seek approval from FAA for the final turbine layout, as necessary. Wind turbines and meteorological towers will have lighting and markings according to FAA requirements that minimize potential for air traffic impacts.

Electromagnetic Fields

Minnesota Power will follow "prudent avoidance" methods to EMF exposure, such as encouraging conservation, encouraging distributed generation, continuing to monitor EMF research, encouraging utilities to work with customers on household EMF issues, and providing public education (Minnesota State Interagency Working Group on EMF Issues 2002).

Hazardous Materials/Hazardous Waste

Since no significant findings are anticipated, no mitigation is proposed at this time.

Security

The following security measures will be taken to reduce the chance of physical and property damage, as well as personal injury, at the site:

- The towers will be placed 250 feet from road ROW in Oliver County, and 110 percent of the

maximum turbine height from the edge of existing road ROW. Additionally the turbines will be set back at least 1,400 feet from occupied dwellings. These distances are considered to be safe based on developer experience and are consistent with the required local setbacks. They also serve to reduce noise.

- Security measures will be taken during the construction and operation of the Project, including temporary and permanent (safety) fencing, warning signs, and locks on equipment and wind power facilities.
- Turbines will sit on solid steel enclosed tubular towers in which all electrical equipment will be located, except for the transformers and switches. Access to towers is only through a solid steel door that will be locked when not in use.
- Where necessary or requested by landowners, Minnesota Power will construct gates or fences such as those around the existing Bison substation.

7.6 Noise

7.6.1 Description of Resources

There are approximately 32 residences and one cemetery located either within the Project boundary or within one mile of the boundary. No churches are found within this area. There are no other noise sensitive land uses such as schools within the study area.

7.6.2 Impacts

Sound is generated by wind turbines due to turbulence at the blade tips, from mechanical systems in the hub or nacelle (which radiates throughout the structure), and from transformers at the base of the turbine mast. Blade noise increases with wind speed until maximum blade rotational speed is reached, which usually occurs when wind speeds reach 8-10 mps at the turbine hub.

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

Wind turbine noise emissions data were provided from a number of turbine manufacturers. Modeled noise levels were based on the anticipated maximum sound power level of 108.5 dBA. Noise emissions for maximum operating conditions were evaluated based on the spectral noise emissions at 8 mps.

There is no single controlling environmental noise regulation or guideline body pertaining to the Project. For informational purposes Minnesota Power has chosen a benchmark noise level of 50 dBA as the criterion for the noise evaluation. Ambient noise levels are to be determined for the

worst case scenario turbine that is being developed and final noise calculations will be included in the application supplement.

The minimum single turbine setback distance calculated where an exceedance of the 45 dBA benchmark would no longer occur is approximately 402 meters (1,320 feet) for the worst case turbine. Turbines will be sited according to the siting plan in Section 4.1.

7.6.3 Mitigative Measures

Impacts to nearby residents and other potentially affected parties in terms of noise will be taken into consideration as part of the actual siting of the turbines.

7.7 Visual Impacts

7.7.1 Description of Resources

The topography of the Project site is characterized by rolling plains and dissected drainage with common occurrences of sandstone buttes or outcrops. Elevations range between 628 to 739 meters (2,060 to 2,425 feet) MSL. A topographic map of the Project site is shown in Exhibit 3.

Within the Project site the land types are dominated by cultivated crops and grassland/herbaceous vegetation. The most widely grown crops in the Project area are wheat, corn, and forage crops. Isolated wetlands that are scattered across the Project area are dominated by cattails and sedges; however, there are wetland areas that are in agricultural production as well. A mix of deciduous and coniferous trees planted for windbreaks typically surrounds farmsteads. Generally, these forested areas are isolated groves or windrows established by the landowner/farmers to prevent wind erosion and shelter dwellings. Typical tree species include cottonwood, aspen, green ash, box elder, and American elm. Exhibit 5 illustrates the typical land cover within the site boundary.

7.7.2 Impacts

The placement of turbines will have an effect on the visual quality of the site and in nearby areas. However, discussion of the aesthetic effect of the proposed wind farm is based on subjective human response. The Project would have a combination of effects on the visual quality/rural character of the area. For some viewers, the Project could be perceived as a visual intrusion, characterized as metal structures intruding on the natural aesthetic value of the landscape. Given that rural nature of the Project area, the turbines associated with the Project will be visible, but not overly intrusive on the horizon.

For other viewers, wind projects have their own positive aesthetic qualities, distinguishing them from other non-agricultural land uses. First, the Project will not generate much traffic or significantly increase day-to-day human activity in the area. Therefore, the Project site will retain the rural aesthetic and remote characteristic of the vicinity. Second, although "industrial" in form and purpose, turbines are essentially "farming" the wind for energy. The proposed land use will not involve any ongoing industrial use of non-renewable resources or emissions into the environment.

Although the turbines are high-tech in appearance, they are compatible with the rural and agricultural heritage of the area.

Visual impacts will be most evident to people traveling north and south along Highways 31 and 49, and east and west along County Road 140 in the southwestern portion of the project and miscellaneous township roads throughout. These impacts will affect the rural visual quality of the landscape and the experience of the persons utilizing those areas. While the turbines in background views of highway travelers will affect the visual characteristics of the landscape, the same could be said of any human habitation or activity in the vicinity, and the presence of turbines may be less intrusive than many such activities. Nonetheless, this may be an impact that some viewers perceive to be negative.

7.7.3 Mitigative Measures

The following are proposed mitigative measures:

- Turbines will be illuminated to meet the minimum requirements of FAA regulations.
- Existing roads will be used for construction and maintenance where possible. Road construction will be minimized.
- Access roads created for the wind farm facility will be located on gentle grades to minimize visible cuts and fills.
- Temporarily disturbed areas will be reseeded in consultation with land owners and the Natural Resource Conservation Service (NRCS) to blend in with existing vegetation.

To attain maximum efficiency, wind power technology requires as much exposure to the wind as possible. Mitigation measures that would result in shorter towers or placement of the turbines at alternate locations off the ridgelines would result in less efficiency per unit.

7.8 Cultural and Archaeological Impacts

7.8.1 Description of Resources

Minnesota Power contacted the North Dakota State Historic Preservation Office (SHPO) on March 18, 2013 to provide notification of the proposed Project and seek comments for the permit application. SHPO responded on March 22, 2013 (see Appendix B). SHPO recommended preparation of a Class I literature review of the Project site, a Class II standing structure inventory of a portion of that study area, and a Class III inventory of the construction footprint.

For the Class I literature review, Minnesota Power collected cultural resources information on file at the SHPO for the Project site as of March 2013. The Project study area is defined as the Project site with a 1-mile surrounding buffer area. SHPO records indicate that 14 cultural resources have been recorded within the Project study area since the 1980s (Table 7.8-1). The sites generally reflect the variety of archaeological and standing structure site types that one would expect in the Project study area and vicinity. Most of the sites are not evaluated for listing on the National Register of Historic

Places (NRHP) and may require (if encountered during the Class II or Class III inventories) additional field investigations.

Table 7.8-1 Previously Identified Archaeological Sites and Leads within the Project Site

SITS #	Location			Affiliation	Description	Recorder, year	Recommend-ations (require SHPO verification)
	T	R	S				
32OLx14	141N	86W	10	Historic Period	Site lead, Otter Creek Post Office	Anonymous, 1980	Unknown
32OLx185	141N	87W	20	Pre-Contact Period	Isolated find, biface and two thinning flakes	Salisbury, 2003	No further work
32OLx244	141N	86W	24	Pre-Contact Period	Isolated find, chipped stone	Johnson, 2010	No further work
32OLx252	141N	86W	33	Pre-Contact Period	Isolated find, Knife River Flint flake	Burns, 2011	No further work
32OL437	141N	87W	8	Historic-period	Stone-lined dugout	Diemstra, 2004	No further work
32OL626	141N	86W	23, 26	Pre-Contact Period	Faunal Remains, chipped stone	Johnson, 2010	Further evaluation
32OL647	141N	86W	10	Architectural/ Historic-period	Glass, masonry, metal at abandoned churchyard & maintained cemetery	Rokke & Jackson, 2011	Exclusion
32OL649	141N	87W	26	Architectural/ Historic-period	Standing house, outhouse, shed depressions, and	Rokke & Jackson, 2011	Further evaluation
32MEx1	141N	88W	26	Unknown	Site Lead	Benson, 1980	Inventory needed
32MEx2	141N	88W	26	Pre-contact	Stone circle	Benson, 1980	Inventory needed
32MEx443	141N	88W	25	Historic-period	Quarry/mine	LCT, 1990	Further evaluation
32ME2406	141N	88W	24	Historic-period	Four or five burials	Rokke & Jackson, 2011	Exclusion
32ME2408	141N	88W	12	Architectural/ Historic-period	Historic dump, depression, foundation	Rokke & Jackson, 2011	Further evaluation
32ME2495	141N	88W	35	Pre-contact period	Stone features	Morrison, 2012	Avoidance

Minnesota Power will make an effort to avoid the known sites during the facility siting process. Minnesota Power will coordinate with the SHPO in anticipation of and (as needed) during the Class II and Class III inventories. Minnesota Power plans to conduct archeological field investigations at proposed construction impact locations throughout the Project study area.

All cultural resources investigations will be conducted by a professional permitted by the State of North Dakota per NDCC 55-03-01. Final inventory reports with consultant recommendations will be sent to the SHPO. Once field and report reviews are complete, a summary of these investigations and a copy of SHPO correspondence will be provided to the PSC.

7.8.2 Impacts

The final turbine and accessory layouts will determine the potential impacts to cultural resources. The placement of facilities in culturally sensitive areas may increase the chance of impacts to cultural resources, but Minnesota Power will strive to avoid known archaeological resources and any significant resources identified during the Class III field inventory.

7.8.3 Mitigative Measures

Minnesota Power will avoid impacts to identified archaeological resources to the best of their ability. In the event that an impact would occur, Minnesota Power would determine the nature of the impact and consult with the SHPO on whether or not the resource was eligible for listing in the National Register of Historic Places (NRHP). Mitigation for Project-related impacts on NRHP-eligible archaeological resources may include an effort to minimize Project impacts on the resource and/or additional documentation through data recovery.

7.9 Recreational Resources

7.9.1 Description of Resources

Recreational opportunities in Oliver and Mercer Counties include camping, hiking, biking, swimming, hunting, fishing, and nature observation. Review of state and federal databases indicates that no registered national wildlife refuges, state wildlife management areas (WMA), state game refuges, game management areas, nature preserves, county parks, or formal recreational areas are present within the Project site. No lakes with public boat access are located within the area. The following WMAs lie within 20 miles of the Project site:

- Missouri Breaks (477 acres in Mercer County)
- Arroda Lake (410 acres in Oliver County)
- Storm Creek (472 acres in Morton County)
- North Beulah Mine (1,861 acres in Mercer County)
- Sweetbriar Lake (893 acres in Morton County)
- Wilbur Boldt (161 acres in Oliver County)
- Sweetbriar Lake (35 acres in Morton County)

- Crown Butte (88 acres in Morton County)

The North Dakota Game and Fish Department (NDGFD) sponsors Private Land Open to Sportsman (PLOTS) to protect, conserve, and enhance fish and wildlife populations for public use. No PLOTS land is located within the Project site, although two quarter-section parcels adjoin it, and eight parcels lie within one mile. These parcels will not be impacted by the Project.

7.9.2 Impacts

In general, recreational impacts will be visual in nature and limited to individuals using public or private property in the Project site for hiking, hunting, fishing, or nature observation. See Section 7.7 for detailed discussion of anticipated visual impacts and proposed mitigative measures. Depending on the turbine layout, it is anticipated that supporting infrastructure (e.g., access roads, collector lines, etc.) will not impact public lands. No other significant impacts to recreational resources are anticipated.

7.9.3 Mitigative Measures

To the extent practicable, supporting infrastructure will be placed in a manner to avoid impacts to public land and recreation areas. Where it is not possible to avoid impacts to these lands, alternative construction methods, such as directional boring, will be considered to minimize impacts. Since it is not anticipated that any significant recreational resources will be removed from service by implementation of the Project, no adjacent land will be converted or dedicated to recreational use or wildlife management. No other mitigation is anticipated.

7.10 Effects on Land-Based Economies

7.10.1 Description of Resources

Agriculture/Farming

The majority of the Project site is native grassland, cultivated farmland, and pasture, as shown in Exhibit 5. Cultivated crops and pasture land comprise approximately 53 percent of the Project site. Grasslands/herbaceous comprise approximately 42 percent of the land.

According to the 2007 Census of Agriculture (2013), Mercer County is ranked 51st overall in agricultural products sold in North Dakota, and Oliver County is ranked 46th. Combined, Oliver and Mercer Counties contain 728 farms (273 in Oliver County 455 in Mercer County), of which the primary commodity is crops, primarily wheat. Cattle are the primary livestock in the counties. According to the 2007 Census of Agriculture, the amount of land in farms decreased six percent in Oliver County and decreased five percent in Mercer County. The market value of production in Mercer County in 2007 was approximately $40,068,000. Crop sales account for approximately 61 percent of the total value. The market value of production in Oliver County in 2007 was

approximately $53,389,000, and crop sales account for approximately 45 percent of the total value.

Crops are a large percentage of the counties' market value so prime farmland is important in production. Cropland accounts for approximately 42 percent of the total land cover within the Project site. Prime farmland is the land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. The NRCS has two classifications for prime farmland. The first is where all areas of the soil series are classified prime farmland. The second is where only the drained areas of the soil series are prime farmland. The NRCS also identifies farmland of statewide and local importance, which is land that is important for the production of food, feed, fiber, forage, and oilseed crops. Generally, additional farmlands of statewide or local importance include those that are nearly prime and that produce high yields of crops in an economic manner when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmland soils if conditions are favorable. Table 7.10-1 lists the soils considered Prime Farmland and soils of statewide or local importance within the Project site. Exhibit 6 illustrates the prime farmland soil distribution in the Project site. The total area for prime farmland within the Project site is 3,954 acres.

There are 32 occupied residences, within the Project site boundary. These homes are identified on Exhibit 4.

According to the North Dakota State Water Commission Water Permit Retrieval System (SWC, 2013), there are no properties with an irrigation permit in the townships affected by the Project.

Woodlands

Since forest cover is found on only approximately 0.3 percent of the Project site, forestry resources are not considered economically important. Woodlands are primarily associated near homes in the form of woodlots and windbreaks within the Project site. Woodlands within the Project site are depicted in Exhibit 5.

7.10.2 Impacts

Agriculture/Farming

No impacts are anticipated to animal health and safety due to the construction or operation of the wind farm and associated facilities. Except for the physical locations of the turbines and access roads, all the land surrounding the facility will be available for grazing.

Of the approximately 47,062 acres of the Project site, approximately 42 percent is comprised of cultivated crops, and 11 percent is used for pasture and hay. Actual impacts to agriculture production will be determined once turbine and road locations are finalized. Each turbine will impact approximately 0.25 acre of land. Approximately 18 acres of land will be permanently impacted due to turbine placement. Roads will be 16 to 23 feet wide and will vary in length. Currently, road impacts are estimated at 69 acres, which is based on the worst case scenario that all

access roads are 23-feet-wide. If built, an O&M Facility will permanently impact approximately 3 acres. The area of land that will be temporarily impacted for contractor staging and lay-down areas will be determined pending final Project design. The actual impacts to agriculture production cannot be determined until turbine and road locations are finalized.

Table 7.10-1 Prime Farmlands Mercer and Oliver Counties

Soil Unit	All Areas are Prime Farmland	Soil of Statewide/ Local Importance	Prime Farmland Only When Drained
Amor-Shambo loams, 3 to 6 percent slopes		X	
Amor loam, 3 to 6 percent slopes		X	
Amor loam, 6 to 9 percent slopes		X	
Arnegard loam, 0 to 2 percent slopes	X		
Arnegard loam, 2 to 6 percent slopes	X		
Arnegard loam, 6 to 9 percent slopes		X	
Belfield-Grail silty clay loams, 0 to 2 percent slopes		X	
Belfield-Morton silt loams, 0 to 2 percent slopes		X	
Belfield-Morton silt loams, 2 to 6 percent slopes		X	
Belfield-Morton silt loams, 6 to 9 percent slopes		X	
Belfield-Straw loams, 0 to 2 percent slopes		X	
Belfield silt loam, 0 to 2 percent slopes		X	
Belfield silt loam, 2 to 6 percent slopes		X	
Bowdle loam, 2 to 6 percent slopes		X	
Farland silt loam, 0 to 2 percent slopes		X	
Farland silt loam, 2 to 6 percent slopes		X	
Flaxton-Williams loams, 0 to 3 percent slopes		X	
Flaxton and Williams soils, 3 to 6 percent slopes		X	
Grail-Belfield silty clay loams, 2 to 6 percent slopes		X	
Grail silt loam, 0 to 2 percent slopes	X		
Grail silt loam, 2 to 6 percent slopes	X		
Grail silty clay loam, 0 to 2 percent slopes	X		
Grail silty clay loam, 2 to 6 percent slopes	X		
Grail silty clay loam, 6 to 9 percent slopes		X	
Lawther silty clay, 2 to 6 percent slopes		X	
Lefor fine sandy loam, 3 to 6 percent slopes		X	
Lihen fine sandy loam, 0 to 6 percent slopes		X	
Morton-Farland silt loams, 3 to 6 percent slopes		X	
Morton silt loam, 0 to 3 percent slopes		X	
Morton silt loam, 3 to 6 percent slopes		X	
Morton silt loam, 6 to 9 percent slope		X	
Parshall fine sandy loam, 0 to 6 percent slopes		X	

Soil Unit	All Areas are Prime Farmland	Soil of Statewide/ Local Importance	Prime Farmland Only When Drained
Parshall loam, 0 to 2 percent slopes		X	
Parshall loam, 2 to 6 percent slopes		X	
Regent silty clay loam, 0 to 3 percent slopes		X	
Regent silty clay loam, 3 to 6 percent slopes		X	
Regent silty clay loam, 6 to 9 percent slopes		X	
Sen-Chama silt loams, 3 to 6 percent slopes		X	
Sen and Amor loams, 0 to 3 percent slopes		X	
Sen and Amor loams, 3 to 6 percent slopes		X	
Sen and Amor loams, 6 to 9 percent slopes		X	
Sen silt loam, 3 to 6 percent slopes		X	
Sen silt loam, 6 to 9 percent slopes		X	
Stady loam, 0 to 2 percent slopes		X	
Straw loam, 0 to 2 percent slopes	X		
Tally-Parshall fine sandy loams, 0 to 6 percent slopes		X	
Tally-Vebar fine sandy loams, 0 to 3 percent slopes		X	
Tonka and Parnell silt loams, 0 to 1 percent slopes			X
Tonka silt loam, 0 to 1 percent slopes			X
Vebar-Parshall fine sandy loams, 0 to 6 percent slopes		X	
Vebar-Tally fine sandy loams, 3 to 6 percent slopes		X	
Vebar-Tally loams, 3 to 6 percent slopes		X	
Vebar fine sandy loam, 3 to 6 percent slopes		X	
Williams-Reeder loams, 3 to 6 percent slopes		X	
Williams loam, 0 to 3 percent slopes		X	
Williams loam, 3 to 6 percent slopes		X	
Williams loam, 6 to 9 percent slopes		X	

Approximately 8.4 percent of the Project site includes prime farmland soils. The prime farmland soils are scattered throughout the Project site (Exhibit 6). The final layout will site only a limited number of turbines and facilities in prime farmlands, and the prime farmlands affected will be a fraction of a percent of all prime farmland in Mercer and Oliver Counties.

Under the worst-case scenario of constructing all the turbines and access roads solely on prime farmland, 3.3 percent of the prime farmland would be taken out of production. The resulting overall impact on production for the top five crops in Oliver and Mercer Counties would be expected to be minor to negligible. As noted earlier, wind lease payments will provide farmers with a supplemental source of income, thus helping to support the continuation of farming in Oliver and Mercer Counties.

No turbines will be placed within 1,400 feet of occupied residences. Family farms will be affected in two ways: from the loss of land associated with the construction of the turbines and access roads, and by the lease payments that will supplement the farms' income. The extent of the impact will not be known until final turbine locations are determined in conjunction with the landowners.

No impacts to irrigation are anticipated.

Woodlands

Since a majority of the woodlands on the Project site are associated with homesteads and windbreaks, no impacts are anticipated. Woody draws will be avoided to the extent practicable.

7.10.3 Mitigative Measures

Agriculture/Farming

The wind turbines and access roads will be located to avoid the most productive farmland (prime farmland) as much as possible. Only land for the turbine and access roads will be unavailable for crop production. Minnesota Power will work with landowners to minimize impacts to their land. Once the wind turbines are constructed, all land surrounding the turbines can still be farmed or grazed.

Woodlands

No impacts are anticipated to woodlands. If unavoidable impacts to woodlands arise, then individual trees will be replaced at a ratio of 2:1 and plantings will be monitored for three years, per ND PSC requirements.

7.11 Soils

7.11.1 Description of Resources

The soils in the Project site occur within the Rolling Soft Shale Plains Land Resource Area of the Northern Great Plains. The parent material for these soils is typically comprised of the soft calcareous shales, siltstones and sandstones of the Tertiary sedimentary rock formations (see Section 7.12.1 and Exhibit 7).

Although great variability exists in the soils throughout the study area, the three most dominant soils by area within the project area are associated with the Sen (11 percent), Morton (10 percent), and Cabba-Werner (9 percent) soils series. The Sen series consists of moderately deep, well drained, moderately permeable soils derived from calcareous siltstone or shale. The Morton series consists of moderately deep, well drained, moderately permeable soils that formed in material weathered from soft calcareous silty shales, siltstones, and fine grained sandstones. The Cabba series consists of shallow, well drained soils that formed in residuum or colluvium derived from semiconsolidated, loamy sedimentary beds; the Werner series consists of shallow, well drained, moderately permeable

soils that formed in residuum weathered from soft sandstone and shale.

7.11.2 Impacts

The impact to soils in the Project site will be limited to areas removed from agricultural production, either for turbines and associated structures, or for road construction. Both of these impacts will be relatively minor. Turbine foundations are comparatively small, and access roads will be single lane roadways. Exact impact acreages will not be known until turbine siting is finalized, but expected impacts will be approximately 1.25 acres per turbine for access roads and turbine foundations. The total impact for a maximum of 70 turbines and the associated access roads is expected to be approximately 87 acres. Areas to be temporarily impacted for contractor staging and lay-down areas will be determined prior to construction. Since land immediately adjacent to the turbines and access roads can be used for pasture or row crops, the Project will only impact those lands used directly for turbine foundation or roadway construction. A discussion of impacts to prime farmland soils is in Section 7.10.

The potential for wind and water erosion exists in the soil types found on the site. Construction practices will minimize soil erosion during and after turbine construction, and impacts are not expected to be measurable.

7.11.3 Mitigative Measures

Wind and water erosion are potential hazards for the soils found on the site. To minimize erosion during and after construction, BMPs for erosion and sediment control will be utilized. Since turbines will not be located on significant slopes, only non-structural practices should be required. These practices include: temporary seeding, permanent seeding, mulching, filter strips, erosion blankets, grassed waterways, and sod stabilization. Topsoil will be segregated if cuts are made during construction and reapplied after final contours have been graded.

7.12 Geologic and Groundwater Resources

7.12.1 Description of Resources

The Project is located in Mercer and Oliver Counties, which lie south and west of Lake Sakakawea and the Missouri River, which physiographical lies primarily in the Missouri Slope District of the Glaciated Missouri Plateau of the Central Lowland Province (Carlson, 1973). The area is part of the Rolling Soft Shale Plains Land Resource Area of the Northern Great Plains. The course of the Missouri River was regionally formed by the outer edge of the last Wisconsin-age glaciation and its end moraine. Consequently, the regional surficial geology south and west of the river is dominated by Tertiary-age strata (Bluemle, 1977), largely derived from sediments that were eroded off the uplifting Rocky Mountains and Black Hills.

The Project lies over a thick sequence of Late Mesozoic and Early Tertiary sedimentary formations. The uppermost bedrock formations that crop out or subcrop in in the project area are the Sentinel

Butte and Bullion Creek (also referred to as the Tongue River) Formations deposited during the Paleocene Epoch—these may also be collectively referred to as the Fort Union Formation. The stratigraphically lower Bullion Creek Formation crops out in the southeast corner of the Project area.

Economically mineable lignite coal deposits underlie small portions of the area at three locations within the Project boundary (Exhibit 9) (Murphy and Helms 2009). Minnesota Power estimates that the disposal in place of wind turbine foundations is not a significant cost and could be accomplished at the end of a turbine's useful life in order to promote lignite production.

Groundwater resources in the vicinity of the Project site are generally derived from shallow aquifers of the Sentinel Butte and Tongue River Formations, and from the deeper aquifers found at the base of the Tongue River Formation and within the Hell Creek and Fox Hills Formations (Carlson, 1973).

Groundwater likely occurs at shallow depths locally, as evidenced by the presence of multiple isolated wetlands in the Project site. Flow direction of the water table aquifer varies greatly and is controlled primarily by topography.

7.12.2 Impacts

Impacts to groundwater resources are not anticipated as water supply needs will be quite limited. It is probable that operations and maintenance water requirements will be satisfied with a single domestic-sized water well. Depending on the location of wind turbines and supporting infrastructure, it is possible that sand and gravel resources could be made unavailable for development.

7.12.3 Mitigative Measures

Wind turbine locations will not impact the use of existing water wells because the turbines will not be sited within 1,400 feet of occupied structures. Wind turbines will be sited to avoid sand and gravel resources identified in the Project site. Where sand and gravel resources cannot be avoided, Minnesota Power will coordinate with landowners regarding impacts and any necessary mitigation. No other mitigation is anticipated to be necessary.

7.13 Surface Water and Floodplain Resources

7.13.1 Description of Resources

Surface water and floodplain resources for the Project site were identified by reviewing U.S. Geological Survey topographic maps and USFWS National Wetlands Inventory (NWI) data. The major surface waters located within the area include wetlands (discussed in detail in Section 7.14), and several intermittent streams. These water resources are shown in Exhibit 8.

The Project site lies within the Cannonball River basin, Heart River basin, and Knife River basin, all of which lie within the Missouri River watershed. Streams tend to flow away from the site in a northwesterly or southeasterly direction since the site straddles more than one watershed basin. The

topography of the area ranges from gently to steeply sloped and includes swales and drainageways, with wetlands primarily associated with streams in the area.

The North Dakota State Water Commission concluded that there are no floodplains identified and/or mapped in the Project site, and that the Project will not affect any floodplains as identified by the Nation Flood Insurance Program (see Section 10.11.23). No flood hazard analysis has been conducted.

7.13.2 Impacts

Construction of the wind turbines, transformer pads, and access roads will disturb land within the Project site. The wind turbines will be built on uplands; this will avoid intermittent streams and wetlands located in the lower positions in the landscape. Access roads to the turbines will be built to avoid impacts to surface waters.

7.13.3 Mitigative Measures

A wetland delineation using USACE standard methodology will be completed prior to construction. The Project may temporarily impact jurisdictional waters of the United States and may require USACE permits. A Section 401 Water Quality certification may be required from the State of North Dakota.

Access roads constructed adjacent to wetlands or intermittent streams and drainageways will be designed in a manner so runoff from the upper portions of the watershed can flow unrestricted to the lower portion of the watershed. An NPDES permit application will be prepared by Minnesota Power and submitted to the North Dakota Department of Health prior to the construction of the wind turbines and access roads.

7.14 Wetlands

7.14.1 Description of Resources

The potential for wetlands within the Project site were identified by reviewing NWI maps. No formal wetland delineations have yet been completed. The vast majority of wetlands on the site are freshwater ponds (see Table 7.14-1). No riverine or floodplain wetlands were found on the site. Wetlands will be field-verified during final siting and permanent impacts to wetlands will be avoided to the extent practicable.

Some wetlands in farmed areas may have been drained for agriculture, but this practice appears uncommon in this area. The wetlands within the site are palustrine systems. See the NWI Map in Exhibit 8 for locations of wetlands.

Table 7.14-1 NWI Wetland Types and Acreages

Wetland Acreages by Type		
Cowardin Classification	**Count**	**Acres[1]**
Palustrine Aquatic Bed Semipermanently Flooded (PABF)	1	4.6
Palustrine Aquatic Bed Semipermanently Flooded, Impounded (PABFh)	22	17.0
Palustrine Aquatic Bed Semipermanently Flooded, Permanently Flooded (PABFH)	89	90.8
Palustrine Aquatic Bed Semipermanently Flooded, Excavated (PABFx)	30	6.4
Palustrine Aquatic Bed Semipermanently Flooded (PEM/ABF)	3	27.2
Palustrine Emergent Temporarily Flooded (PEMA)	138	213.2
Palustrine Emergent Temporarily Flooded (PEMAD)	1	1.9
Palustrine Emergent Temporarily Flooded—Impounded (PEMAh)	3	2.3
Palustrine Emergent Seasonally Flooded (PEMC)	337	148.3
Palustrine Emergent Seasonally Flooded, Impounded (PEMCh)	11	3.8
Palustrine Emergent Seasonally Flooded, Excavated (PEMCx)	5	0.6
Palustrine Emergent Semipermanently Flooded (PEMF)	3	3.0
Palustrine Emergent Semipermanently Flooded, Impounded (PEMFh)	2	4.5
Palustrine Emergent Temporarily Flooded (PFOA)	1	0.4
Palustrine Forested Temporarily Flooded, Impounded (PFOAh)	1	0.4
Palustrine Unconsolidated Bottom Semipermanently Flooded—Excavated (PUBFx)	17	3.8
Palustrine Unconsolidated Seasonally Flooded, Permanently Flooded (PUSCH)	5	1.1

[1] Wetland acreage is calculated using USFWS NWI data.

7.14.2 Impacts

Wind turbines will be built on upland areas, and thus avoiding wetlands on the lower areas of the landscape. Access roads and supporting facility features will be designed to minimize impacts on wetlands to the extent practicable. A wetland determination will be completed in the second quarter of 2013.

7.14.3 Mitigative Measures

Wetlands will be avoided to the extent practicable during the construction phase of the Project. If impacts to USACE jurisdictional wetland are unavoidable, then a Section 404 permit application will be submitted to USACE. Permanent impacts to jurisdictional wetlands and waters will be mitigated according to USACE requirements. However, it is anticipated that any impacts to USACE jurisdictional waters will be temporary and as a result, will not require compensatory mitigation.

Minnesota Power will use BMPs during construction and operation of the Project to protect topsoil and adjacent wetland resources and to minimize soil erosion. Practices may include containing excavated material, protecting exposed soil, stabilizing restored material, and revegetating disturbed areas with native species.

7.15 Vegetation

7.15.1 Description of Resources

The Project is located in the Northwestern Great Plains Ecoregion (EPA, 2009), which encompasses the Missouri Plateau portion of the Great Plains. This ecoregion is semiarid with rolling plains and occasional buttes. Native grasslands are largely replaced by spring wheat, alfalfa, and rangeland areas.

The native vegetation is transitional between tall and shortgrass prairie. The common plants in the tallgrass/midgrass prairie include western wheatgrass, green needlegrass, big and little bluestem, blue grama grass, and forbs such as purple cornflower, lead plant, and pasque flower. There are numerous temporary and seasonal wetlands with vegetation that includes cattails, cordgrass, rushes, and sedges. Native tree cover in the Project site primarily would have been limited to lake and river margins and would have been dominated by aspen, cottonwoods, and bur oaks.

As a result of settlement in the 1800s, the area was converted into farmland and rangeland. Settlement and farming activities were dependent on slope, presence of rocks in the soil, and wetlands. During this process, the wetland areas were frequently ditched and drained. Trees were planted by landowners for wind breaks (windrows and homestead groves) or were established by natural means, such as being transported to the area by animals, birds, or wind.

Based on a review of aerial photographs, land use database information, USFWS database information, and a visit to the Project site, it was determined that the majority of the land area within the Project site is cultivated crops and grassland/herbaceous. Table 7.3-1 in Section 7.3 identifies current land use in the Project site based on the National Land Cover Dataset. Approximately 42 percent of the land use within the Project site is grassland/herbaceous, some of which appear to be native grasslands. The native grasslands include remnant native prairie of wide-ranging quality, dependent on grazing pressure and herbicide applications to control weed species.

Mercer County currently has 3,376.6 acres enrolled in the Conservation Reserve Program (CRP) and Oliver County has 813.2 acres; however, it is not currently known whether any of these lands are located within the Project area. CRP land is typically covered by brome grasses, orchard grass, and alfalfa. CRP may also be planted in native grasses such as big bluestem, little bluestem, and Indian grass. Land is typically put into CRP for 10- year cycles. CRP encourages farmers to convert environmentally sensitive acreage to vegetative cover. Farmers receive an annual rental payment for the term of the multi-year contract. The CRP is administered by the North Dakota Farm Service Agency (FSA), which considers this information private. Therefore, Minnesota Power will work with landowners to determine which lands are enrolled in CRP. FSA personnel indicated that,

because the footprint of turbines is generally less than five acres, they generally don't view turbines as impacts to CRP land. However, access roads tend to be more problematic given the greater area that they impact, and where significant areas would be permanently impacted, the FSA would be require removal from the CRP contract, which then would be renegotiated with the landowner. Approximately 53 percent of the Project site is used for cultivated crops and pasture/hay. The principal crop in Mercer and Oliver Counties is spring wheat. Other crops include corn, oats, barley, canola, and hay (USDA 2007). Grasslands are used for range and pasture of cattle. Heavily grazed range typically contains Kentucky bluegrass, quack grass, and brome grasses. Lightly grazed or undisturbed range contains native prairie species.

The National Land Cover Dataset indicates 154 acres of forested vegetation, amounting to approximately 0.3 percent of the Project site. Generally, these woodland areas are adjacent to lake margins, isolated groves, or windrows established by landowners to prevent wind erosion and shelter dwellings. Typical tree species include cottonwood, aspen, green ash, box elder, and American elm.

There are no federal grasslands within the Project site. Additionally, there are no North Dakota School Trust Lands within the area.

7.15.2 Impacts

The amount of vegetation that will be removed as a result of the Project will be determined once a site layout is finalized. It is anticipated that for a maximum 70-turbine project, there would be approximately a total of 87 acres of permanent impacts: 18 acres for the turbines, up to 69 acres for access roads and an additional 3 acres of land for an O&M Facility. Native prairies have been avoided to the extent practicable. The area of native prairie that will be affected by the Project will be determined pending final Project design, but is expected to be minimal. The vegetation will be permanently removed and replaced by wind turbines, access roads, transformers, and transmission lines. During the construction of the wind power facilities, additional area may be temporarily disturbed for contractor staging areas and power lines. The acreage of land that will be temporarily impacted for contractor staging and laydown areas will be determined prior to construction. Temporarily disturbed areas will be reseeded per NRCS recommendations to blend with existing vegetation. Minimal impacts are anticipated to woodlands, shrubs, or wetland areas. Minnesota Power also anticipates landowner impacts related to CRP will be minimal.

7.15.3 Mitigative Measures

Minnesota Power will work closely with the USFWS during micro-siting to minimize impacts to vegetation within the Project site. Minnesota Power will conduct a pre-construction inventory of existing wetlands, native prairie, and woodlands. The preconstruction inventories will have varying levels of detail with the most specific detail in the vicinity of construction. These preconstruction inventory reports will be filed with the PSC prior to construction. Minnesota Power will work to avoid and minimize impacts to existing trees and shrubs. If impacts to individual trees and shrubs cannot be avoided, these resources will be mitigated at a ratio of 2:1 and new plantings will be

monitored for three years.

If impacts to jurisdictional wetland are proposed, then a Section 404 permit application will be submitted to USACE. Permanent impacts to jurisdictional wetlands and waters will be mitigated according to USACE requirements.

Minnesota Power 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 revegetating rangelands with native species.

7.16 Wildlife

7.16.1 Description of Resources

Wildlife in the Project site consists of birds, mammals, fish, reptiles, amphibians, and insects, both resident and migratory, which utilize the Project site habitat for forage, migratory stopover, breeding, and/or shelter. Species present in the Project area are associated with agricultural fields, pasture grasslands, and wetland areas. Common mammals in the Project area include raccoon, mink, skunk, weasel, white-tailed deer, coyote, red fox, badger, porcupine, and rabbit.

Information on the existing wildlife in the wind farm Project site was obtained from a variety of sources including observations during field visits and information from the NDGFD, North Dakota Parks and Recreation Department (NDPRD), and USFWS. Minnesota Power has conducted a Site Characterization Study of the Project site (see Appendix A) and is conducting an evaluation of biological and avian resources in the Project site. This work is being completed in the spring of 2013 and will include a stick nest surveys for raptors and a field survey for grouse leks. The results of biological and avian studies will be provided in a supplemental filing.

7.16.2 Impacts

Development of the wind farm, including the construction and operation of the Project, is expected to produce a minimal impact on wildlife. Minnesota Power will avoid or minimize impacts to wildlife and habitat to the extent possible. In addition, in the course of doing good business, Minnesota Power will implement many of the policies proposed by the American Bird Conservancy and other organizations for siting wind facilities.

The land cover within the Project site is not unique to the region and that it is unlikely that the characteristics of the Project would attract concentrations of bird or bat species. Numerous birds and bats may utilize the area. Raptors are likely to frequent the area. The presence of larger trees in woodlots provides habitat for the tree-nesting species and the grasslands provide nesting opportunities for ground-nesting birds.

The impact of the proposed Project on wildlife is expected to be minimal. There is potential for avian and bat collisions with facility turbines or meteorological towers. Additional impacts may

include a small reduction in the available habitat that some of the wildlife uses for forage or cover. Operation of the wind farm will not change the existing land use.

7.16.3 Mitigative Measures

The following measures will be used, to the extent practicable, to help avoid potential impacts to wildlife in the Project site during selection of the turbine locations and subsequent development and operation:

- Minnesota Power has characterized the biological resources found in the Project area, including an assessment of threatened and endangered species, birds, and bats. This report (WEST, 2013) is attached in Appendix A.
- Minnesota Power will continue coordinating with USFWS regarding avian impacts and will provide any updates in a supplemental filing. Minnesota Power is also coordinating with the NDGFD to identify issues and minimize impacts.
- Minnesota Power is performing field surveys for grouse leks in spring, 2013.
- Minnesota Power is surveying for raptor nests and will monitor identified nests, as required, in order to prevent disturbance during construction activities to breeding and nesting species.
- Minnesota Power will be conducting inventories of wetlands, native prairies, and woodlands to avoid in the vicinity of proposed turbines, access roads, and associated facilities to minimize impacts at the site. Detailed follow up field surveys may be completed if necessary once final turbine siting is completed to assess the construction zone. These inventory reports will be filed with the PSC prior to Project construction.
- If warranted, Minnesota Power will prepare an Avian and Bat Protection Plan and will implement the plan once complete.
- Minnesota Power will construct wind turbines using tubular monopole towers and turbines will be lit according to FAA requirements.
- Minnesota Power will avoid or minimize disturbance of individual wetlands or drainage systems during construction and operation of the Project. If impacts to wetlands occur, they are expected to be both temporary and minimal.
- Minnesota Power will protect existing trees and shrubs where practicable. If impacts are unavoidable, Minnesota Power will replace existing trees 2 inches or larger diameter at breast height (dbh) and shrubs taller than 6 feet at a 2:1 ratio at the site and will monitor plantings for three years.
- Minnesota Power will maintain appropriate water and soil conservation practices during construction and operation of the Project to protect topsoil and adjacent resources and to minimize soil erosion. To minimize erosion during and after construction, BMPs for erosion and sediment control will be utilized. These practices include: temporary seeding, permanent seeding, mulching, filter strips, erosion blankets, grassed waterways, and sod stabilization.
- Minnesota Power will revegetate non-cropland and pasture areas with seeding mix as recommended by the NRCS.

- Minnesota Power will inspect and control noxious weeds in the vicinity of the turbines, access roads, and associated facilities immediately after construction and periodically for the life of the Project.

Minnesota Power is committed to minimizing wildlife impacts within the Project site. Minnesota Power will design their facility to minimize avian impacts by avoiding high use wildlife habitat, using tubular towers to minimize perching, and minimizing infrastructure. Minnesota Power continues to consult with the USFWS and GFD regarding appropriate mitigation measures for wildlife impacts.

7.17 Rare and Unique Natural Resources

7.17.1 Description of Resources

The USFWS, NDGFD, and NDPRD were contacted to review the Project site for threatened and endangered species and unique habitats. Minnesota Power will meet with USFWS and NDGFD if necessary, to discuss the Project and gather agency comments.

No federally-listed endangered, threatened, or candidate plant species are known to occur in the Project site. The USFWS identifies eight federally-listed threatened, endangered, or candidate wildlife species for Mercer and Oliver Counties (USFWS 2013a, USFWS NDFO 2013c) (see Table 7.17-1). Of these eight, the interior least tern, the piping plover, Sprague's pipit, Dakota skipper, and the whooping crane have the highest potential, however remote, of migrating or occurring in the Project site. Habitat for the other species is either completely lacking, is extremely limited in the Project area, or the species is sufficiently mobile to avoid impacts, with the exception of Sprague's pipit and Dakota skipper, which rely on native prairie habitat. Potential use of the Project site by these federally listed or candidate species is more completely reviewed in the attached biological resources Site Characterization Study (Appendix A).

Table 7.17-1 Federally-Listed Threatened and Endangered Species

Species	County	Status
Black-footed Ferret (*Mustela nigripes*)	Mercer, Oliver	Endangered
Gray Wolf (*Canis lupus*)	Mercer, Oliver	Endangered
Interior Least Tern (*Sternula antillarum*)	Mercer, Oliver	Endangered
Pallid Sturgeon (*Scaphirhynchus albus*)	Mercer, Oliver	Endangered
Piping Plover (*Charadrius melodus*)	Mercer, Oliver	Threatened
Sprague's Pipit (*Anthus spragueii*)	Mercer, Oliver	Candidate
Dakota skipper (*Hesperia decotae*)	Mercer, Oliver	Candidate
Whooping Crane (*Grus americana*)	Mercer, Oliver	Endangered

The Sprague's pipit is a small passerine bird of open grasslands (USFWS 2013b, 2013c). According to the current range for Sprague's pipit, the Project area falls within the known breeding range.

Larger blocks of grassland (greater than 320 acres) may be considered potential nesting habitat for the pipit. The Dakota skipper is found in native prairie, mainly in flat, mesic bluestem prairie and drier, upland prairie along ridges and hill sides. There is grassland habitat within the project area which may be suitable for Dakota skippers. Minimizing impacts to grassland areas, especially native grasslands may limit potential impacts to this species.

Since habitat in the project includes native grassland and wetland areas, the project area could be used by whooping cranes, least terns, and piping plovers. However, the project area habitat does not appear to be any more likely than other areas of North Dakota to attract these species.

Therefore, risk to these species and other avian species does not appear to be higher here than in other parts of North Dakota. Mortality to these protected species is not likely. The Site Characterization Study provided in Appendix A provides the detailed risk analysis for the site.

The State of North Dakota does not have a state list of endangered and threatened species. However, they have documented 100 animal species and designated them with conservation priority from Level I (greatest conservation need) to Level III (lowest concern). No Level I species were identified as part of the site characterization study. Habitat for several of these species has been documented near the Project site as part of the Site Characterization Study. Impacts to many of these species can be avoided or minimized by focusing construction activities on cultivated landscapes.

The NDPRD maintains a Natural Heritage Inventory Database (NHID), which is the most complete source of data on North Dakota's rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features. In a response dated, April 16, 2013, the NDPRD stated that one rare species, *Sprague's Pipit (Anthus spragueii)*, had been documented Morton County, just south of the Project area.

7.17.2 Impacts

No impacts to rare and unique resources are anticipated.

7.17.3 Mitigative Measures

No impacts are anticipated to rare and unique resources. A preconstruction inventory of existing native prairie, woodlands, and wetlands will be conducted in the Project site. Minnesota Power will avoid the resources identified to the extent practicable.

7.18 Summary of Impacts

Table 7.18–1 summarizes the resources that will be impacted as a result of the Project and the appropriate mitigation.

Table 7.18-1 Summary of Impacts and Mitigation

Resource	Impact	Mitigation
Demographics	Primarily positive due to increased expenditures during construction and the long term benefits of an increased tax base for the counties due to property taxes.	No adverse impacts are anticipated.
Land Use	For a maximum 70 turbine project, permanent impacts would total approximately 87acres, of which 18 acres would be needed for the turbines, 69 acres for permanent access roads, and an additional 3 acres for an O&M Facility. The total area that will be taken out of production will be determined pending final Project design but is expected to have an insignificant impact to agricultural production.	Minnesota Power will work with landowners and agencies to minimize impacts of the Project.
Public Services	No impacts are anticipated.	Minnesota Power will use station service from the local electrical utility
Human Health and Safety	No impacts are anticipated.	Turbines will be lighted to comply with FAA requirements. Minnesota Power will follow "prudent avoidance" methods to minimize EMF exposure. A variety of security measures will be implemented to reduce the chance of physical and property damage.
Noise	No impacts are anticipated to noise-sensitive resources.	Minnesota Power will locate turbines at least 1,400 feet from occupied residences.
Visual	Visual impacts will occur. The impacts are based on a subjective human response.	Minnesota Power will work with landowners and agencies to site turbines. They will not be located in environmentally sensitive areas. Existing infrastructure will be used where possible. Cut and fill areas will be minimized and mitigated as appropriate.
Cultural and Archaeological	No impacts to previously identified cultural resources are anticipated.	Minnesota Power has completed a Class I Cultural Resources Inventory for the Project. Minnesota Power will conduct a Class II structure and Class III inventory of construction areas as needed, and avoid any resources identified to best of their ability throughout the life of the Project. If avoidance is not possible, Minnesota Power will work with the North

Resource	Impact	Mitigation
		Dakota SHPO to mitigate potential impacts.
Recreational Resources	Visual impacts to recreational resources are likely and are limited to individuals using the resources.	To the extent practicable, supporting infrastructure will be placed in a manner to avoid impacts to public land and recreation areas.
Land Based Economies	Approximately 87 acres of land will be impacted for the access roads, O&M Facility, and turbines. Temporary impacts for contractor staging and lay down areas will be determined prior to construction.	Minnesota Power will work with landowners to minimize impacts to their land.
Soils	Approximately 87 acres of land will be impacted for the turbines, access roads, and O&M building. Temporary impacts for contractor staging and lay down areas will be determined prior to construction. Impacts will be limited to land needed for the turbine foundations, access roads, and associated facilities.	BMPs for erosion and sediment control will be utilized to minimize wind and water erosion at the site. Only land needed for the facility will be impacted. Temporarily disturbed areas will be restored.
Geologic and Groundwater Resources	No impacts to groundwater resources are anticipated.	Wind turbines will be sited to avoid known sand and gravel resources to the extent practicable.
Surface Water and Floodplain Resources	Access roads and turbines will be located and constructed in such a manner that no impacts are anticipated.	Impacts to surface waters will be avoided. Minnesota Power will implement BMPs to minimize erosion and sedimentation at the site.
Wetlands	No impacts are anticipated.	If impacts cannot be avoided once the final turbine layout is complete, Minnesota Power will work with the USFWS, USACE, and the State of North Dakota to obtain permits and create required mitigation.
Vegetation	Approximately 87 acres of land will be impacted for the turbines, access roads, and O&M building. Temporary impacts for contractor staging and lay down areas will be determined prior to construction.	Minnesota Power will work with the USFWS to minimize impacts. Minnesota Power will avoid existing trees and shrubs as practicable. Minnesota Power will use BMPs during construction and operation to minimize impacts. If impacts to trees or shrubs cannot be avoided, the individual trees (2" dbh or >) or shrubs (6' tall or higher) will be replaced at a ratio of 2:1 and plantings will be monitored for three years. Temporarily disturbed areas will be reseeded per USFWS and NRCS recommendations.

Resource	Impact	Mitigation
Wildlife	Impacts to wildlife populations are expected to be minimal. Potential avian and bat collisions may occur, but are anticipated to be relatively small.	A variety of mitigative measures will be implemented, as discussed in Section 7.17.3. These include designing the facility to specifically minimize avian impacts. Pre- construction monitoring will be completed for avian species. Post-construction monitoring of avian and bat species will occur.
Rare and Unique Natural Resources	Impacts to rare and unique natural resources are not anticipated.	No additional mitigative measures are necessary.

8.0 Public Coordination

Keeping the public informed on the status of the Project is key component to its success. Principal stakeholders in the Project are landowners that have entered into agreements with Minnesota Power to provide wind rights for the Project. Minnesota Power will provide Project updates to the landowners and will continue to do so as the Project moves forward.

Minnesota Power plans to meet with Oliver and Mercer Counties' commissioners representing the Project site and staff to inform them of the Project, discuss local permits, and answer questions. Minnesota Power representatives will discuss this Project with county planning officials in anticipation of submitting special use permit applications for the Project.

Minnesota Power is working with key state and federal agencies including the NDPSC, NDGFD and the USFWS to inform them of the Project and to address areas of interest particular to each department.

Additionally, letters introducing the Project and requesting feedback were sent on March 18 and May 1, 2013 to the following agencies and Project stakeholders (note that the March 18 letters were sent to Morton County agencies before Morton County was eliminated from further consideration):

- Natural Resources Conservation Service
- North Dakota Attorney General
- Governor of North Dakota
- North Dakota Aeronautics Commission
- North Dakota Department of Transportation
- North Dakota Department of Agriculture
- North Dakota Department of Health
- North Dakota Department of Human Services
- North Dakota Department of Labor
- North Dakota Department of Career and Technical Education
- North Dakota Department of Commerce, Division of Community Services
- North Dakota Department of Commerce, Division of Economic Development and Finance
- North Dakota Department of Trust Lands
- North Dakota Energy Infrastructure and Impact Office
- North Dakota Farm Service Agency
- North Dakota Game and Fish Department
- North Dakota Geological Survey
- North Dakota Indian Affairs Commission
- North Dakota Industrial Commission
- North Dakota Job Service
- North Dakota Parks and Recreation Department

- North Dakota Pipeline Authority
- North Dakota Public Service Commission
- North Dakota State Soil Conservation Committee
- North Dakota Transmission Authority
- North Dakota State Water Commission
- State Historical Society of North Dakota
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- U.S. Bureau of Reclamation
- U.S. Bureau of Land Management
- Mercer County Auditor
- Mercer County Emergency Services
- Mercer County Highway Department
- Mercer County Planning and Zoning Administrator
- Mercer County Water Resource Board
- Oliver County Emergency Management
- Oliver Soil Conservation District
- Oliver County Highway Department
- Oliver County Planning and Development Department
- Oliver County Park Board
- Oliver County Auditor's Office
- Oliver County Water Resource Board

Letters introducing the Project and requesting feedback will be sent to DoD and the FAA pending final siting of the wind turbines for the Project.

Minnesota Power is committed to keeping key stakeholders engaged in the Project as it moves forward. Minnesota Power will participate in landowner, agency, or other stakeholder meetings as needed before the PSC's public hearing.

9.0 Identification of Potential Permits/Approvals

The federal and state permits or approvals that have been identified as potentially being 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			
U.S. Army Corps of Engineers	Section 404 Permit	Final layout will determine whether permit/approval is needed; permit not anticipated	Permit required for dredge or fill in jurisdictional waters of the US. Project will avoid or minimize impacts on waters of the US to the extent practicable. Coverage under an existing Nationwide Permit may be necessary for unavoidable impacts.
-Federal Aviation Administration	Form 7460-1, Notice of Proposed Construction	Will apply once Certificate is received	Notice and approval are required for structures over 200 feet high. FAA approval of lighting and marking of turbines is required.
	Form 7460-2, Part 1, Notice of Actual Construction or Alteration	Will apply once construction is complete	Required to provide FAA with final construction as-built information for their records.
Environmental Protection Agency	Spill Prevention Control and Countermeasure (SPCC) Plan	Will apply once Certificate is received	Required if the substation facility has greater than 1,320 gallons of oil. A copy of the plan will be maintained on file with the substation's owner/operator and will be reviewed by the certifying engineer every five years.
State of North Dakota			
Public Service -Commission	Certificate of Site Compatibility	Subject of this Application	Required for construction of generation facility over 0.2 MW in size.
North Dakota Department of Health	401 Water Quality Certification	Final layout will determine whether permit/approval is needed	Required for filling in jurisdictional waters of US. No permit anticipated for Project.
	NPDES Permit: General Construction Storm Water	Will apply once Certificate is received	Required for disturbance of over 1 acre of land. Must prepare a Storm Water Pollution Prevention Plan (SWPPP).

Agency	Type of Approval	Status	Need
North Dakota Division of Emergency Management	Emergency Planning and Community Right-to-Know Act (EPCRA) Tier II report	Will apply once Certificate is received	Required for owner/operators of facilities containing hazardous materials. A copy of the report must be filed annually by March 1.
State Historic Preservation Office	Section 106 Compliance Approval	Final layout will determine whether permit/approval is needed	Section 106 Compliance Approval is required if there is federal involvement in the Project (i.e. federal funding or wetland fill). Need for approval is not anticipated at this time.
North Dakota Highway Patrol	Overheight/Overweight Permit	Will apply once Certificate is received	Permit required for hauling construction equipment and materials on state highways.
North Dakota Department of Transportation	Road Approach/Access Permit	Will apply once Certificate is received	Permit required for construction of access roads from state highways.
	Utility Permit/Risk Management Documents	Will apply once Certificate is received	Permit required for utility crossings on state highway ROW.
Local Permits			
- Mercer County	Conditional Use Permit	Summer 2013 application date planned depending on off-taker agreement.	Permit required for Project construction.
Oliver County	Conditional Use Permit	Summer 2013 application date planned depending on off-taker agreement.	Permit required for Project construction.

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10.0 Factors Considered

The North Dakota Energy Conversion and Transmission Facility Siting 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

The preceding sections of this application discuss the research and investigations relating the effects of the proposed facility on public health and welfare, natural resources, and the environment. These effects and the proposed mitigation to minimize these effects are summarized in Section 7.18.

10.2 Technologies to Minimize Adverse Environmental Effects

Minnesota Power will utilize the most recent technologies that minimize impacts to the environment. Current wind turbine technologies, including the equipment and siting tools, optimize the wind and land resources.

10.3 Potential for Beneficial Uses of Waste Energy

This factor is not applicable to this Project. No waste energy is created using wind energy.

10.4 Unavoidable Adverse Environmental Effects

Unavoidable adverse environmental effects include the visual impacts associated with the Project as well as those impacts related to the placement and use of the land within the site. The visual character of the site will be changed due to the construction of the Project. In order to construct, operate, and maintain the facility, access roads and turbine pads are necessary. Based on the maximum number of turbine locations, a possible O&M Facility, and access road layout, the Project is expected to permanently impact approximately 87 acres of land. An additional acreage that will be temporarily impacted during construction will be restored to its original condition following construction.

10.5 Alternatives to the Proposed Site

Minnesota Power believes that the proposed site is the most viable alternative. Minnesota Power is committed to being flexible on the preliminary site layout and will work closely with landowners and regulatory agencies to examine all reasonable alternatives to the preliminary site layout.

10.6 Irreversible and Irretrievable Commitment of Natural Resources

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable time. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action. There are few commitments of resources associated with this Project that are irreversible and irretrievable, but those resources are primarily

related to construction.

Construction resources that will be used include aggregate resources, concrete, steel, and hydrocarbon fuel. Each steel turbine requires the construction of a concrete base 45 to 65 feet across and 7 to 10 feet thick. Access roads will require aggregate resources for their construction and maintenance. During construction, vehicles will be traveling to and from the site, using hydrocarbon fuels.

10.7 Direct and Indirect Economic Impacts

Direct economic impacts include the short-term impacts associated with agricultural land being removed from production due to conversion to turbine sites, associated access roads, and associated facilities. The acreage impacted will be determined pending final Project design, but is expected to have an insignificant impact to agricultural production. In general, agricultural areas surrounding each turbine can still be farmed, and landowners will be compensated for the land occupied by the wind turbines and associated facilities.

The remaining direct and indirect economic impacts are primarily positive. To the extent that local contractors are used for portions of the construction, total wages and salaries paid to contractors and workers in Oliver and Mercer Counties will contribute to the total personal income of the region. Additional personal income will be generated for residents in the county and the state by circulation and recirculation of dollars paid out by Minnesota Power as business expenditures and state and local taxes. Expenditures made for equipment, energy, fuel, operating supplies, and other products and services benefit businesses in the county and the state.

Long-term beneficial impacts to the counties' tax bases as a result of the construction and operation of the wind farm will contribute to improving the local economy in this area of North Dakota. The development of wind energy in this region will be important in diversifying and strengthening the economic base of north central North Dakota. Additional revenues are expected from property and income taxes.

Continuing to establish North Dakota as an important producer of alternative energy sources may spur the development of wind-related businesses in the area, in turn contributing to the economic growth in the region.

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

No conflicts are anticipated with existing state and local government and private entities' development plans.

10.9 Effect of Site on Cultural Resources

Minnesota Power has reviewed cultural resources information on file at the SHPO for the study area and will prepare a Class I Cultural Resources Inventory. A total of 14 known archaeological

resources were found within the Project study area (Table 7.8-1).

Currently, no impacts are anticipated to known cultural resources on the site. Minnesota Power is committed to minimizing impacts to these resources and will avoid to the best of their ability these resources and any additional resources identified throughout the life of the Project. If avoidance is not possible, Minnesota Power will work with the North Dakota SHPO to appropriately mitigate potential impacts.

10.10 Effect of Site on Biological Resources

Minnesota Power has implemented measures to avoid and minimize effects to biological resources at the proposed site. The impact of the Project on wildlife is expected to be minimal. There is potential for avian and bat collisions with facility turbines or meteorological towers. The site will be designed to minimize impacts to those species.

10.11 Problems Raised by Agencies

Agencies were contacted to comment on the Project. The summary of comments received is below.

10.11.1 Natural Resources Conservation Service

In a letter dated March 25, 2013, the Natural Resources Conservation Service (NRCS) commented that they have a major responsibility under the Farmland Protection Policy Act (FPPA) to document the conversion of certain classification of farmland to non-agricultural use for projects using federal funds. The NRCS indicated that Form AD-1006 must be completed under this situation.

10.11.2 North Dakota Office of Attorney General

Minnesota Power sent a letter to the Attorney General on March 18, 2013 (Appendix B). No response has been received.

10.11.3 North Dakota Governor

Minnesota Power sent a letter to the North Dakota Governor Jack Dalrymple on March 18, 2013 (Appendix B). No response has been received.

10.11.4 Aeronautics Commission

Minnesota Power sent a letter to the Aeronautics Commission, March 18, 2013 (Appendix B). No response has been received.

10.11.5 North Dakota Department of Transportation

Minnesota Power sent a letter to the North Dakota Department of Transportation (NDDOT), March 18, 2013 (Appendix B). NDDOT responded in a letter dated April 12, 2013, stating that the project should have no adverse effect on NDDOT highways. The letter noted that appropriate

permits and risk management documents will be required for any work conducted on highway right-of-way.

10.11.6 North Dakota Department of Agriculture

Minnesota Power sent a letter to the North Dakota Department of Agriculture, March 18, 2013 (Appendix B). No response has been received.

10.11.7 North Dakota Department of Health

Minnesota Power sent a letter to the North Dakota Department of Health (NDDH), March 18, 2013 (Appendix B). NDDH responded in a letter dated April 10, 2013, concluding that the environmental impacts of construction will be minor. It also indicated that NDDH owns no land within or adjacent to the Project site. The letter requested that, during construction, fugitive dust emissions be controlled, impacts to water bodies be minimized, and spills of oil and grease be prevented. They also noted that a permit would be required for discharge of storm water runoff for projects disturbing one acre or more. The letter further requested that noise levels be mitigated during construction.

10.11.8 North Dakota Department of Human Services

Minnesota Power sent a letter to the North Dakota Department of Human Services, March 18, 2013 (Appendix B). No response has been received.

10.11.9 North Dakota Department of Labor

Minnesota Power sent a letter to the North Dakota Department of Labor, March 18, 2013 Appendix B). No response has been received.

10.11.10 North Dakota Department of Career and Technical Education

Minnesota Power sent a letter to the North Dakota Department of Career and Technical Education, March 18, 2013 (Appendix B). No response has been received.

10.11.11 North Dakota Department of Commerce, Division of Community Services

Minnesota Power sent a letter to the North Dakota Department of Commerce, March 18, 2013 Appendix B). No response has been received.

10.11.12 North Dakota Department of Commerce, Division of Economic Development and Finance

Minnesota Power sent a letter to the North Dakota Department of Commerce, March 18, 2013 (Appendix B). No response has been received.

10.11.13 North Dakota Department of Trust Lands

Minnesota Power sent a letter to the North Dakota Department of Trust Lands on March 18, 2013

(Appendix B). On March 20, 2013, that department e-mailed a response indicating that an online application must be submitted for any School Trust Lands that would be crossed by the Project.

Minnesota Power has determined that no turbines or associated structures are proposed on the School Trust Lands.

10.11.14 North Dakota Energy Infrastructure and Impact Office

Minnesota Power sent a letter to the North Dakota Energy Infrastructure and Impact Office, March 18, 2013 (Appendix B). No response has been received.

10.11.15 North Dakota Farm Service Agency

Minnesota Power sent a letter to the FSA, March 18, 2013 (Appendix B). The FSA responded in a letter dated March 28, 2013 indicating that it was unknown whether the project would cross land enrolled in the Conservation Reserve Program (CRP). The letter further stated that land enrolled in CRP cannot have any cover disturbance during the Primary Nesting and rood Rearing Season (PNS). If it is necessary for the project to access CRP lands during the PNS, a formal request to waive this requirement must be submitted to the FSA. A waiver could be granted if the disturbance to the existing cover on CRP lands is minimal.

10.11.16 North Dakota Game and Fish Department

Minnesota Power sent a letter to the NDGFD, March 18, 2013 (Appendix B). In a response dated April 17, 2013, the NDGFD requested that native prairie be avoided to the extent possible, that any unavoidable wetland impacts be replaced in-kind, aboveground appurtenances not be placed in wetland areas, and no alterations be made to existing drainage patterns. The NDGFD further noted that Otter Creek and an unnamed tributary in the Project area are Class I Fisheries, and requested that overhead lines be marked when placed over perennial streams or sited in close proximity to large wetland complexes to minimize possible avian impacts. They recommended following guidance from the publication "Mitigating Bird Collisions with Power Lines: the State of the Art in 1994." They also recommended routine monitoring for avian and bat mortality as part of the facility maintenance plan during the life of the Project. They requested that they be kept apprised of the Project as it progresses, and receive GPS coordinates for the turbines after the site has been established.

10.11.17 North Dakota Geological Survey

A response was received dated March 22, 2013 (Appendix B). The agency included a map that indicates the presence of two economically minable lignite deposits within the most current Project boundary. These deposits are illustrated on Exhibit 9.

10.11.18 North Dakota Indian Affairs Commission

Minnesota Power sent a letter to North Dakota Indian Affairs Commission, March 18, 2013 (Appendix B). No response has been received.

10.11.19 North Dakota Industrial Commission

Minnesota Power sent a letter to the North Dakota Industrial Commission on May 1, 2013 (Appendix B). No response has been received.

10.11.20 North Dakota Job Service

Minnesota Power sent a letter to the North Dakota Job Service, March 18, 2013 (Appendix B). No response has been received.

10.11.21 North Dakota Parks and Recreation Department

Minnesota Power sent a letter to the North Dakota Parks and Recreation Department on March 18, 2013 (Appendix B). The agency responded on April 16, 2013 identifying no sensitive species or habitats in the Project site.

10.11.22 North Dakota Pipeline Authority

Minnesota Power sent a letter to the North Dakota Pipeline Authority on May 1, 2013 (Appendix B). No response has been received.

10.11.23 North Dakota Public Service Commission

Minnesota Power sent a letter to the NDPSC on March 18, 2013 (Appendix B).

10.11.24 North Dakota Soil Conservation Committee

Minnesota Power sent a letter to the North Dakota Soil Conservation Committee, March 18, 2013 (Appendix B). No response has been received.

10.11.25 North Dakota Transmission Authority

Minnesota Power sent a letter to the North Dakota Transmission Authority on, May 1 2013 (Appendix B). No response has been received.

10.11.26 North Dakota State Water Commission

In a response dated April 9, 2013, the North Dakota State Water Commission stated that the Project site is not located in an identified floodplain, and it is believed the Project will not affect an identified floodplain. The letter also indicated that the State Engineer may require a Surface Drain Permit for the Project. They recommended checking their website to determine if any observation/monitoring wells maintained by the State Water Commission fall within the Project site. They also stated that it is the responsibility of the Project sponsor to ensure that all local, state, and federal agencies are contacted for required approvals, permits, and easements. All waste materials associated with the Project must be disposed of properly. There are no sole-source aquifers designated in the state of North Dakota.

10.11.27 North Dakota SHPO

In a letter dated March 22, 2013, the SHPO recommended a Class I cultural resources inventory be completed for areas that may be impacted by the Project. They also recommended a Class II reconnaissance survey for standing structures in the visual Area of Potential Effect (APE), with a Class III survey for those in the APE and over 50 years of age. They stated that a Class III cultural resources inventory is warranted for any area directly impacted by the project, such as crane paths, access roads, transmission lines, and turbine pads. The SHPO further encouraged inviting tribal monitors to survey the APE. Minnesota Power has completed the Class I cultural resources inventory. Fourteen known cultural resources were identified within the Project boundary (Table 7.8-1).

SHPO also recommended consultation with tribal nations, North Dakota Indian Affairs, ND DOT, and property owners maintaining land for recreational or scenic value. Minnesota Power continues to consult with the SHPO in preparation for the need for a Class III inventory. The Class I inventory has also addressed the probability for archaeological sites within the Project study area and recommends survey strategies to identify additional cultural resources.

10.11.28 Federal Aviation Administration

Minnesota Power will send a letter to the Federal Aviation Administration pending final siting of the wind turbines.

10.11.29 U.S. Fish and Wildlife Service

Minnesota Power sent a letter to the U.S. Fish and Wildlife Service (FWS) on March 18, 2013 (see Appendix B), met with them on April 3, 2013, and called on May 1, 2013 to inquire about any comments they may have on the project. In the May 1, 2013 phone discussion, Terry Ellsworth from the FWS stated there were no FWS easement lands within the project footprint in Oliver and Mercer County, and he stated the FWS would not be sending any formal comments in response to the project notification.

10.11.30 U.S. Army Corps of Engineers

In a response dated March 25, 2013, the USACE stated that work over, in, or under navigable waters may be subject to a permit under Section 10 of the Rivers and Harbors Act, and the discharge of dredge or fill material in waters of the U.S. may be subject to a permit under Section 404 of the Clean Water Act. An application was provided for completion and submittal should a permit be required for any of these conditions.

10.11.31 U.S. Bureau of Reclamation

Minnesota Power sent a letter to the U.S. Bureau of Reclamation, March 18, 2013 (Appendix B). No response has been received.

10.11.32 U.S. Bureau of Land Management

Minnesota Power sent a letter to the U.S. Bureau of Land Management (BLM) on March 18, 2013 (Appendix B). In a letter dated March 26, 2013, the BLM responded by indicating that it had no comments to submit regarding the project.

10.11.33 U.S. Department of Defense

Minnesota Power will send a letter to the U.S. Department of Defense pending final siting of the wind turbines.

10.11.34 Mercer County Auditor

Minnesota Power sent a letter to the Mercer County Auditor, March 18, 2013 (Appendix B). No response has been received.

10.11.35 Mercer County Emergency Services

Minnesota Power sent a letter to the Mercer County Emergency Services, March 18, 2013 (Appendix B). No response has been received.

10.11.36 Mercer County Highway Department

Minnesota Power sent a letter to the Mercer County Highway Department, March 18, 2013 (Appendix B). No response has been received.

10.11.37 Mercer County Planning and Zoning Administrator

Minnesota Power sent a letter to the Mercer County Planning and Zoning Administrator, March 18, 2013 (Appendix B). No response has been received.

10.11.38 Mercer County Water Resources Board

Minnesota Power sent a letter to the Mercer County Water Resources Board, March 18, 2013 (Appendix B). No response has been received.

10.11.39 Oliver County Emergency Management

Minnesota Power sent a letter to the Oliver County Emergency Management, March 18, 2013 (Appendix B). No response has been received.

10.11.40 Oliver County Soil Conservation District

Minnesota Power sent a letter to the Oliver County Soil Conservation District, March 18, 2013 (Appendix B). No response has been received.

10.11.41 Oliver County Highway Department

Minnesota Power sent a letter to the Oliver County Highway Department, March 18, 2013 (Appendix B). No response has been received.

10.11.42 Oliver County Planning and Development Department

Minnesota Power sent a letter to the Oliver County Planning and Development Department, March 18, 2013 (Appendix B). No response has been received.

10.11.43 Oliver County Park Board

Minnesota Power sent a letter to the Oliver County Park Board, March 18, 2013 (Appendix B). No response has been received

10.11.44 Oliver County Auditor

Minnesota Power sent a letter to the Oliver County Auditor, March 18, 2013 (Appendix B). No response has been received.

10.11.45 Oliver County Water Resources Board

Minnesota Power sent a letter to the Oliver County Water Resources Board, March 18, 2013 (Appendix B). No response has been received.

11.0 List of Preparers

Table 11-1 Contributor Qualifications

Name and Affiliation	Education and Professional Experience
MINNESOTA POWER PROJECT MANAGEMENT TEAM	Daniel McCourtney, Environmental Compliance Specialist, Barry Gartner, Project Development Tom Coughlan-Project Advisor Matt Freudenrich- Project Manager Address: 30 West Superior Street, Duluth, MN 55802
TOM JANSSEN Project Manager Merjent, Inc.	Tom has 14 years of experience in permitting and regulatory compliance for construction and operational phases of electric transmission and other energy development projects. He has worked closely with MN Power on project planning and scoping, coordinating regulatory agency consultations, managing environmental field surveys, and permitting and siting new facilities. Address: 800 Washington Avenue North, Suite 315, Minneapolis, MN 55401
JOHN SEABERG Deputy Project Manager Merjent, Inc.	John is a Professional Geologist with over 27 years of experience in site investigation, remediation, aquifer hydraulics, and permitting for natural gas infrastructure projects. John has provided environmental permitting support for projects in North Dakota, and has worked on energy development projects throughout the U.S. Most recently, John developed a BLM Environmental Assessment, and obtained Nationwide and Individual Section 404 Permits from the COE for a proposed crude oil pipeline in North Dakota. Address: 800 Washington Avenue North, Suite 315, Minneapolis, MN 55401
MICHAEL MADSON Merjent, Inc.	Michael has worked in North Dakota for over 10 years as an archaeologist and regulatory specialist who is licensed to serve as a Principal Investigator for archaeological resources studies statewide. Mike will manage the work of Beaver Creek Archaeology, the cultural resources subconsultant. Mike has worked on previous expansions of the Bison Wind Farm. Address: 800 Washington Avenue North, Suite 315, Minneapolis, MN 55401
MITCHELL SHIELDS Merjent, Inc.	Mitchell is a specialist in threatened and endangered species, wildlife, wetlands, and environmental regulatory permitting. He is overseeing the biological and water resource survey efforts, ensuring that project information is conveyed to Merjent's proposed biological and water

Name and Affiliation	Education and Professional Experience
	resources subconsultant. Address: 800 Washington Avenue North, Suite 315, Minneapolis, MN 55401
BRIAN SCHUERS Merjent, Inc.	Brian is the Geographic Information Systems (GIS) specialist on the project. Brian has 6 years of experience supporting constraint analyses and mapping for energy projects. Address: 800 Washington Avenue North, Suite 315, Minneapolis, MN 55401
WADE BURNS Beaver Creek Archaeology	Senior Archaeologist Wade Burns has several years' experience managing archaeological projects that range in size from one-acre surveys to multi-year mitigations. He also has several years of experience in GIS analysis, receiving GISc certification from the University of North Dakota. In addition, Burns has achieved certification in subsurface geophysical survey from the National Park Service, using a range of sensing technologies, such as Ground Penetrating Radar (GPR). Address: 301 1st St NE, Suite 201, Mandan, North Dakota 58554
CLAYTON DERBY Western EcoSystems Technology, Inc.	Senior Manager/Wildlife Biologist brings several years of experience in North Dakota biological resources, managing large and small scale projects. He received a Bachelor of Arts degree in Biology from Moorhead State University and a Master's of Science degree in Zoology and Physiology from the University of Wyoming. Address: 4007 State Street, Suite 109, Bismarck, ND 58503

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13.0 Acronyms, Abbreviations and Definitions

ADT	Average Daily Traffic
ANSI	American National Standards Institute
APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
ASTM	American Society for Testing of material
Asynchronous Generator	A cage-wound generator, also called an induction generator, used to generate alternating current.
AWEA	American Wind Energy Association
BMPs	Best Management Practices; prevents soil erosion and sedimentation
Capacity	The capability of a system, circuit, or device for storing electric charge.
Certificate	Certificate of Site Compatibility
Class I Cultural Resources Inventory	Existing data inventory – a large-scale review and compilation of known cultural resource data.
Class III Cultural Resources Inventory	Intensive field inventory – complete surface inventory of a specific area.
Commission or PSC	North Dakota Public Service Commission
Corridor Certificate	Certificate of Corridor Compatibility
CRP	Conservation Reserve Program
dBA	Decibel
DC	direct current
Distribution	Relatively low-voltage lines that deliver electricity to the retail customer's home or business.
DOE	US Department of Energy
EIA	Energy Information Administration
Electromechanical	Of, relating to, or being a mechanical process or device actuated or

	controlled electrically; especially being a transducer for converting electrical energy to mechanical energy.
EMF	Electric and Magnetic Field
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FPPA	Farmland Protection Policy Act
Ft	Foot/Feet
GE	General Electric
Generator	A machine by which mechanical energy is changed into electrical energy.
Geotechnical	A science that deals with the application of geology to engineering.
Hub	The central part of a circular object (as a wheel or propeller).
Interconnection	To be or become mutually connected.
ISO	International Standards Organization
kV	kilovolt
kW	kilowatt
kWh	Kilowatt-hour
m	meter
Micro-siting	The process in which the wind resources, potential environmentally sensitive areas, soil conditions, and other site factors, as identified by local, state and federal agencies, are evaluated to locate wind turbines and associated facilities.
MISO	Midwest Independent System Operator
MLRA	Major Land Resource Area

mph	miles per hour
mps	meters per second
MSL	Mean Sea Level
MW	Megawatt
MWh	Megawatts per hour
Nacelle	A streamlined enclosure (as for an engine), which houses the generator, brake, cooling system and other electrical and mechanical systems.
NASS	National Agricultural Statistics service
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NDDOT	North Dakota Department of Transportation
NDGFD	North Dakota Game and Fish Department
NDPRD	North Dakota Parks and Recreation Department
NDSWC	North Dakota State Water Commission
NESC	National Electric Safety Code
NHID	Natural Heritage Inventory Database
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O&M	Operations and maintenance facility
ONAC	Office of Noise Abatement and Control
Pitch	The action or a manner of pitching; especially an up-and-down movement.
PPA	Power Purchase Agreements
Project, the	Minnesota Power Bison 4 Wind Project
PSC	North Dakota Public Service Commission

PTC	Production Tax Credit
RD	Rotor Diameter: Diameter of the rotor from the tip of a single blade to the tip of the opposite blade.
RECs	Recognized Environmental Conditions
RES	Renewable Energy Standard
Resistance	The opposition offered by a body or substance to the passage through it of a steady electric current.
Rotor	The rotor consists of three blades mounted to a rotor hub.
ROW	Right-of-Way
rpm	Revolutions per minute
RPS	Renewable Portfolio Standards
SCADA	Supervisory Control and Data Acquisitions (communications technology)
SHPO	State Historic Preservation Office
SPCC	Spill Prevention Control and Countermeasures
Step-up Transformer	A transformer that increases voltage
Substation	A subsidiary station in which electric current is transformed.
SWL	Sound Power Level, W is for the reference of power, the Watt
SWPPP	Stormwater Pollution Prevention Plan
Torque	A force that produces or tends to produce rotation or torsion; also a measure of the effectiveness of such a force that consists of the product of the force and the perpendicular distance from the line of action of the force to the axis of rotation: a turning or twisting force.
Transformer	An electrical device by which alternating current of one voltage is changed to another voltage.
USACE	US Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
UT	Unincorporated Township
WEST	Western EcoSystems Technology, Inc

WMA	Wildlife Management Area
WMD	Wetland Management District
WPAs	Waterfowl Protection Areas
WTG	Wind Turbine Generator
Yaw	To deviate erratically from a course (as when struck by a heavy sea); especially to move from side to side: to turn by angular motion about the vertical axis.

Appendices

Appendix A

Studies and Assessments

Wind Power GeoPlanner™

Microwave Study

Bison 4 Wind Energy Conversion Facility

Prepared on Behalf of
Minnesota Power

March 26, 2013

COMSEARCH®
A CommScope Company

Table of Contents

1. Introduction

Comsearch has developed and maintains comprehensive technical databases containing information on licensed microwave networks throughout the United States. Microwave bands that may be affected by the installation of wind turbine facilities operate over a wide frequency range (900 MHz – 23 GHz). These systems are the telecommunication backbone of the country, providing long-distance and local telephone service, backhaul for cellular and personal communication service, data interconnects for mainframe computers and the Internet, network controls for utilities and railroads, and various video services. This report focuses on the potential impact of wind turbines on licensed, proposed and applied non-federal government microwave systems.

2. Project Overview

Project Information

Name: Bison 4 Wind Energy Conversion Facility
County: Oliver, Morton, and Mercer
State: North Dakota
Number of Turbines: TBD
Blade Diameter: 117
Hub Height: 93

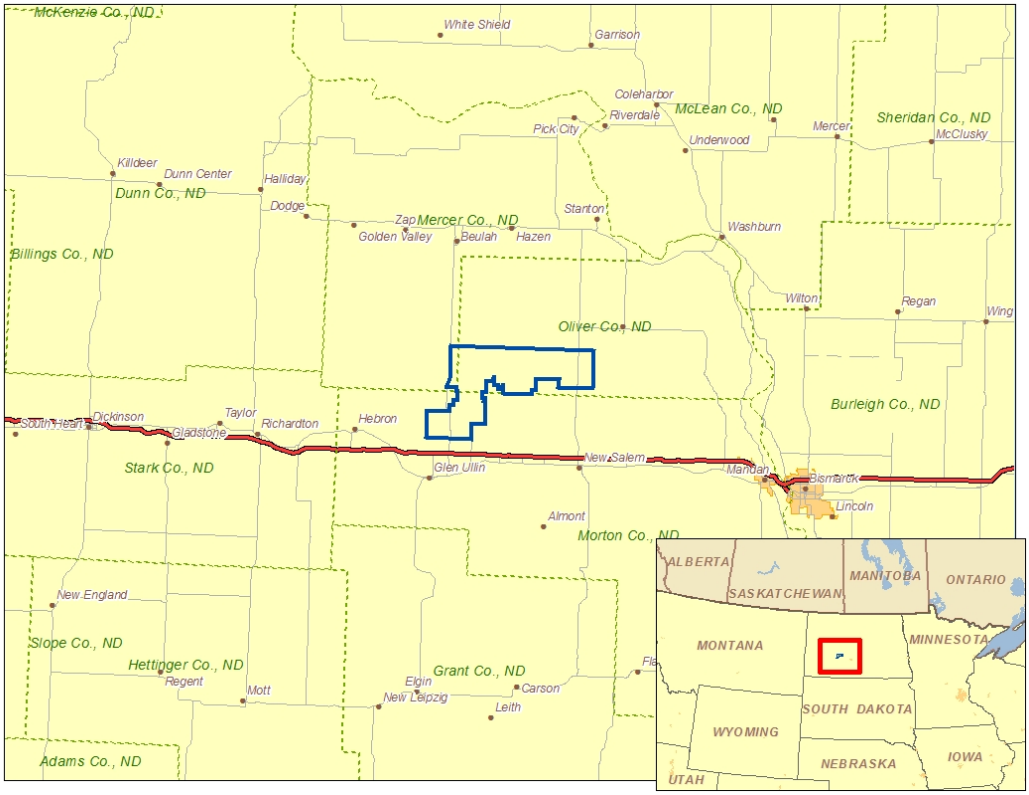


Figure 1: Area of Interest

3. Fresnel Zone Analysis

Methodology

Our obstruction analysis was performed using Comsearch's proprietary microwave database, which contains all non-government licensed, proposed and applied paths from 0.9 - 23 GHz[1]. First, we determined all microwave paths that intersect the area of interest[2]. The area of interest encompasses the planned turbine locations.

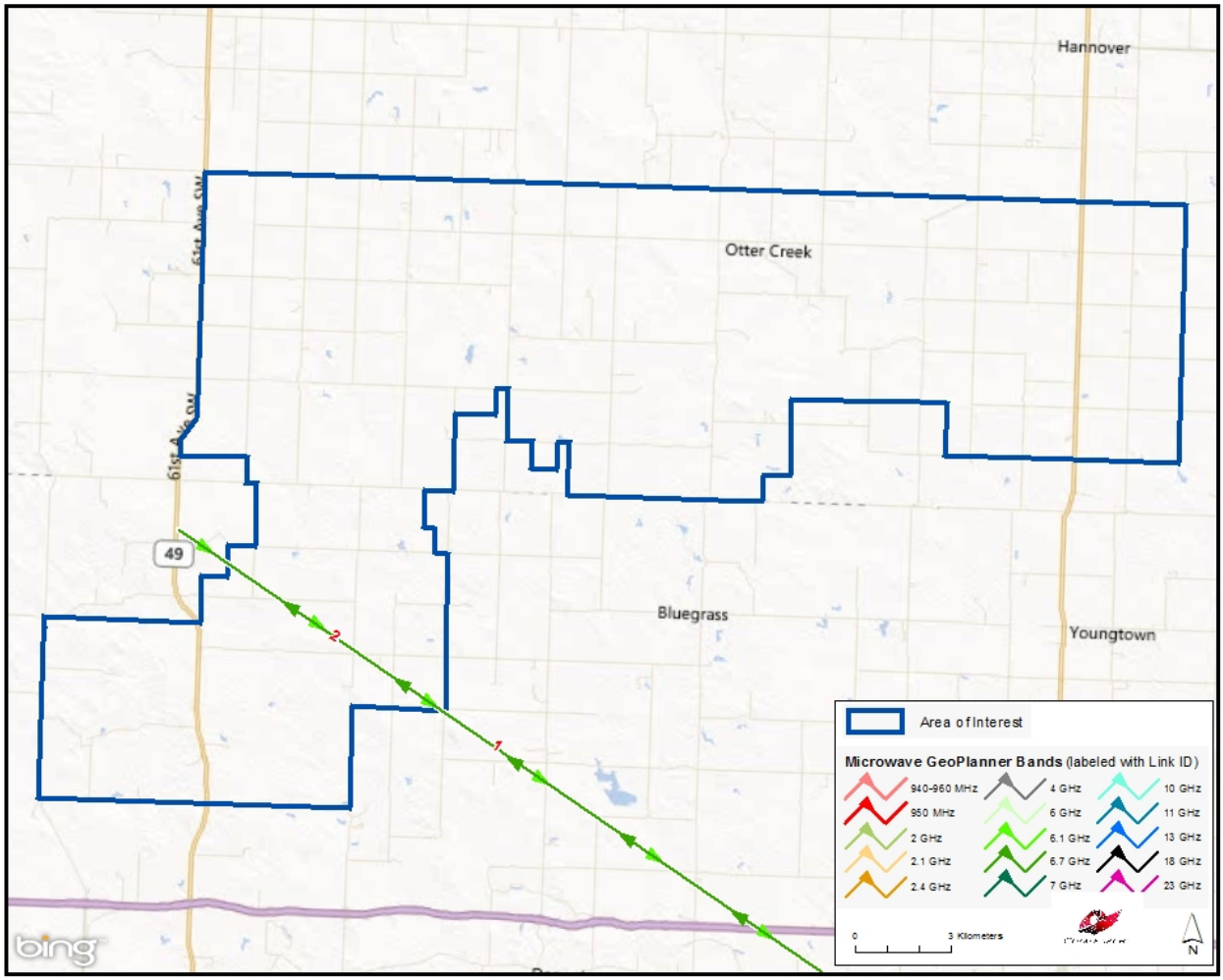


Figure 2: Microwave Paths that Intersect the Area of Interest

[1] Please note that this analysis does not include unlicensed microwave paths or federal government paths that are not registered with the FCC.

[2] We use FCC-licensed coordinates to determine which paths intersect the area of interest. It is possible that as-built coordinates may differ slightly from those on the FCC license.

ID	Status	Callsign 1	Callsign 2	Band	Path Length (km)	Licensee
1	Licensed	WEH428	WEH426	6.7 GHz	34.89	Basin Electric Power Cooperative
2	Applied	WEH426	WEH428	6.1 GHz	34.89	Basin Electric Power Cooperative

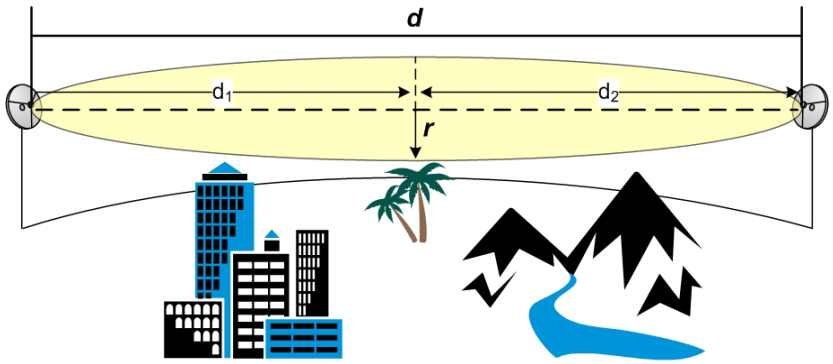
Table 1: Summary of Microwave Paths that Intersect the Area of Interest
(See enclosed mw_geopl.xlsx for more information and GP_dict_matrix_description.xls for detailed field descriptions)

Next, for each microwave path that intersected the project area, we calculated a Fresnel Zone. Fresnel zones were calculated for each path using the following formula.

$$Rn \cong 17.3\sqrt{\frac{n}{F_{GHz}}\left(\frac{d_1 d_2}{d_1 + d_2}\right)}$$

Where,
R_n = Fresnel Zone radius at a specific point in the microwave path, meters
n = Fresnel Zone number, 1
F_{GHz} = Frequency of microwave system, GHz
d_1 = Distance from antenna 1 to a specific point in the microwave path, kilometers
d_2 = Distance from antenna 2 to a specific point in the microwave path, kilometers

The calculated Fresnel Zone shows the linear area of signal swath (illustrated below) and is calculated for each microwave path in the project area. In general, this is the area where the planned wind turbines should be avoided, if possible. A depiction of the Fresnel Zones can be found in Figure 3, and is also included in the shapefiles[3,4].



[3] The ESRI® shapefiles enclosed are in NAD 83 UTM Zone 14 projected coordinate system.

[4] Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data provided in this report is governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

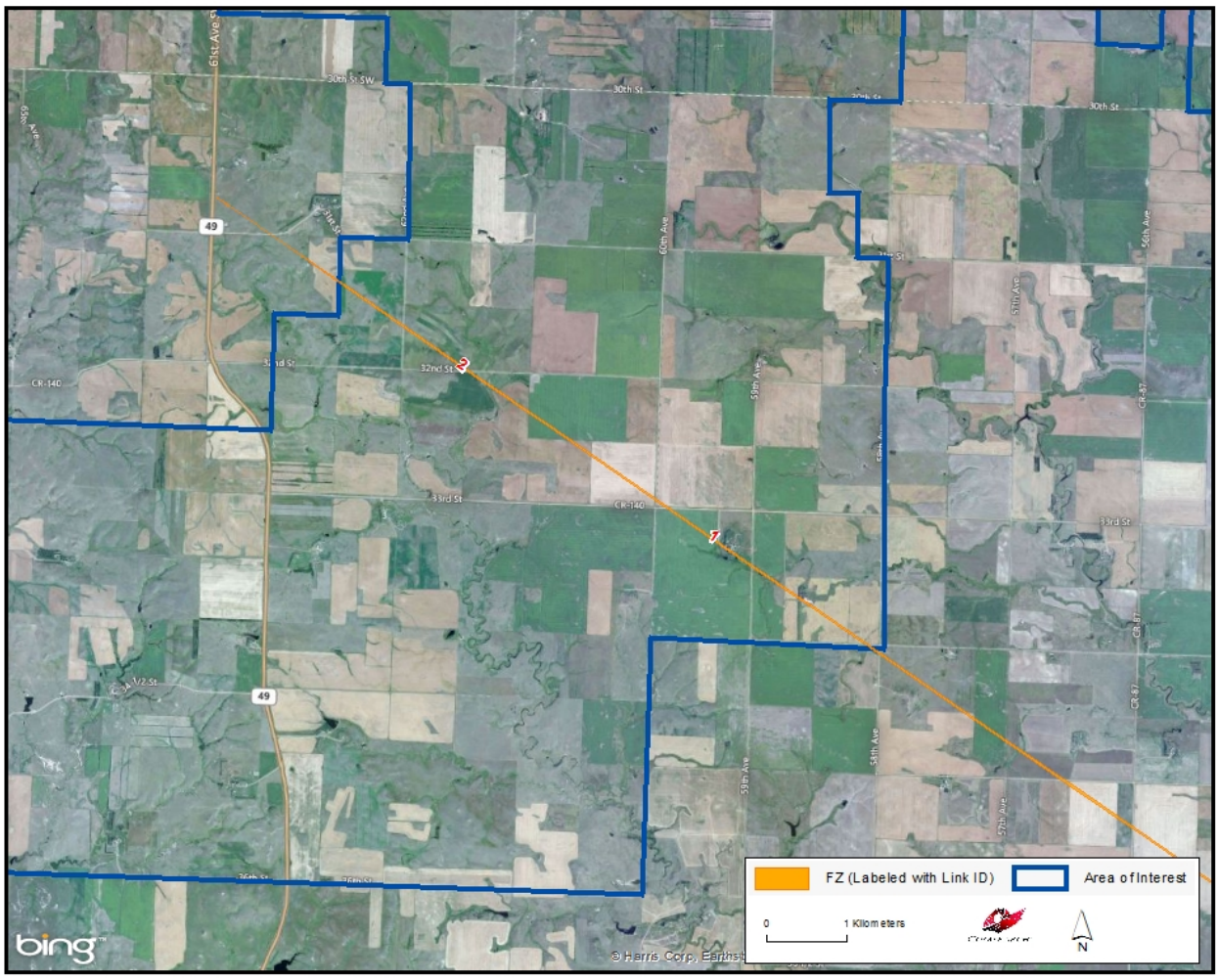


Figure 3: Fresnel Zones in the Area of Interest

Discussion of Potential Obstructions

Total Microwave Paths	Paths with Affected Fresnel Zones	Total Turbines	Turbines Obstructions
2	N/A	N/A	N/A

For this project, turbine locations were not provided; thus we could not determine if any potential obstructions exist between the planned wind turbines and the incumbent microwave paths. If the latitude and longitude values for turbine locations are provided, Comsearch can identify where a potential conflict might exist.

4. Conclusions

Our study identified two microwave paths intersecting the Bison 4 Wind Project area. The Fresnel Zones for these microwave paths were calculated and mapped. We recommend that all turbines be sited in locations that will not obstruct the Fresnel Zones.

5. Contact Us

For questions or information regarding the Microwave Study, please contact:

Contact person:	Denise Finney
Title:	Account Manager
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5650
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Tier II Site Characterization Study of the Bison IV Wind Resource Area

Prepared for:

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30 West Superior St
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Prepared by:

Clayton Derby and Ann Dahl

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May 2, 2013

EXECUTIVE SUMMARY

The proposed Bison IV Wind Resource Area (B4WRA), currently about 19,228 hectares (47,514 acres), is located in Oliver and Mercer Counties in North Dakota. The 1-mile (1.6-kilometer [km]) buffer crosses into Morton County, North Dakota; the buffer is about 15,538 hectares (38,394 acres). The purpose of this report is to characterize biological resources in the proposed project area and the 1-mile buffer area and determine if additional biological resource surveys may be warranted. Biological resources within the B4WRA and the 1-mile buffer were evaluated through a search of existing data and a site visit from public roads on April 3, 2013. Wildlife species associated with tilled agricultural landscapes, grasslands, and wetlands were observed during the site visit.

The landscape of the B4WRA and buffer is almost level to rolling, with elevations ranging from 618 to 739 meters. Ownership within the B4WRA is private; there are four parcels of North Dakota State Lands within the buffer area. There are no designated areas of sensitive habitats, Nature Conservancy conservation areas, or Audubon Society Important Bird Areas within the B4WRA and the 1-mile buffer areas. North Dakota Game and Fish Department's Storm Creek Wildlife Management Area is about 8.4 km (5.2 miles) from the southern boundary of the B4WRA.

The B4WRA and the 1-mile buffer have similar percent composition of land cover types; about 37% of each area is cropland and 31% is prairie. The B4WRA has a slightly lower percent of its acreage in planted herbaceous perennials (22.4%) compared to the 1-mile buffer (24.1%). Spring wheat, sunflower, and corn are common cultivated crops in the area.

Wetlands are generally evenly distributed but sparse. Based on National Wetland Inventory (NWI) polygon data, there are approximately 214.1 hectares (529 acres) of wetlands, not including streams and rivers, found within the B4WRA and 526 acres in the 1-mile buffer. Over 75% of wetlands are freshwater emergent wetlands in both areas. About 1% of the overall B4WRA and the 1-mile buffer are wetlands. Three named creeks cross both the 1-mile buffer and the B4WRA: Hailstone, Otter, and Brush Creeks. Two named creeks are found only within the 1-mile buffer: Sweetbriar and Square Butte Creeks.

A review of US Fish and Wildlife Service websites revealed that there are no federally threatened, endangered, or candidate plant species listed for Oliver, Mercer, and Morton Counties. During the site visit, some areas were observed that were native grasslands; however, it was not possible to accurately identify native areas due to heavy grazing and lack of green plant growth. Some species of native grassland-dependent birds are likely to be present.

There are five endangered, one threatened, and two candidate animal species listed under the Endangered Species Act that could occur within Oliver, Mercer, and Morton Counties. Four of those species (whooping crane, piping plover, Dakota skipper, and Sprague's pipit) have the

potential to occur in or around the B4WRA, based on range and habitat requirements. No Critical Habitat has been designated within the B4WRA and the 1-mile buffer.

The USFWS North Dakota Field Office has identified 11 bird species of habitat fragmentation concern: Baird's sparrow, bobolink, chestnut-collared longspur, grasshopper sparrow, greater prairie-chicken, greater sage-grouse, northern harrier, sedge wren, sharp-tailed grouse, Sprague's pipit, and upland sandpiper. Northern harrier and sharp-tailed grouse were both observed during the site visit. Other species that could be found within the B4WRA are Baird's sparrow, bobolink, chestnut-collared longspur, grasshopper sparrow, Sprague's pipit, and upland sandpiper. Based on ranges, greater prairie-chicken, greater sage-grouse, and sedge wren are not likely to be found on the B4WRA.

Twenty-two North Dakota Level I species of concern, including bird, mammal, reptile, and amphibian species, have the potential to occur within the B4WRA and the 1-mile buffer, although no Level I species were observed during the site visit. Due to the diverse habitats (cropland, grassland, and wetland), present in and around the B4WRA, all of the Level I species could occur within the B4WRA. Federal and state agencies have raised concerns regarding the potential impact of wind facilities on prairie grouse species. Sharp-tailed grouse are listed as a Level II species of conservation need. Based on the location of and presence of grasslands within the B4WRA and the 1-mile buffer, the area will likely be utilized by sharp-tailed grouse. In fact, sharp-tailed grouse were observed during the site visit.

Raptor species that could occur in or near the B4WRA are northern harrier, sharp-shinned hawk, Cooper's hawk, northern goshawk, broad-winged hawk, red-tailed hawk, Swainson's hawk, ferruginous hawk, rough-legged hawk, golden eagle, bald eagle, osprey, merlin, American kestrel, gyrfalcon, and prairie falcon. The red-tailed hawk, northern harrier, and American kestrel were observed during the site visit. Owl and vulture species that could be found in the area include northern saw-whet owl, snowy owl, short-eared owl, long-eared owl, great-horned owl, eastern screech owl, burrowing owl, and turkey vulture. Fourteen of these species could potentially breed in or near the B4WRA: northern harrier, sharp-shinned hawk, Cooper's hawk, Swainson's hawk, red-tailed hawk, ferruginous hawk, American kestrel, prairie falcon, burrowing owl, eastern screech owl, great-horned owl, short-eared owl, long-eared owl, and turkey vulture.

The nearest US Geological Survey Breeding Bird Survey route is the Zap route, which is northwest of the northwest corner of the B4WRA. In 2011, there were 46 species with 875 individual observations recorded on the Zap route. Western meadowlark, brown-headed cowbird, mourning dove, cliff swallow, and bobolink were the most abundant birds. Four species observed in 2011, Baird's sparrow, grasshopper sparrow, lark bunting, and upland sandpiper, are North Dakota Level I bird species of greatest conservation need.

There are several species of bats that could be found in or around the B4WRA, including big brown bat, hoary bat, eastern red bat, little brown myotis, northern myotis, and silver-haired bat. None of these species are listed by the federal government under the Endangered Species Act

or are Level I species of conservation need in North Dakota. All six of the bat species that are likely residents and migrants in and around the B4WRA have been found as casualties at other wind energy facilities. Potential roosting habitat in the B4WRA is found in the form of trees and buildings; no caves were observed during the site visit. Bats may forage over agricultural fields, grasslands, streams, and wetlands/ponds.

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INTRODUCTION

Knowledge of biological resource issues early in the development phase of wind energy facilities helps the industry identify, avoid, and minimize potential biological issues. This report describes known biological resources present within a potential wind energy facility and 1-mile (1.6-kilometer [km]) buffer area and evaluates these general characteristics as related to potential or known impacts on the resources from wind energy facilities.

The proposed Bison IV Wind Resource Area (B4WRA) is located in Oliver and Mercer Counties, North Dakota (Figure 1), north and northwest of New Salem, North Dakota. The purpose of this report is to characterize biological resources in the proposed project area and 1-mile buffer area and determine if additional biological resource surveys may be warranted.

STUDY AREA

The B4WRA, currently about 19,228 hectares (ha; 47,514 acres), is located mainly in southwest Oliver County; a small portion of the study area is in southeastern Mercer County. The B4WRA is located in western North Dakota, near the town of Hannover (Figure 1). The 1-mile buffer area around the B4WRA is about 15,538 ha (38,394 acres) and extends into Morton County, as well as Oliver and Mercer Counties. The study area lies within the Missouri Plateau of the Northwestern Great Plains ecoregion (Bryce et al. 1996). The Missouri Plateau is largely unglaciated and therefore retains its original soils and drainage pattern. Wetlands are generally evenly distributed but sparse. Native vegetation is prairie grass and forb species typically found in shortgrass prairie of the region. Areas of native grassland persist in areas of steep topography or areas unsuitable for agriculture. Agriculture is limited by precipitation and the lack of areas suitable for tillage.

The landscape of the B4WRA and buffer is mostly level to rolling, with elevations ranging from 618 to 739 meters (m; 2,027.6 to 2,424.5 feet [ft]) above sea level (Figure 2). The B4WRA soils are about 10% Morton silt loam, about 7% Williams loam and about 7% Vebar-Tally fine sandy loams (SSURGO Soils Data). The 1-mile buffer is about 12% Williams loam, about 7% Rhoades-Daglum complex, and about 7% Belfield-Daglum silt loams.

Ownership within the B4WRA is private; there are four parcels of North Dakota State Lands within the buffer area (Figure 3; US Geological Survey [USGS] 2013c). The extent and location of conservation program enrollments (e.g., Conservation Reserve Program, USFWS grassland or wetland easements) is unknown at this time.

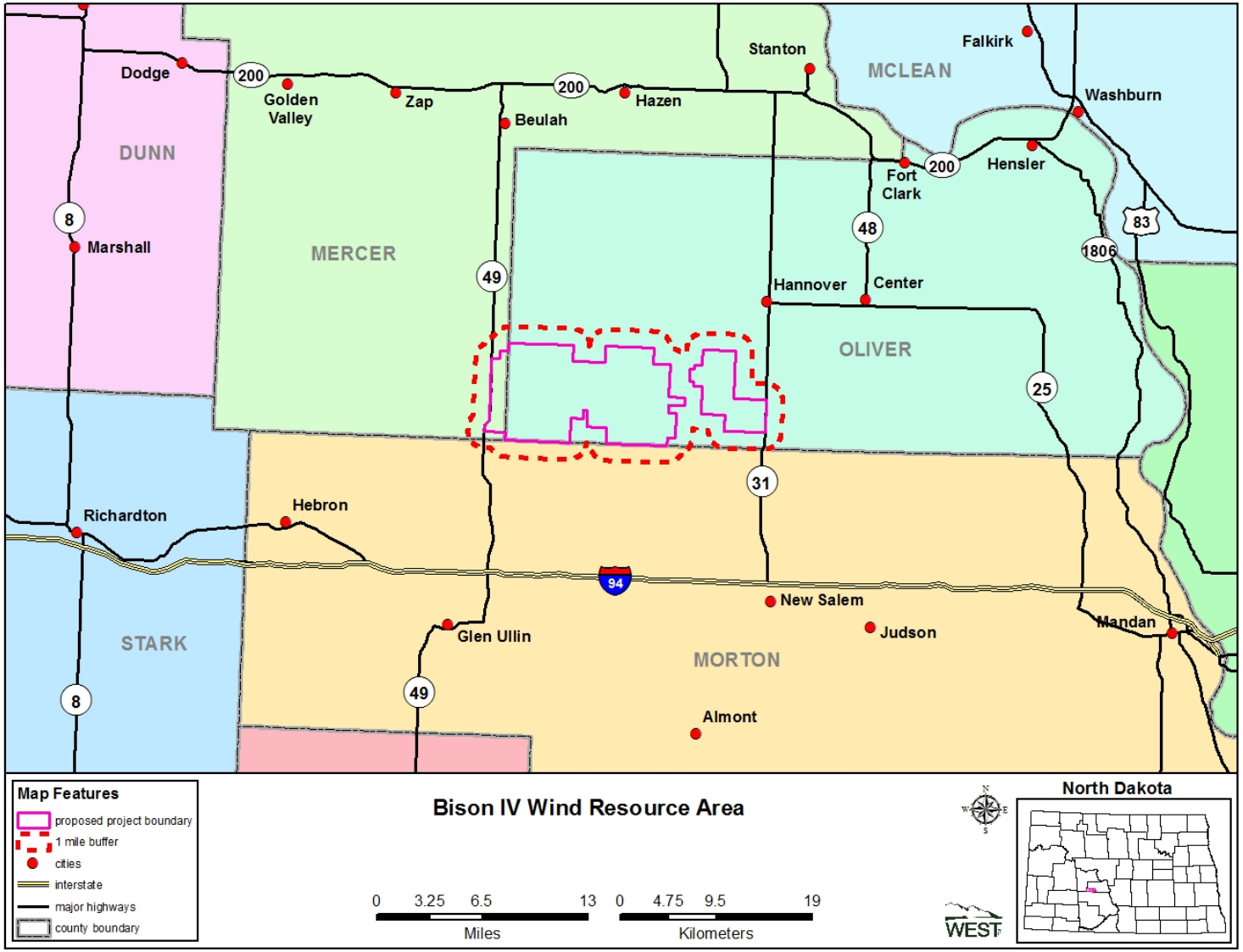

Figure 1. Location of the Bison IV Wind Resource Area and the 1-mile buffer in Oliver, Mercer, and Morton Counties, North Dakota.

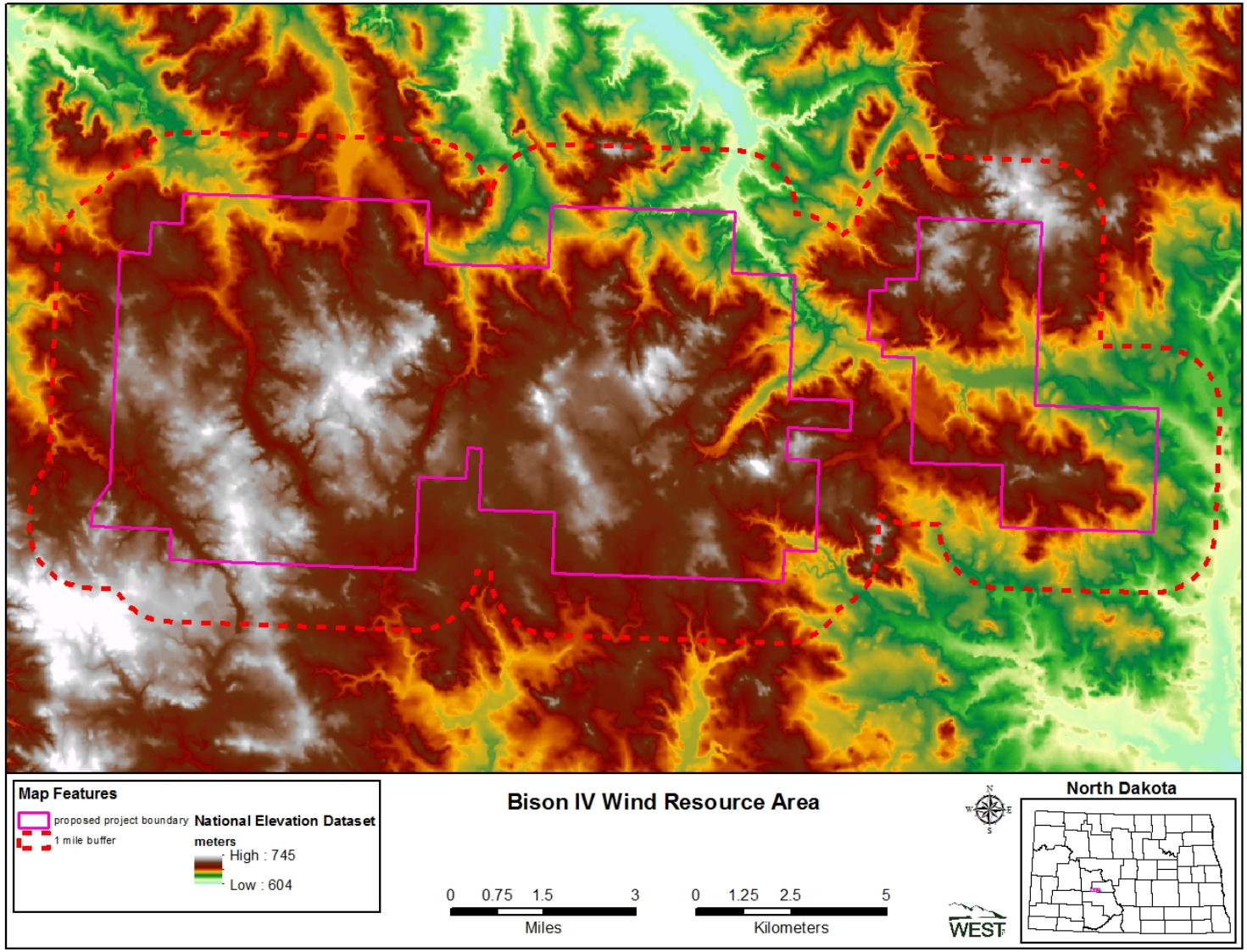

Figure 2. Elevation of the Bison IV Wind Resource Area and the 1-mile buffer.

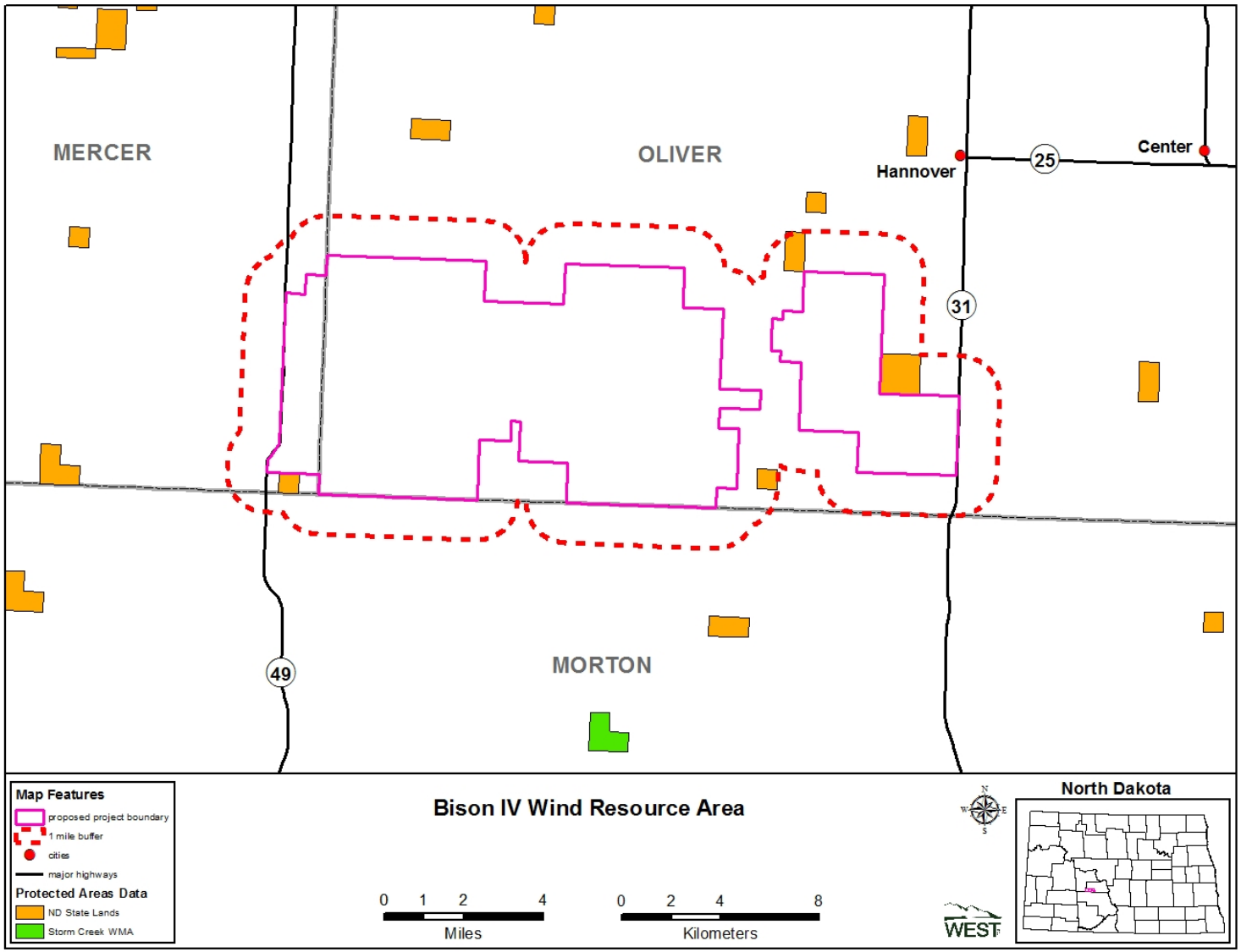

Figure 3. Ownership of the Bison IV Wind Resource Area and the 1-mile buffer.

METHODS

Biological resources within the B4WRA and the 1-mile buffer were evaluated through a search of existing data and a reconnaissance level site visit. The site visit entailed an examination of the B4WRA and buffer from public roads on April 3, 2013, during which biological features and potential wildlife habitat, including plant communities, topography features, and potential raptor nesting habitat and prey populations, were generally identified. All wildlife species observed during the site visit were recorded and photographs (Appendix A) were taken of the areas.

Several sources of available data were used to identify biological resources within the B4WRA including published literature, field guides, and public data sets. Copies of correspondence submitted to agencies to identify biological or sensitive resource issues and locations within the Project area, including responses received to-date, are provided in Minnesota Power's application to the North Dakota Public Service Commission under Case No. PU 13-127. In addition, federal and state input regarding other potential wind energy facilities in the region were reviewed and the general information provided from these informal consultations is used as appropriate in this document.

Land Use/Land Cover

The B4WRA and the 1-mile buffer have similar percent composition of land cover types; about 37% of each area is cropland and 31% is prairie (Table 1; Figure 4; USGS 2004). The B4WRA has a slightly lower percent of its acreage in planted herbaceous perennials (22.4%) compared to the 1-mile buffer (24.1%). All other land cover types account for less than 6% of total land cover. Spring wheat (*Triticum aestivum*), sunflower (*Helianthus annuus*), and corn (*Zea mays*) are common cultivated crops in the area (US Department of Agriculture [USDA] National Agricultural Statistics Service [NASS] 2012).

Table 1. Land cover types present within the Bison IV Wind Resource Area and the 1-mile buffer.

Land Cover	Project Acres	% Total	Buffer Acres	% Total
Cropland	17,699.5	37.6	14,093.4	36.7
Prairie	14,856.4	31.6	11,957.4	31.1
Planted herbaceous perennials	10,540.5	22.4	9,248.6	24.1
Shrubland - upland deciduous	2,486.2	5.3	1,699.3	4.4
Wetland	957.6	2.0	993.6	2.6
Barren land	393.0	0.8	277.3	0.7
Woodland	113.0	0.2	61.5	0.2
Developed	4.9	0.0	62.7	0.2
Total	**47,051.1**	**100.0**	**38,393.9**	**100**

Data: USGS 2004 Gap Landcover, USGS 2004

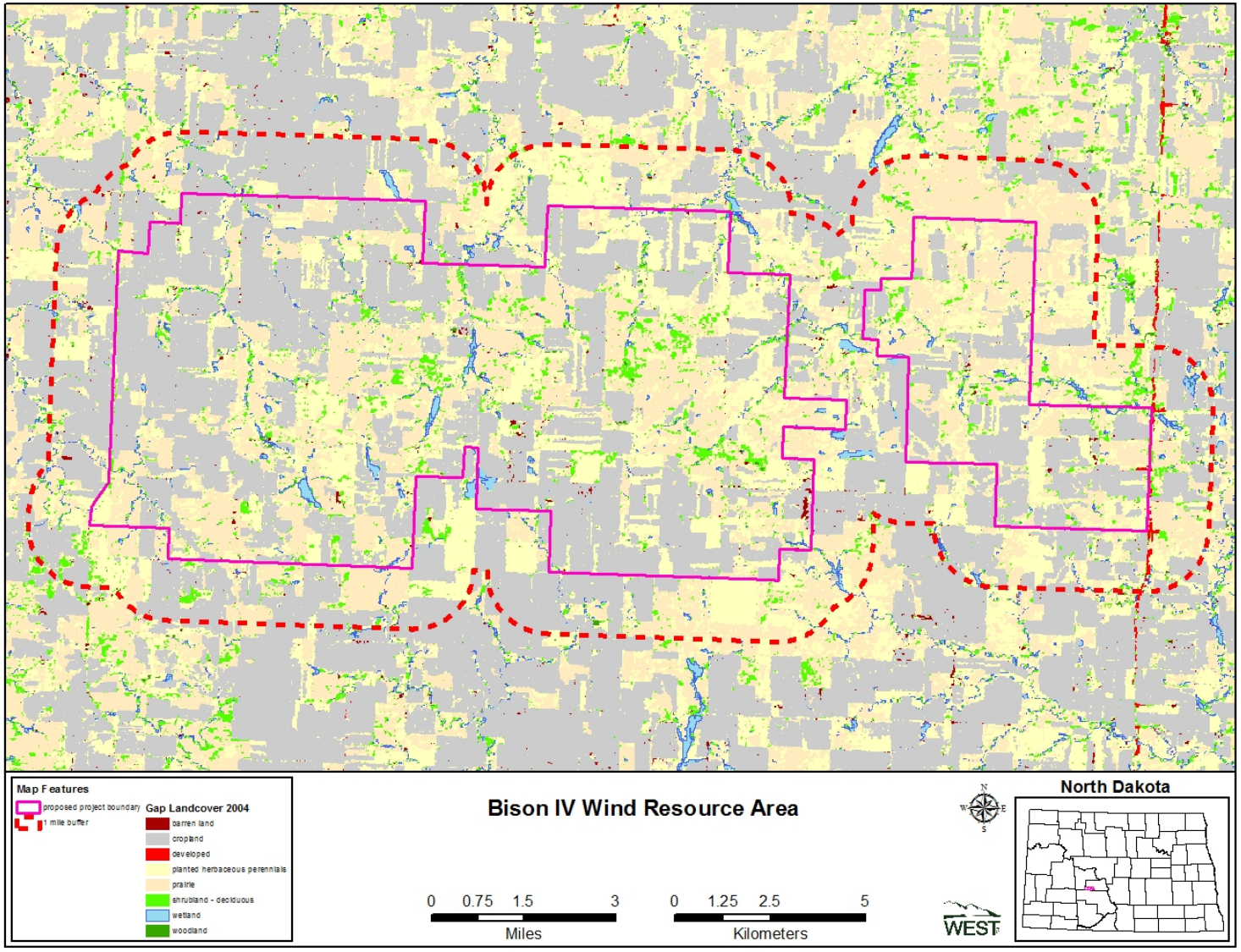

Figure 4. Land use/land cover of the Bison IV Wind Resource Area and the 1-mile buffer.

SENSITIVE PLANTS AND HABITATS

Sensitive and Special Status Plant Species

A review of USFWS website revealed that there are no federally threatened, endangered, or candidate plant species listed for Oliver, Mercer, and Morton Counties (USFWS 2012a, 2013i). The USFWS has not completed a project review at this time; it is possible that issues regarding sensitive plant species and habitats may arise once this information is received.

A search of North Dakota's Natural Heritage Program database did not identify any sensitive plants or communities within the B4WRA or 1 mile buffer. In addition, data was reviewed on NatureServe's online database (NatureServe 2013). No data for sensitive plant species were found for the three counties of interest (NatureServe 2013).

Sensitive Areas and Habitats

There are no designated areas of sensitive habitats within the B4WRA and 1-mile buffer areas. There are no Nature Conservancy conservation areas in the B4WRA or the 1-mile buffer area (The Nature Conservancy [TNC] 2011). There are currently no Audubon Society Important Bird Areas designated in North Dakota (National Audubon Society 2013). North Dakota Game and Fish Department's Storm Creek Wildlife Management Area is about 8.4 km (5.2 mi) from the southern boundary of the B4WRA (Figure 3; USGS 2013c).

The presence of wind turbines may alter the landscape so that wildlife use patterns change, possibly displacing wildlife from the B4WRA. The greatest concern with displacement impacts are for wind energy facilities that are placed in native grasslands and other native habitats. The B4WRA and the 1-mile buffer contain grasslands, some of which are likely native (see Land Use/Land Cover section). It is probable that some grassland-dependent species will be displaced from construction and/or operation of the wind facility (see the Breeding Bird section for more discussion on displacement). Both the State (see correspondence in PCS application for this project) and the USFWS, on past projects, have expressed concerns regarding wind facility development within intact native landscapes. In past discussions with the agencies, most concern has been expressed regarding landscapes where 75% or more is comprised of native grasslands, wetlands, and other native features, but there is concern with any native landscapes. The B4WRA has less than 40% native land cover (USGS 2004).

During the site visit, some areas were observed that were undoubtedly native grasslands; but it was difficult to accurately identify native areas due to heavy grazing and lack of green plant growth.

Wetlands Areas

Based on National Wetland Inventory (NWI) polygon data (USFWS NWI 2013), there are approximately 214.1 ha (529 acres) of wetlands, not including streams and rivers, found within the B4WRA and 212.9 ha (526 acres) in the 1-mile buffer (Table 2; Figure 5). This translates

into approximately 1% of the B4WRA and buffer areas. Of the wetlands, over 75% were identified as freshwater emergent wetlands in both areas with freshwater ponds comprising most of the remaining wetland acres (Table 2).

Table 2. National Wetland Inventory (NWI) wetland types present within the Bison IV Wind Resource Area and the 1-mile buffer.

Wetland Type	Project Acres	Percent Total	Buffer Acres	Percent Total
Freshwater Emergent	404.9	76.9	430.8	81.8
Freshwater Pond	122.7	23.3	95.1	18.1
Other	1.1	0.2	0.5	0.1
Freshwater Forested/Shrub	0.8	0.2		
Total	529.4	100.6	526.3	100.0

Three named creeks cross both the 1-mile buffer and the B4WRA: Hailstone Creek (along southern edge, drains to the south), Otter Creek (central, drains to the north), and Brush Creek (along northern edge, drains to the north; Figure 5). Two named creeks are found only within the 1-mile buffer: Sweetbriar Creek (along southern edge, drains to the south) and Square Butte Creek (along northern edge, drains to the north). The NDGFD recommended that any above-ground transmission lines be marked when crossing perennial streams or larger wetland complexes to minimize avian collisions.

Constructing access roads to the turbines and other facilities may require crossing some wetlands, drainages, and possible easements.

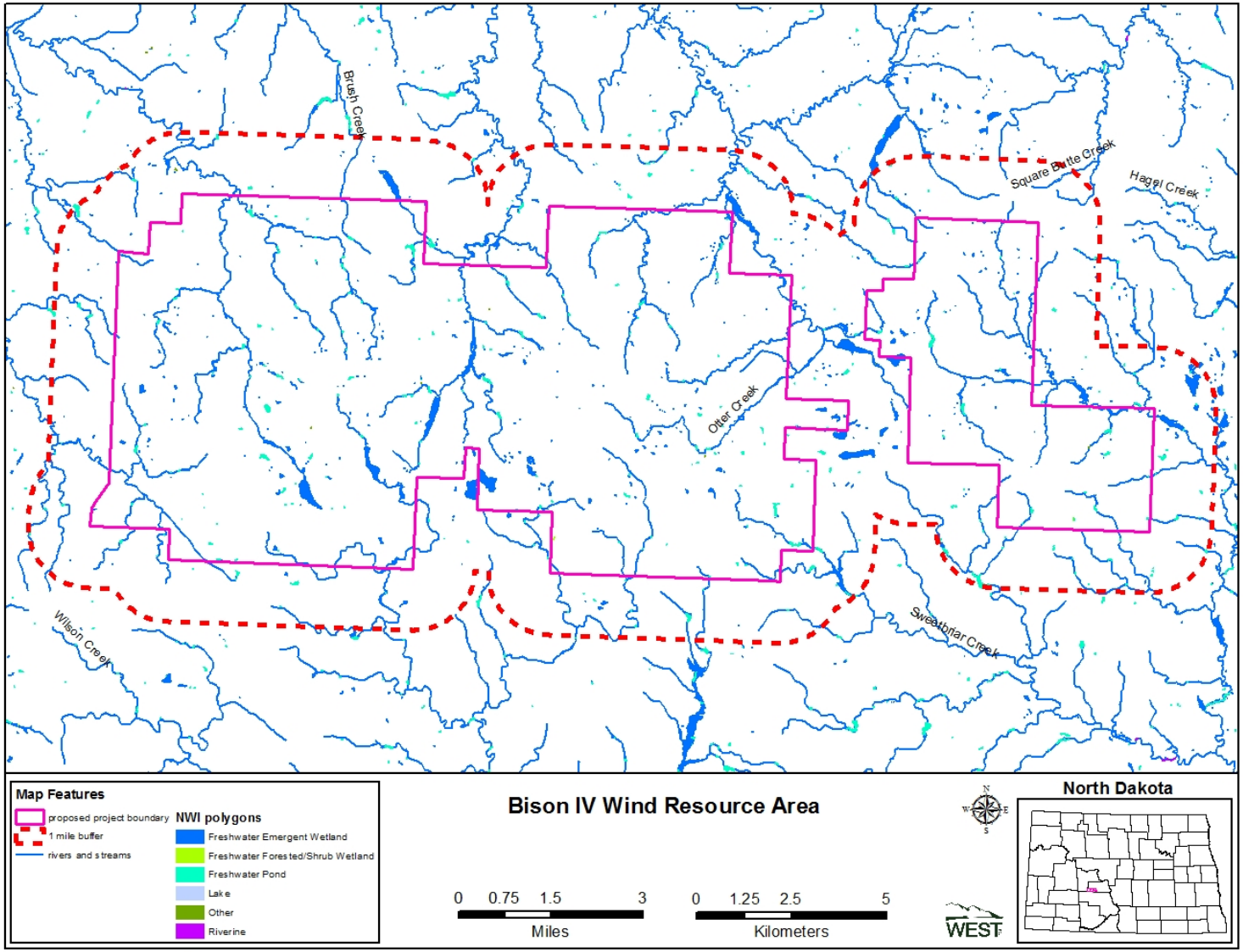

Figure 5. National Wetland Inventory (NWI) wetlands and named rivers and streams of the Bison IV Wind Resource Area and 1-mile buffer.

WILDLIFE

Wildlife species associated with tilled agricultural landscapes, grasslands, and wetlands are expected to be the most common species in the B4WRA and the 1-mile buffer area. A list of species observed during the site visit is provided in Table 3.

Table 3. Wildlife observed in the Bison IV Wind Resource Area and the 1-mile buffer during the site visit on April 3, 2013.

Species	Scientific Name
Birds	
Canada goose	*Branta canadensis*
killdeer	*Charadrius vociferus*
mallard	*Anas platyrhynchos*
northern harrier	*Circus cyaneus*
red-winged blackbird	*Agelaius phoeniceus*
ring-billed gull	*Larus delawarensis*
ring-necked pheasant	*Phasianus colchicus*
western meadowlark	*Stumella neglecta*
red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
American robin	*Turdus migratorious*
common redpoll	*Acanthis flammea*
European starling	*Sturnus vulgaris*
horned lark	*Eremophila alpestris*
rock pigeon	*Columba livia*
sandhill crane	*Grus canadensis*
sharp-tailed grouse	*Tympanuchus phasianellus*
Mammals	
striped skunk	*Mephitis mephitis*
mule deer	*Odocoileus hemionus*

Federal Listed Wildlife Species

According to the USFWS, there are five endangered, one threatened, and two candidate species listed under the Endangered Species Act (ESA 1973) that could occur within Oliver, Mercer, and Morton Counties (Table 4; USFWS 2012a, 2013i). No Critical Habitat has been designated within the B4WRA or the 1-mile buffer (USFWS 2013c). No federally listed species were observed during the site visit.

Table 4. Federal threatened, endangered, and candidate wildlife species with the potential to occur in the Bison IV Wind Resource Area and the 1-mile buffer.

Group/Species	Status	Scientific Name
BIRDS		
whooping crane	FE	*Grus americana*
interior least tern	FE	*Sterna antillarum*
piping plover	FT	*Charadrius melodus*
Sprague's pipit	FC	*Anthus spragueii*
FISH		
pallid sturgeon	FE	*Scaphirhynchus albus*

Table 4. Federal threatened, endangered, and candidate wildlife species with the potential to occur in the Bison IV Wind Resource Area and the 1-mile buffer.

Group/Species	Status	Scientific Name
INSECT		
Dakota skipper	FC	*Hesperia dacotae*
MAMMALS		
gray wolf	FE	*Canis lupus*
black-footed ferret	FE	*Mustela nigripes*

FE=Federal Endangered, FT = Federal Threatened, FC=Federal Candidate (USFWS 2012a, 2013i)

Whooping Crane

The whooping crane (*Grus americana*) is an endangered bird with a current population estimate of approximately 273 (95% CI 250-301) individuals (Martha Tacha, USFWS, pers. comm.). Whooping cranes typically migrate from their breeding grounds in Wood Buffalo National Park, Canada to their wintering areas in Aransas National Wildlife Refuge, Texas. During the migration, most birds pass through central North Dakota (Austin and Richert 2001).

Approximately the eastern one-third of the B4WRA is within the whooping crane migration corridor that contains 75% of the confirmed whooping crane observations (Figure 6; CWCTP 2007). The rest of the B4WRA is almost all within the region that contains 80% of the confirmed whooping crane observations. As of fall 2010 data, there were no confirmed observations of whooping cranes within the B4WRA and the 1-mile buffer; the closest confirmed observations were 12.7 km (7.9 miles) south of the southern boundary of the B4WRA (Figure 6; CWCTP 2010).

Whooping cranes generally migrate at 300-1,500 m (1,000-5,000 ft), altitudes well above turbine height (Stehn 1998), and thus for the most part are unlikely to collide with turbines. However, as whooping cranes ascend and descend during takeoff and landing, or migrate during inclement weather, they may fly at lower altitudes and may fly within the flight altitudes corresponding to the rotor-swept areas.

The potential exists for whooping cranes to fly through the area during migration because the B4WRA lies within the defined migration corridor. Both foraging (cropland and grasslands) and roosting (wetlands) habitat is present making it possible for whooping cranes to utilize the B4WRA.

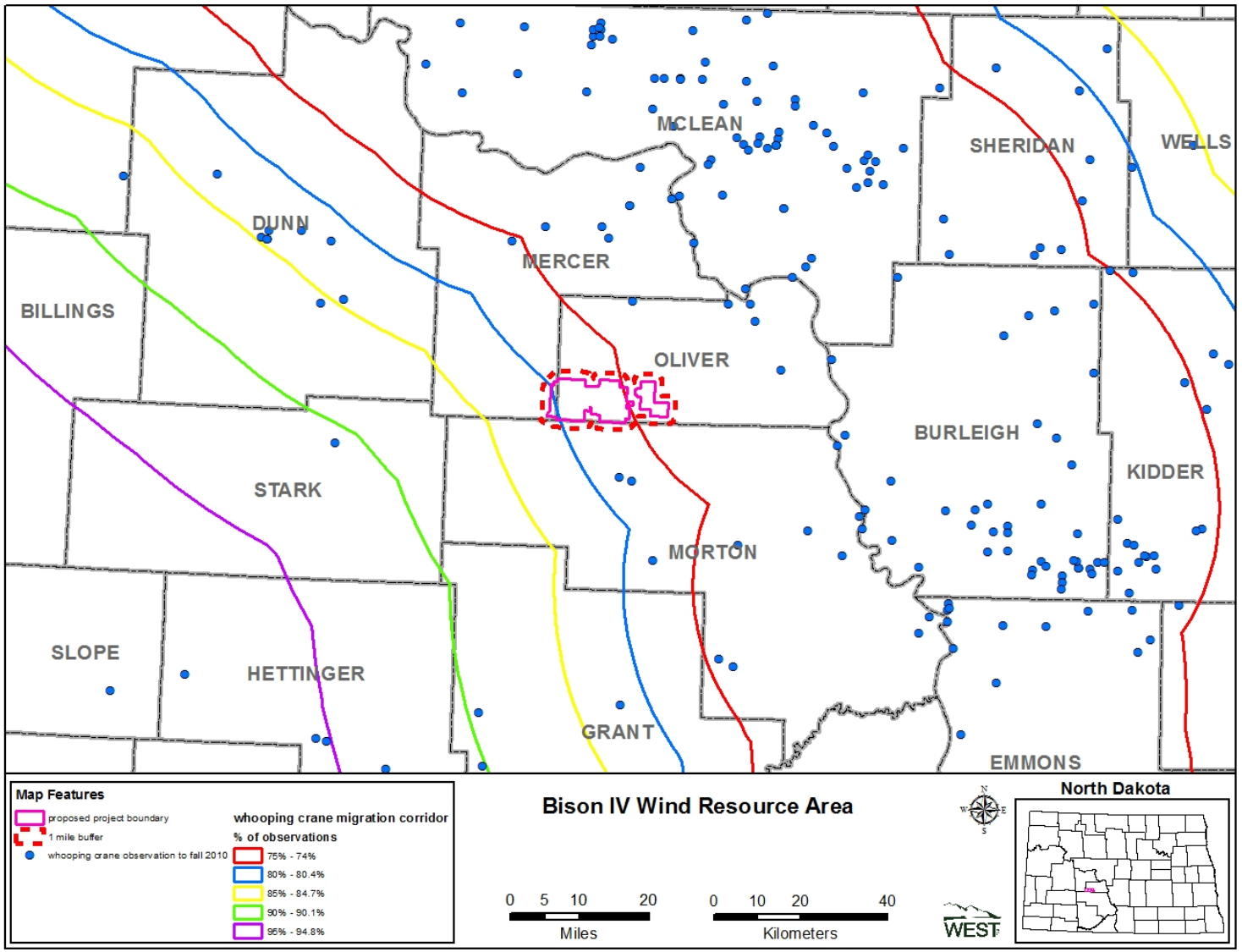

Figure 6. Whooping crane migration corridor and confirmed observations through fall 2011 in the vicinity of the Bison IV Wind Resource Area.

Interior Least Tern

The least tern (*Sterna antillarum athalassos*) is an endangered bird that breeds along exposed sandbars of the Missouri and Yellowstone Rivers of North Dakota (USFWS 2013f). No potential nesting habitat was observed or known to occur within the B4WRA or the 1-mile buffer. Gap Analysis models of potential distribution predicted that the least tern could occur within the B4WRA and the 1-mile buffer, but in a limited area (USGS 2012). Because the Missouri River is over 27 km (16.8 miles) away, and least terns generally stay close to major rivers, it is unlikely that breeding least tern would be impacted by construction of the proposed wind energy facility. Least terns may migrate through the project area as it is unknown if they migrate along river corridors or in a more straight north-south fashion.

Piping Plover

The piping plover (*Charadrius melodus*) is a threatened bird species that nests along shorelines of alkaline wetlands and along midstream sandbars of the Missouri and Yellowstone Rivers in North Dakota (USFWS 2013g). The wetlands and waterbodies observed within the B4WRA during the site visit did not exhibit the saline wetland characteristics (salt-encrusted, wide beaches devoid of vegetation) used by piping plovers in non-riverine areas of North Dakota (USFWS 2001). Not all wetlands were observed during the site visit, so it is possible that there are other areas of potential habitat in the project area. However, Gap Analysis models of potential distribution predicted that the piping plover would not occur within the B4WRA or the 1-mile buffer (USGS 2012). In summary, while minimal potential nesting habitat for the piping plovers was observed within the B4WRA, the potential exists for the species to fly through the area during migration.

Sprague's Pipit

The Sprague's pipit (*Anthus spragueii*) is a candidate species that is grassland dependent. The species prefers medium-height native prairie with no shrubs or trees in relative large blocks (MNHP and MFWP 2013). The pipit is sensitive to fragmentation of grassland habitat and prefers prairie areas of at least about 29.1 ha (72 acres); larger patches of at least 145.7 ha (360 acres) are preferred (USFWS 2013b). The USFWS published the Sprague's pipit Conservation Plan in 2010 that further outlines and describes the need for larger blocks of habitat for the species (Jones 2010).

Grassland habitat, some of which is likely native prairie, is present within the B4WRA. Gap Analysis models of potential distribution predicted that the Sprague's pipit would occur within the B4WRA and the 1-mile buffer (USGS 2012) and one was documented as occurring in the vicinity of the current project boundary within the Natural Heritage Database review (see correspondence in PSC application). If native prairie grasslands cannot be avoided for this project, surveys may be needed to determine the occupancy of Sprague's pipits within potentially impacted areas, especially if construction cannot occur outside of the breeding season which would minimize potential for direct impacts.

Pallid Sturgeon

The endangered pallid sturgeon (*Scaphirhynchus albus*) is confined to the Missouri and Yellowstone River systems in North Dakota and would therefore not be found in the B4WRA (USFWS 2013g).

Dakota Skipper

Dakota skippers (*Hesperia dacotae*) are a federal candidate species found in native prairie, mainly in flat, mesic bluestem prairie and a drier, upland prairie along ridges and hill sides (USFWS 2013d). There is grassland habitat within the B4WRA and the 1-mile buffer that may be suitable for Dakota skippers. If native grasslands cannot be avoided, Dakota skipper surveys may be needed to determine occupancy and population size within potentially impacted areas.

Gray Wolf

The endangered gray wolf (*Canis lupus*) could utilize the B4WRA as a transient, but is unlikely to use the area consistently (USFWS 2013e). Confirmed wolf sightings from the 1990s occurred in North Dakota. Transient wolfs would most likely be those of dispersing animals from packs in Minnesota or Manitoba Canada.

Black-Footed Ferret

The black-footed ferret (*Mustela nigripes*) is an endangered species that utilizes short-grass prairie in proximity to prairie dog (*Cynomes* spp.) colonies (2013a). Unconfirmed reports of the ferret in southwest North Dakota have been made as well as recent confirmation of released black-footed ferrets moving into Sioux County, North Dakota from South Dakota (K. Shelley, USFWS, pers. comm.). No prairie dog colonies were observed during the site visit, although the Gap Analysis models of potential distribution predicted that the black-tailed prairie dog (*Cynomys ludovicianus*) would occur within the B4WRA and the 1-mile buffer (USGS 2012). Based on the rarity of this species and lack of prairie dog towns, it is unlikely that this species would occur in the B4WRA or buffer.

North Dakota State Species

The State of North Dakota does not have a state list of endangered and threatened species. However, they have documented 100 animal species and designated them with conservation priority. This group was then categorized by conservation need into three levels, with Level I species having the greatest conservation need (Hagen et al. 2005). Level I bird, mammal, reptile, and amphibian species with the potential to occur within the B4WRA and the 1-mile buffer are listed in Table 5 (USGS 2013a). Species descriptions that follow are taken from Hagen et al. (2005). No Level I species were observed during the site visit.

Table 5. North Dakota Level I wildlife species with the potential to occur in or near the Bison IV Wind Resource Area and the 1-mile buffer.

Group/Species	Scientific Name
BIRDS	
American bittern	*Botaurus tentiginosus*
American white pelican	*Pelecanus eryhrorhynchos*
Baird's sparrow	*Ammondramus bairdii*
black tern	*Chlidonias niger*
black-billed cuckoo	*Coccyzus erythropthalmus*
chestnut-collared longspur	*Calcarius omatus*
ferruginous hawk	*Buteo regalis*
Franklin's gull	*Larus pipixcan*
grasshopper sparrow	*Ammondramus savannarum*
horned grebe	*Podiceps auritus*
lark bunting	*Calamospiza melanocorys*
marbled godwit	*Limosa fedoa*
Nelson's sharp-tailed sparrow	*Ammondramus nelsonii*
Sprague's pipit	*Anthus spragueii*
Swainson's hawk	*Buteo swainsoni*
upland sandpiper	*Bartramia longicauda*
willet	*Catoptrophorus semipalmatus*
Wilson's phalarope	*Phalaropus tricolor*
yellow rail	*Columicops noveboracensis*
AMPHIBIANS AND REPTILES	
plains spadefoot	*Spea bombifrons*
western hognose snake	*Heterodon nasicus*
MAMMALS	
black-tailed prairie dog	*Cynomys ludovicianus*

Wetland-Related Species

Horned grebes (*Podiceps auritus*) prefer wetlands with emergent vegetation and areas of open water. American white pelicans (*Pelecanus erythrorhynchos*) will use island and peninsulas in larger lakes for nesting but will frequent various wetlands types to feed and loaf. The American bittern (*Botaurus lentiginosus*) prefers wetlands with tall emergent vegetation and will also utilize tall, thick grasslands for nesting. The yellow rail's (*Coturnicops noveboracensis*) main habitat is shallow wetlands or wet meadows of various sizes with emergent vegetation. Marbled godwits (*Limosa fedoa*) nest in short-grass (or grazed) prairies and will forage in various wetland types. Another species with similar habitat requirements is the willet (*Cataptrophorus semipalmatus*); however, it may utilize a wider variety of upland habitat types for nesting. Shallow, open wetlands with mudflats are utilized by Wilson's phalaropes (*Phalaropus tricolor*), Both the Franklin's gull (*Larus pipixican*) and black tern (*Chlidonias niger*) use wetlands with ample open water and stands of emergent vegetation. The Nelson's sharp-tailed sparrow (*Ammondramus nelsonii*) is included in this paragraph due to its preference for the shallow, wet meadow areas of wetlands.

Grassland-Related Species

Although classified as a shorebird, the upland sandpiper (*Bartramia longicauda)* uses a wide variety of upland habitats throughout its life cycle; preferred habitat is mixed-type grassland. The

grasshopper sparrow (*Ammodramus savannarum*) also utilizes various upland habitats with preferred habitat being grasslands with visual obstructions and ample vegetation litter. Baird's sparrows (*Ammondramus bairdii*) prefer larger tracts of native prairie without shrubs and forbs. Lark buntings (*Calamospiza melanocorys*) preferred habitat is low to medium height grasslands with shrubs. Native, open mixed and short grass prairies are preferred by chestnut-collared longspurs (*Calcarius ornatus*). Sprague's pipit, also a federal candidate species, is described above.

Other Bird Species

The two hawk species, Swainson's (*Buteo swainsoni*) and ferruginous (*Buteo regalis*) both prefer open grassland habitat. The Swainson's hawk uses taller trees and shrubs for nesting while ferruginous hawks nest on or near the ground as well as in trees and rock outcrops. The black-billed cuckoo (*Coccyzus erythropthalmus*) is mostly associated with edges of woodlands and to a lesser extent tree and/or shrub patches in grassland.

Reptiles and Amphibians

The plains spadefoot (*Spea binbufrons*) is found in dry, open grassland with loose, sandy soils. It uses small, temporary wetlands for breeding. Another species which prefers open grassland with dry sandy soil is the western hognose snake (*Heterodon nasicus*).

Mammals

The black-tailed prairie dog lives west of the Missouri River in North Dakota and prefers to establish their colonies in short grass (USGS Northern Prairie Wildlife Research Center [NPWRC] 2013). No prairie dog colonies were observed during the site visit.

State Species of Concern Summary

Due to the diverse habitats (cropland, grassland, and wetland), present in and around the B4WRA and the large size of the B4WRA, all of the above mentioned state Level I species could occur within the B4WRA. It does not appear, however, that the project or the 1-mile buffer contain specific habitats which would concentrate any one of these species. The overall project area has been significantly disturbed by tilled agriculture and possibly wetland drainage. These actions likely diminish the potential for some of the species to be found in these tilled areas and in the overall landscape. However, avoiding preferred habitats such as native prairie during turbine micro-siting, may reduce impacts to these species.

Raptors

Species Likely to Occur in the Area

The following raptor species could occur in or near the B4WRA during some portion of the year (USGS 2012, All About Birds 2013): northern harrier (*Circus cyaneus*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*A. cooperii*), northern goshawk (*A. gentilis*), broad-winged hawk (*Buteo playpterus*), red-tailed hawk (*B. jamaicensis*), Swainson's hawk, ferruginous hawk, rough-legged hawk (*B. lagopus*), golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*),

merlin (*Falco columbarius*), American kestrel (*F. sparverius*), gyrfalcon (*F. rusticolus*), and prairie falcon (*F. mexicanus*). The red-tailed hawk, northern harrier, and American kestrel were observed during the site visit.

Other species often grouped with raptors that could be found in the area include the northern saw-whet owl (*Aegolius acadicus*), snowy owl (*Nyctea scandiaca*), short-eared owl (*Asio flammeus*), long-eared owl (*A. otus*), great-horned owl (*Bubo virginianus*), eastern screech owl (*Otus asio*), burrowing owl (*Athene cunicularia*), and turkey vulture (*Cathartes aura*).

Fourteen of these species could potentially breed in or near the B4WRA: northern harrier, sharp-shinned hawk, Cooper's hawk, Swainson's hawk, red-tailed hawk, ferruginous hawk, American kestrel, prairie falcon, burrowing owl, eastern screech owl, great-horned owl, short-eared owl, long-eared owl, and turkey vulture.

Potential Raptor Nesting Habitat

Two raptor nests were observed during the site visit and other potential nest structures for above ground nesting species were present in the form of living and dead trees. Farmsteads observed during the site visit usually had tree rows or woodlots associated with them. There were also planted tree rows scattered throughout the areas. Grasslands could provide nesting habitats for ground-nesting raptors, such as the northern harrier or burrowing owl. A thorough raptor nest search is planned to document nest locations in spring 2013.

Potential for Prey Densities

No signs of colonial rodents were observed during the site visit; these types of areas are known to attract feeding raptors. However, it is possible that small mammal colonies are present in and around the B4WRA, but were not visible from public roads. Other potential raptor prey sources include rodents, rabbits, and other birds.

Generally, it is very difficult to assess potential prey densities during site visits and prey densities can fluctuate rapidly based on habitat and climatic factors. Overall prey densities are not expected to be significantly different than areas outside of the proposed B4WRA. With roost sites and food available, it is likely that raptors will use the area but not to a greater degree than the surrounding areas with similar habitat.

Does the Topography of the Site Increase the Potential for Raptor Use?

Topography in the B4WRA and the 1-mile buffer is flat to rolling (Figure 7). There are no large hills, ridges, or other topographical features that might cause bottlenecks or updrafts where raptors might concentrate. At other wind energy facilities located on prominent ridges with defined edges (e.g., rims of canyons, steep slopes), raptors often fly along the rim edges, using updrafts to maintain altitude while hunting, migrating or soaring (Johnson et al. 2000b, Hoover and Morrison 2005).

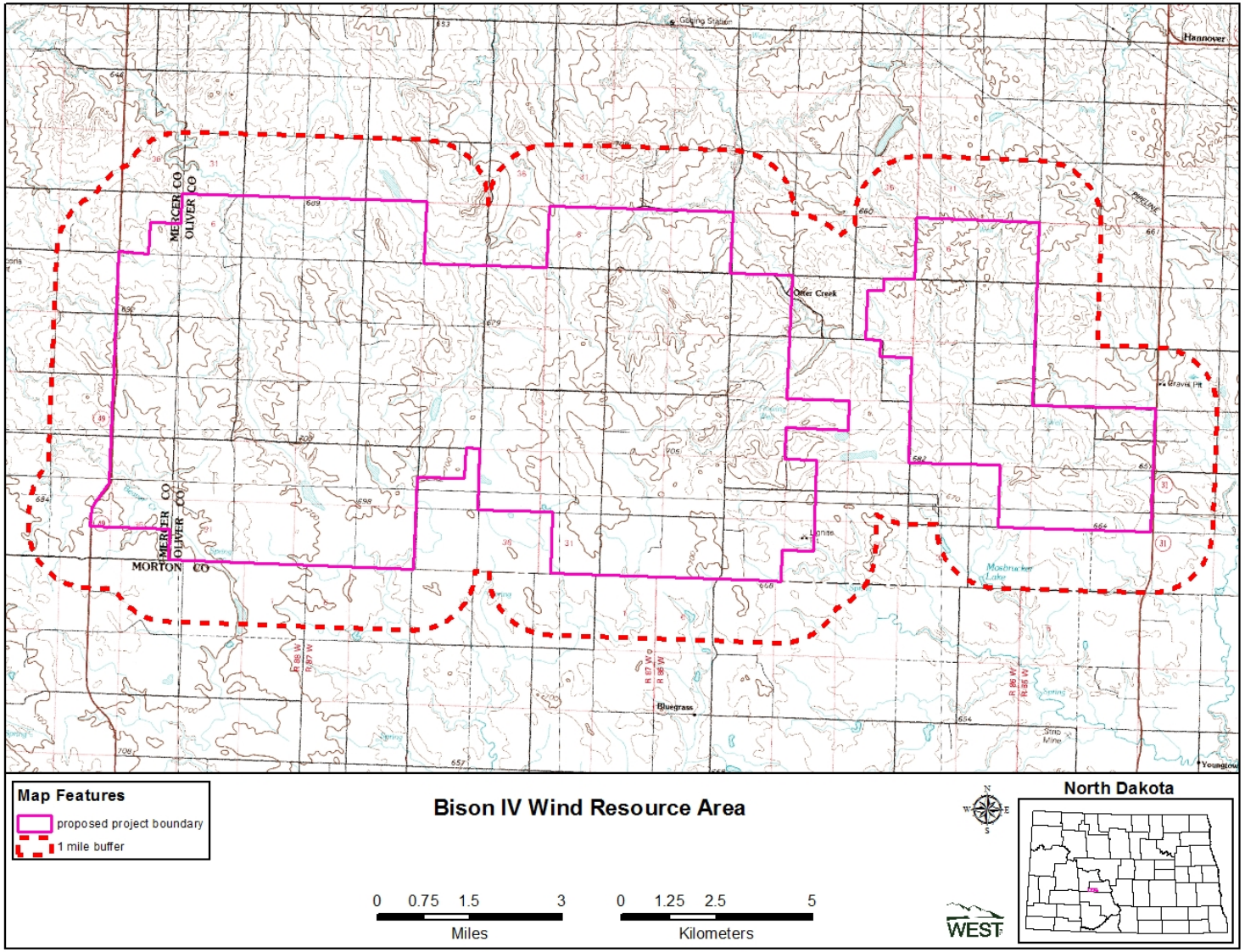

Figure 7. Topography of the Bison IV Wind Resource Area and the 1-mile buffer.

Bird Migration

Most species of birds are protected by the Migratory Bird Treaty Act (MBTA 1918). Although many species of passerines migrate at night and may collide with tall man-made structures, no large mortality events on the same scale as those seen at communication towers have been documented at wind energy facilities in North America (National Wind Coordinating Collaborative [NWCC] 2004). Large numbers of passerines have collided with lighted communication towers and buildings when foggy conditions occur during spring or fall migration. Birds appear to become confused by the lights during foggy or low cloud ceiling conditions, flying circles around lighted structures until they become exhausted or collide with the structure (Erickson et al. 2001). Most collisions at communication towers are attributed to the guy wires on these structures, which wind turbines do not have. Additionally, the large mortality events observed at communication towers have occurred at structures greater than 152 m (500 ft) in height (Erickson et al. 2001), likely because most small birds migrate at elevations of 152 to 305 m (500 to 1,000 ft) above the ground (USFWS 1998), which is higher than most of the modern turbines. Migrating passerines are likely more at risk of turbine collision when ascending and descending from stopover habitats.

Migrating birds, such as passerines, raptors, and waterfowl, are likely to utilize the B4WRA for several reasons. Woodlots, wetlands, and tree rows scattered throughout the area may provide stopover habitat for migrants or individuals during post-breeding dispersal. Harvested grains, such as wheat, sunflower, and corn, could serve as feeding areas that could attract migrating and wintering waterfowl and other birds. These types of habitats are found throughout the region and therefore their presence in and around the B4WRA should not concentrate bird use as compared to adjacent areas.

Breeding Birds

The nearest US Geological Survey (USGS) Breeding Bird Survey (BBS) route is the Zap Route approximately 15 km (9 miles) northwest of the northwest corner of the B4WRA (Figure 8). Each BBS route is 39.4 km (24.5 miles) long, and all birds seen or heard are tallied for a 3-minute period every 0.8 km (0.5 mi) along the route. In 2011, there were 46 species with 875 individual observations recorded on the Zap Route (Sauer et al. 2012). Western meadowlark (*Sturnella neglecta*), brown-headed cowbird (*Molothrus ater*), mourning dove (*Zenaida macroura*), cliff swallow (*Petrochelidon pyrrhonota*), and bobolink (*Dolichonyx oryzivorus*) were the most abundant birds. Four species observed in 2011, Baird's sparrow, grasshopper sparrow, lark bunting, and upland sandpiper, are North Dakota Level I bird species of greatest conservation need.

Recent research has focused on the potential displacement of grassland passerines at wind energy facilities, and some uncertainty currently exists over the effects of wind energy facilities on the breeding success of these birds. In Minnesota, researchers have found that breeding passerine density on Conservation Reserve Program grasslands was reduced in the immediate vicinity of turbines (Leddy et al. 1999), but changes in density at broader scales was not detectable (Johnson et al. 2000a). Erickson et al. (2004) documented a decrease in density of

some native grassland passerines, such as grasshopper sparrow, near turbines in Washington; however, they could not determine if a decrease in post-construction density was the result of behavioral disturbance or a loss of habitat. Piorkowski (2006) conducted a displacement study at a wind energy facility in Oklahoma where, of the grassland species present on the site, only the western meadowlark showed significantly lower densities near turbines. Piorkowski (2006) suggested that habitat characteristics were more important to determining passerine breeding densities than the presence of wind turbines. Shaffer and Johnson (2007) documented avoidance by grasshopper sparrows out to 150 m (492 ft) at a wind energy facility in northern South Dakota. While research concerning displacement impacts to songbirds, waterfowl, and waterbirds is limited, the projects that have been completed have shown small scale impacts (150-200 m [411-548 ft]), while impacts to birds at larger scales has not been shown. Additional research is ongoing at several projects across the country. The proposed B4WRA contains some grasslands, some of which are native grasslands, and some species of sensitive grassland passerines could be present. Breeding bird surveys may be required prior to construction to determine the occupancy and density of grassland nesting species. Minimizing placement of project infrastructure within native grasslands will likely minimize potential impacts to grassland nesting species, especially species of fragmentation concern.

Federal and state agencies have raised concerns regarding the potential impact of wind facilities on prairie grouse species. Sharp-tailed grouse (*Tympanuchus phasianellus*) are common throughout much of North Dakota, including the general B4WRA. They are listed as a Level II species of conservation need (Hagen et al. 2005). Based on the location of and presence of grasslands within the B4WRA and the 1-mile buffer, the area will likely be utilized by sharp-tailed grouse. In fact, sharp-tailed grouse were observed during the site visit. Surveys for leks are planned for spring 2013.

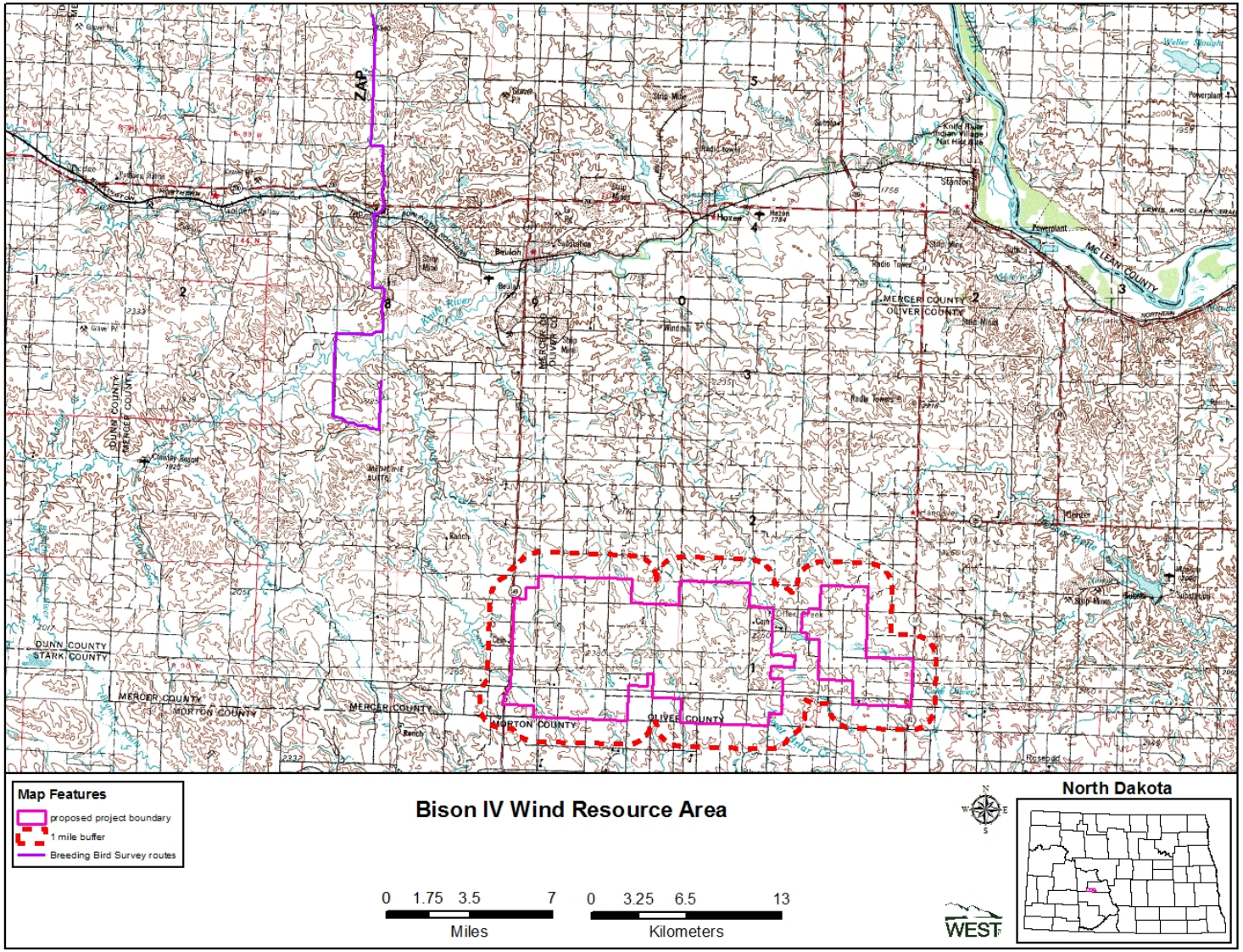

Figure 8. Breeding Bird Survey routes near the Bison IV Wind Resource Area and the 1-mile buffer.

Bats

There are several species of bats that could be found in or around the B4WRA, including the big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), eastern red bat (*Lasiurus borealis*), little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*), and silver-haired bat (*Lasionycteris noctivagans*) (BCI 2003, USGS 2012). None of these species are listed by the federal government under ESA (1973) or are Level I species of conservation need in North Dakota (Hagen et al. 2005).

Assessing the potential impacts of wind energy development on bats at the B4WRA is complicated by our current lack of understanding of how bats are being impacted by wind turbines (Kunz et al. 2007a,2007b; Baerwald et al. 2008, Cryan and Barclay 2009, Long et al. 2010a, 2010b), combined with the inherent difficulties of monitoring elusive, night-flying animals (O'Shea et al. 2003). To date, monitoring studies of wind projects suggest that:

a) Bat fatality shows a rough positive correlation with bat activity (Kunz et al. 2007b);

b) migratory tree-roosting species (eastern red, hoary, and silver-haired bats) account for almost 75% of reported bats killed (Arnett et al. 2008, Gruver et al. 2009),

c) the majority of fatalities occur during the post-breeding or fall migration season (roughly August and September; Johnson 2005, Arnett et al. 2008), and

d) The level of bat fatalities may depend upon many variables, including local environmental characteristics and/or specific weather conditions, but no single predictive factor has yet been identified.

Some of the highest reported fatality rates have occurred at wind facilities located along forested ridge tops in the eastern United States (Gruver 2002, Johnson et al. 2003, Kunz et al. 2007b, Arnett et al. 2008), although recent studies in agricultural regions of Iowa, Wisconsin, and Alberta, Canada, report relatively high fatalities as well (Jain 2005, Baerwald 2006, Gruver et al. 2009; BHE Environmental 2010, 2011).

Bat casualties have been reported from most wind energy facilities where post-construction fatality data are publicly available. Reported estimates of bat mortality at wind energy facilities have ranged from 0.01 – 47.5 fatalities per turbine per year (0.9 – 43.2 bats/MW/Year) in the US, with an average of 3.4 per turbine or 4.6 per MW (NWCC 2004). Most of the bat casualties at wind energy facilities to date are migratory species which conduct long migrations between summer roosts and winter areas.

Migratory tree bats account for most of the bats killed at wind energy facilities in North America with the majority of collisions occurring in the fall (Gruver 2002, Johnson et al. 2003, Johnson 2005, Arnett et al. 2008). The reason for disproportionate mortalities during fall are unknown. However, it may be that tree bats fly at lower altitudes during spring migration than during fall migration. For example, hoary bats fly one to five m (3.3 to 16.4 ft) from the ground while

migrating through New Mexico in the spring, but apparently not in the fall (Cryan and Veilleux 2007).

At least 18 bat species have been recovered during carcass searches at wind energy facilities throughout the Midwest (Table 6a; also see Johnson 2005, Kunz et al. 2007b, National Research Council [NRC] 2007, Arnett et al. 2008), and 12 of those species have been found as fatalities in the Midwest (Table 6b). All six of the species that are likely residents and migrants in and around the B4WRA have been found as casualties at other facilities.

Table 6a. Summary of bat fatalities (by species) from wind energy facilities in North America.

Common Name	Scientific Name	Total # Fatalities[1]	% Comp
hoary bat	*Lasiurus cinereus*	4,847	37.0
eastern red bat	*Lasiurus borealis*	2,998	22.9
silver-haired bat	*Lasionycteris noctivagans*	2,386	18.2
little brown myotis	*Myotis lucifugus*	1,036	7.9
tricolored bat	*Perimyotis subflavus*	623	4.8
big brown bat	*Eptesicus fuscus*	496	3.8
Mexican free-tailed bat	*Tadarida brasiliensis*	348	2.7
unidentified bat		296	2.3
unidentified myotis		32	0.2
northern myotis	*Myotis septentrionalis*	14	0.1
Seminole bat	*Lasiurus seminolus*	10	0.1
western red bat	*Lasiurus blossevillii*	9	0.1
big free-tailed bat	*Nyctinomops macrotis*	5	<0.1
western yellow bat	*Lasiurus xanthinus*	3	<0.1
Indiana bat	*Myotis sodalis*	3	<0.1
pocketed free-tailed bat	*Nyctinomops femorosacca*	2	<0.1
eastern small-footed bat	*Myotis leibii*	2	<0.1
unidentified free-tailed bat		1	<0.1
cave bat	*Myotis velifer*	1	<0.1
canyon bat	*Pipistrellus hesperus*	1	<0.1
long-legged bat	*Myotis volans*	1	<0.1
Total		**13,114**	**100**

1. These are raw numbers and are not corrected for searcher efficiency or scavenging.
Cumulative fatalities and species from data compiled by Western EcoSystems Technology, Inc. from publicly available fatality documents (WEST unpublished database, queried December 19, 2012).
One incidental long-eared bat (*Myotis evotis*) was recorded at Tehachapi, California (Anderson et al. 2004), but is not included in the total fatalities. Hale and Karsten (2010) also reported evening bat as a fatality at Wolf Ridge, Texas, but as no numbers were given, evening bat is not included in the total fatalities.
Canyon bat (*Parastrellus hesperus*) formerly western pipistrelle (*Pipistrellus hesperus*), tricolored bat (*Perimyotis subflavus*) formerly eastern pipistrelle (*Pipistrellus subflavus*; BCI 2013).

Table 6b. Summary of bat fatalities (by species) from wind energy facilities in the Midwest.

Common Name	Scientific Name	Total # Fatalities[1]	% Comp
hoary bat	*Lasiurus cinereus*	1,555	53.2
silver-haired bat	*Lasionycteris noctivagans*	984	33.7
Mexican free-tailed bat	*Tadarida brasiliensis*	180	6.2
unidentified bat		85	2.9
little brown myotis	*Myotis lucifugus*	54	1.8
big brown bat	*Eptesicus fuscus*	33	1.1
western red bat	*Lasiurus blossevillii*	9	0.3
eastern red bat	*Lasiurus borealis*	7	0.2
big free-tailed bat	*Nyctinomops macrotis*	5	0.2
western yellow bat	*Lasiurus xanthinus*	3	0.1
Indiana bat	*Myotis sodalis*	3	0.1
pocketed free-tailed bat	*Nyctinomops femorosacca*	2	0.1
unidentified myotis		1	<0.1
unidentified free-tailed bat		1	<0.1
long-legged bat	*Myotis volans*	1	<0.1
Total		**2,923**	**100**

1. These are raw numbers and are not corrected for searcher efficiency or scavenging.
Cumulative fatalities and species from data compiled by Western EcoSystems Technology, Inc. from publicly available fatality documents (WEST unpublished database, queried December 19, 2012).

Potential roosting habitat in the B4WRA is found in the form of trees and buildings (Figure 9); no caves were observed during the site visit. Bats generally forage over water and open spaces, such as agricultural fields, grasslands, streams, and wetlands/ponds. Bats may forage over the entire project area, although the extent of use is not known. Because some insects concentrate over open water, foraging bats may be attracted to these areas.

Operation of the proposed B4WRA will likely result in the mortality of some bats. The magnitude of these fatalities and the degree to which bat species will be affected is difficult to determine, but they should be within or below the average range of bat mortalities found throughout the US and similar to bat fatalities at other facilities in North Dakota based on similarity of habitat (e.g., cropland/grassland/wetland mix).

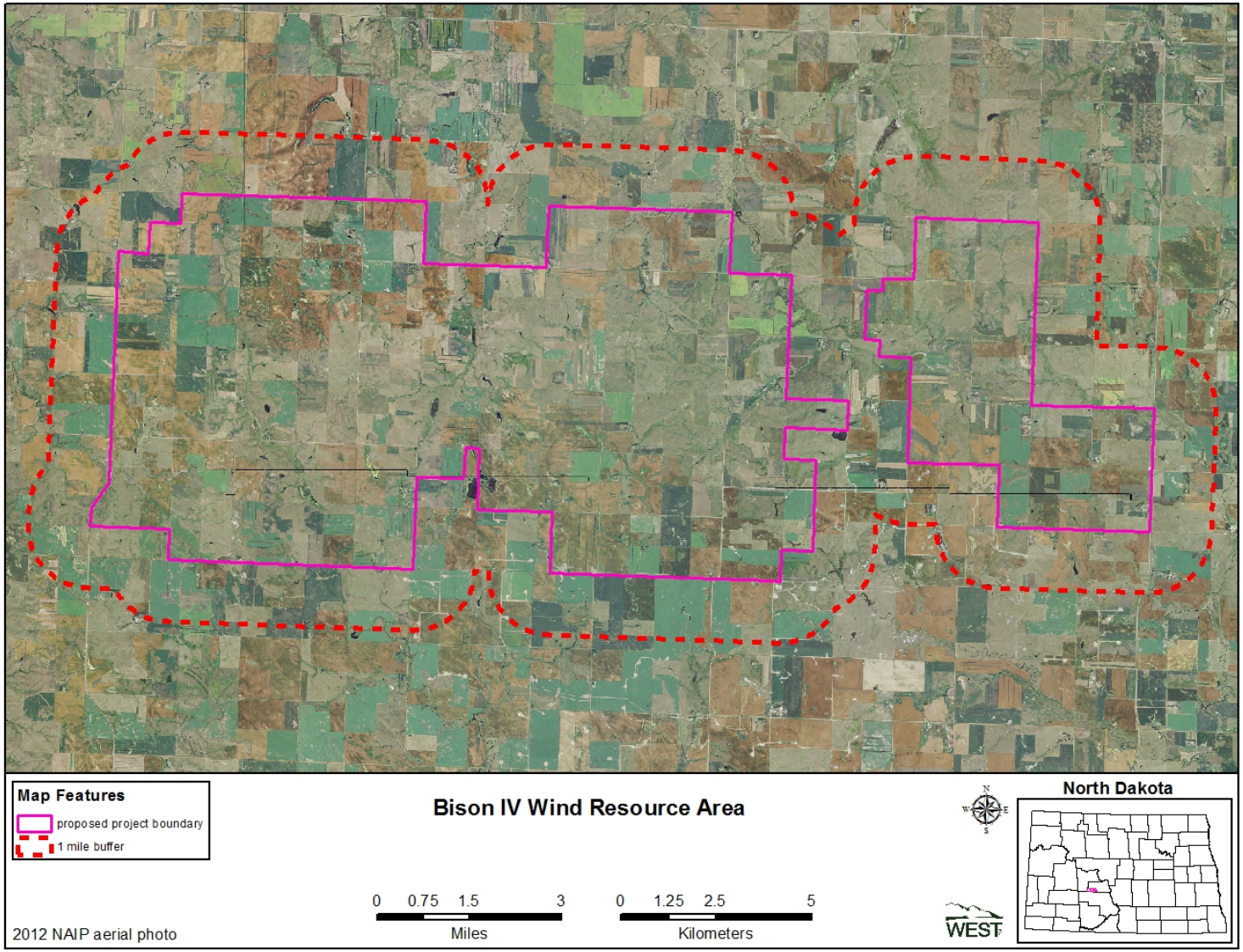

Figure 9. Aerial photo of the Bison IV Wind Resource Area and the 1-mile buffer.

CONCLUSIONS

A summary of the potential for wildlife and habitat conflicts in the proposed wind energy facility development area is presented in Table 7. Table 8 summarizes potential future studies and their timing.

This report describes biological resources present within the B4WRA and evaluates these general characteristics as related to potential or known impacts on the resources from wind energy facilities. Replies from North Dakota Game and Fish and the USFWS regarding a project review have not been requested. It is possible that issues regarding sensitive plant and animal species and habitats may arise once requests are made and replies are received.

The USFWS's Wind Turbine Guidelines Advisory Committee Recommendations (USFWS 2012b) suggests seven questions to answer while conducting a Tier 2 (Site Characterization) study. These questions and their answers follow.

1.) Are known species of concern present on the proposed site, or is habitat (including designated critical habitat) present for these species?

While none are known to positively occur in the B4WRA at this time, the USFWS lists four species (whooping crane, piping plover, Dakota skipper, and Sprague's pipit) under the ESA (1973), which have the potential to occur in or around the B4WRA, based on range and habitat requirements. There are 22 bird, amphibian, and reptile species which the state lists as Level I species of conservation need that may use the B4WRA, with some of them having been documented within or near the project. Sharp-tailed grouse, a growing species of concern by both federal and state agencies, were observed during the site visit; it is likely that leks will be found in and around the B4WRA. All of the bat species that may occur within the B4WRA have been recorded as fatalities at other wind power facilities.

Tier 3 surveys would be required to better address this question. It is recommended that habitat mapping occur: Surveys could be done to conduct more detailed habitat mapping of community types and species composition in areas where turbines could be placed in community types of concern (e.g., native grasslands). For example, if turbines are to be placed in native grasslands, a ground survey of those areas could occur to search for grass and forb species needed by Dakota skippers. Additionally, the mapping could examine the presence or absence of potential piping plover habitat (e.g., saline wetlands) or other features that are required for species of concern presence.

Species specific surveys needed could include sharp-tailed grouse lek surveys (scheduled for spring 2013), raptor nest surveys (scheduled for spring 2013), avian use surveys, acoustic bat surveys, and breeding bird surveys to determine the presence/absence of Sprague's pipit.

2.) Does the landscape contain areas where development is precluded by law or designated as sensitive according to scientifically credible information? Examples of designated areas include, but are not limited to: federally designated critical habitat; for NGOs; or other local, state, regional, federal, tribal, or international categorizations.

The B4WRA does not appear to contain any designated sensitive or other areas which would preclude development.

3.) Are there plant communities of concern present or likely to be present at the site(s)?

No federally threatened, endangered, or candidate plant species were listed for Oliver, Mercer, and Morton Counties (USFWS 2012a, 2013i). It is possible that issues regarding sensitive plant species and habitats may arise once agency information is received. Also, a search of North Dakota's Natural Heritage Program database and NatureServe did not document any sensitive plant species in the B4WRA or 1-mile buffer.

There are likely areas of native grassland present within and around the B4WRA (Table 1) and wetlands are also present (Table 2). Both of these broad habitat categories are of concern on a state, regional, and national scale and support many of the sensitive animal species discussed earlier in this report. The habitat mapping discussed above will also help address this question by quantifying the amount of these habitats.

4.) Are there known critical areas of congregation of species of concern, including, but not limited to: maternity roosts, hibernacula, staging areas, winter ranges, nesting sites, migration stopovers or corridors, leks, or other areas of seasonal importance?

The B4WRA has the potential to contain sharp-tailed grouse leks. Sharp-tailed grouse lek surveys will identify lek locations so that leks can be avoided during construction and/or followed post-construction to determine impacts. Lek surveys are scheduled for spring 2013.

Wetlands are likely used as stopover habitat by migrating waterfowl and other waterbirds. Wetlands and surrounding uplands could also be used by nesting birds. However, the project area does not appear to contain any habitats or features which would concentrate animals markedly compared to the surrounding region.

Raptor nest surveys are planned for spring 2013 and will identify nest locations that can be avoided during project planning and construction. Nest surveys will include the project boundary and a minimum of one mile around the project.

Whooping cranes may utilize the B4WRA during migration, based on the B4WRA location within the whooping crane migration corridor and the confirmed whooping crane observations nearby (Figure 6). Surveys for this species are not practical given the low probability of observing individuals during any migration season.

Little is known about bat use of the area. Trees and buildings are present which would provide possible habitat for bats. Also, wetlands and large open spaces are present and could be used by foraging bats. However, no features were observed during the site visit to suggest that bats would be concentrated in the B4WRA.

5.) Using best available scientific information has the developer or relevant federal, state, tribal, and/or local agency identified the potential presence of a population of a species of habitat fragmentation concern?

No information was found indicating that a government agency has independently demonstrated the potential presence of a population of species of habitat fragmentation concern in the B4WRA. The USFWS ND Field Office has identified 11 bird species of habitat fragmentation concern: Baird's sparrow, bobolink, chestnut-collared longspur, grasshopper sparrow, greater prairie-chicken (*Tympanuchus cupido*), greater sage-grouse (*Centrocercus urophasianus*), northern harrier, sedge wren (*Cistothorus platensis*), sharp-tailed grouse, Sprague's pipit, and upland sandpiper (USFWS 2013h)

The northern harrier and sharp-tailed grouse were both observed during the site visit. As discussed previously, other species that could be found within the B4WRA are the Baird's sparrow, bobolink, chestnut-collared longspur, grasshopper sparrow, Sprague's pipit, and upland sandpiper. Based on ranges, the greater prairie-chicken, greater sage-grouse, and sedge wren are not likely to be found on the B4WRA (USGS 2012). Further site specific surveys, as mentioned above, would be needed to confirm occupancy and densities of these species.

6.) Which species of birds and bats, especially those known to be at risk by wind energy facilities, are likely to use the proposed site based on an assessment of site attributes?

Any bird or bat utilizing a wind energy facility would be at risk of mortality. Certain bird groups, such as raptors, may be at greater risk of collisions; however, behavioral characteristics of different species can greatly affect their risk of collision. It is known that various raptor species as well as other bird species utilize the project area as they do all areas of North Dakota.

The USFWS lists three bird species (whooping crane, piping plover, and Sprague's pipit) under ESA that may occur in or around the B4WRA. There are 19 bird species which the state lists as Level I species of conservation need that may use the B4WRA (Table 5). Sharp-tailed grouse were observed during the site visit; it is likely that leks will be found in and around the B4WRA.

There are several species of bats that could be found in or around the B4WRA, including big brown bat, hoary bat, eastern red bat, little brown myotis, northern myotis, and silver-haired bat. None of these species are listed under ESA (1973) or are Level I species of conservation need (Hagen et al. 2005). All of the bat species that may occur within the B4WRA have been recorded as fatalities at other wind power facilities.

7.) Is there a potential for significant adverse impacts to species of concern based on the answers to the questions above, and considering the design of the proposed project?

Based on this initial review, it is likely that there will be some amount of direct and indirect impact to bird and bat species through development of the project. Given the similarity in habitat (e.g., grassland, cropland, shrubs, wetlands) within the B4WRA and other projects in North Dakota, it is likely that impacts from this project would be similar to other projects in the region and state.

Table 7. A summary of the potential for wildlife and habitat conflicts in and around the Bison IV Wind Resource Area. VH = Very High, H = High, M = Medium, and L = Low.

Issue	VH	H	M	L	Notes
Potential for raptor nest site		✓			Tree rows, woodlots, grasslands and some riparian habitat are present in and around the B4WRA.
Concentrated raptor flight potential				✓	A general lack of stark topography over the majority of the B4WRA decreases the potential for concentrated raptor use.
Potential for migratory pathway				✓	The project area has no topography or other prominent features likely to concentrate birds during migration.
Potential for raptor prey species			✓		Suitable habitat for small mammals, but likely not concentrated.
Potential for protected species to occur			✓		Several federally listed species occur or have the potential to occur, but high use is unlikely.
Potential for State Issues		✓			Protection of native grasslands, prairie grouse and the presence of state species of conservation need are potential issues.
Uniqueness of habitat at wind energy facility			✓		Overall, habitat in the B4WRA is not unique compared to the surrounding landscape but is of importance on a broader scale (e.g., native grasslands).
Potential for rare plants to occur				✓	No federal plant species are listed as occurring. However, there are possible native prairie and wetland habitats which may harbor rarer plants.
Potential for use by bats			✓		The site has scattered trees, buildings, wetlands, and some riparian habit which bats could utilize.

Table 8. Possible future studies and their timing at the Bison IV Wind Resource Area.

Resource	Project Considerations	Potential Future Studies	Timing of Potential Studies
Vegetation			
Wetlands and Waters of the US	Wetlands and Waters of the US occupy a portion of the project area. Site away from higher wetland concentration areas to minimize wildlife impacts	Conduct a wetland delineation once the facility design has been determined but prior to finalizing the layout. Micro-site facilities when possible to avoid or minimize impacts to wetlands/waters	Snow free periods
Native Grasslands	Native grassland may be in the project area. Site away from grassland areas to minimize impacts.	Ground based mapping. Micro-site facility to minimize impacts to native grasslands.	After initial layout is determined
Wildlife			
Threatened, Endangered, and Conservation Need Species	Several federal and state species of interest may occur in the project area.	Habitat mapping of any site would be required before further surveys, if any, would be completed.	Surveys to be performed as necessary during appropriate survey windows
Nesting Raptors	Woodlands, tree rows, and grasslands in the area provide nesting habitat for raptors.	Survey suitable habitat for nests	Early Spring
Migratory Birds	Migrating birds likely pass over the project area and could utilize the area.	Fixed-point bird use surveys	Spring, Summer, and Fall
Breeding Birds	Woodlands, grasslands, and wetlands in the project area provide potential nesting for many species.	Breeding bird transect surveys	Summer
Bats	Habitats suitable for bat roosting and foraging.	Acoustic bat surveys	Spring, Summer, Fall

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Appendix A: Photographs from the Bison IV Wind Resource Area Site Visit

Photo 1. View in northeast

Photo 2. View in eastern portion of north central area

Photo 3. View in western portion of north central area

Photo 4. View in northwest

Photo 5. View in southwest

Photo 6. View in western portion of south central area

Photo 7. View in eastern portion of south central area

Photo 8. View in southeast

Appendix B

Agency Letters

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
PO Box 1458
Bismarck, ND 58502-1458

March 25, 2013

Merjent
800 Washington Avenue North, Ste. 315
Minneapolis, Minnesota 55401

Re: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Sirs:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated March 18, 2013, concerning the construction of a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project in Oliver, Morton and Mercer Counties in North Dakota.

Farmland Protection Policy Act

NRCS has a major responsibility with the Farmland Protection Policy Act (FPPA) in documenting conversion of farmland (i.e., prime, statewide importance and local importance) to non-agriculture use. It is not clear from your letter whether federal funding will be used for this project. If the project is supported by federal funding or actions, FPPA will apply and the form AD-1006 must be completed for all areas removed from permanent production. A negative response is not required.

Wetlands

The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provide that if a USDA participant converts a wetland for the purpose, or to have the effect of making agricultural production possible, loss of USDA benefits could occur. The NRCS has developed the following guidelines for the installation of permanent structures where wetlands occur. If these guidelines are followed the impacts to the wetland will be considered minimal allowing USDA participants to continue to receive USDA benefits. Following are the requirements:

- Disturbance to the wetland must be temporary.
- No drainage of wetland is allowed (temporary or permanent).
- Mechanized landscaping necessary for installation is kept to a minimum and preconstruction contours are maintained.
- Temporary side cast material must be placed in such a manner not to be dispersed in the wetland.
- All trenches must be backfilled to the original wetland bottom elevation.

NRCS would recommend that impacts to wetlands be avoided. If the alignment of the permanent structure requires construction in a wetland, NRCS can complete a certified wetland determination if requested by the land owner/operator

If you have additional questions pertaining to FPPA, please contact Steve Sieler, Liaison Soil Scientist, NRCS, Bismarck, ND at 701-530-2019.

Sincerely,

WADE D. BOTT
State Soil Scientist

North Dakota Department of Transportation

Grant Levi, P.E.
Interim Director

Jack Dalrymple
Governor

April 12, 2013

Thomas M. Janssen, Senior Analyst
Merjent
800 Washington Ave. N., Suite 315
Minneapolis, MN 55401

CONSTRUCT A WIND ENERGY CONVERSION FACILITY CALLED BISON 4 WIND ENERGY CONVERSION PROJECT, OLIVER, MORTON, AND MERCER COUNTIES, NORTH DAKOTA

We have reviewed your March 18, 2013, letter.

This project should have no adverse effect on the North Dakota Department of Transportation highways.

However, 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 Engineer, Kevin Levi at 701-328-6955.

Robert Fode

ROBERT A. FODE, P.E., DIRECTOR – OFFICE OF PROJECT DEVELOPMENT

57/raf/js
c: Kevin Levi, Bismarck District Engineer

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

April 10, 2013

Mr. Thomas M. Janssen, Senior Analyst
Merjent, Inc.
800 Washington Avenue North, Suite 315
Minneapolis, MN 55401

Re: Minnesota Power Bison 4 Wind Energy Conversion Project
Oliver, Morton and Mercer Counties in North Dakota

Dear Mr. Janssen:

This department has reviewed the information concerning the above-referenced project submitted under date of March 18, 2013, 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.

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
701.328.5200 (fax)
www.ndhealth.gov

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.

Katie Wilson

To: Tom M. Janssen
Subject: RE: Proposed Minnesota Power Bison 4 Wind Energy Conversion Project

From: Haupt, Michael L. [mailto:mhaupt@nd.gov]
Sent: Wednesday, March 20, 2013 1:48 PM
To: Tom M. Janssen
Subject: Proposed Minnesota Power Bison 4 Wind Energy Conversion Project

Thomas,

Good afternoon! If the proposed project intends to cross School Trust land please submit an online application on our web site at http://www.land.nd.gov/surface/Right-of-Way.aspx. Let me know if you have questions. Thanks.

Michael L. Haupt
Land Management Professional, CPRM
North Dakota Department of Trust lands
1707 Nth 9th Street
Bismarck ND 58506-5523
701-328-1916
mhaupt@nd.gov

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

March 28, 2013

Merjent, Inc.
C/O Thomas Janssen, Senior Analyst
800 Washington Ave N, Suite 315
Minneapolis, MN 55401

Dear Mr. Janssen,

This letter is in response to your March 18, 2013 letter concerning the environmental assessment associated with the Bison 4 Wind Energy Conversion Project ("Project") in Oliver, Morton and Mercer Counties of North Dakota.

Based on the information in you March 18th letter, it is unknown if, at any time, the Project will be crossing land enrolled in the Conservation Reserve Program (CRP). Although the land enrolled in CRP is privately owned, FSA has administrative responsibilities to ensure the provisions of CRP are maintained throughout the contract period.

The land enrolled in CRP shall not have the cover disturbed during the Primary Nesting and Brood Rearing Season (PNS), which in North Dakota, is from April 15 through August 1. No activity is to take place on CRP during the PNS. However, there are exceptions to this provision. If disturbance of the existing cover is minimal, a waiver of this provision could be granted.

If the Project will need access to CRP during the PNS, a formal request to waive this provision must be submitted prior to any disturbance of CRP cover. Only the North Dakota State FSA Committee has the authority to grant a waiver of activity during the PNS. Therefore, if necessary, the request to disturb cover during the PNS shall be sent to the North Dakota State FSA Committee at the address provided on the letterhead of this letter. Such a request should include the proposed timeframe construction will occur, impact to the land enrolled in CRP and plans to restore CRP cover, if necessary.

If there are any questions, please contact this office.

Sincerely,

FOR Aaron Krauter
State Executive Director

Cc: Oliver FSA County Office
Mercer FSA County Office
Morton FSA County Office
Honeyman, District Director

"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

April 17, 2013

Thomas M. Janssen
Senior Analyst
Merjent
800 Washington Avenue North, Suite 315
Minneapolis, MN 55401

Dear Mr. Janssen:

RE: Minnesota Power – Bison 4 Wind Energy Conversion Project

The North Dakota Game and Fish Department has reviewed this project for wildlife concerns. Our primary concern with wind power development is the disturbance of native prairie associated with construction of turbines, access roads, and other associated facilities. We ask that work within native prairie be avoided to the extent possible. This could include micro-siting turbines onto adjacent previously disturbed land, locating access roads on existing section line trails rather than across undisturbed native prairie, etc.

The National Wetland Inventory indicates numerous wetlands within the proposed project area. We recommend that any unavoidable wetland impacts be replaced in kind, above-ground appurtenances not be placed in wetland areas, and no alterations be made to existing drainage patterns.

Otter Creek and an unnamed tributary, both Class I fisheries, are also located within the project area. We ask that overhead lines be marked when placed over perennial streams or sited in close proximity to large wetland complexes to minimize possible avian impacts. The publication "Mitigating Bird Collisions with Power Lines: the State of the Art in 1994" provides a range of management options which can be used to reduce avian collisions.

We suggest that routine monitoring for avian and bat mortality be included as part of the facility maintenance plan for the life of the project. We would appreciate being kept informed as this project progresses, and if possible, we would like the GPS coordinates for each turbine after the site has been established.

Sincerely,

Greg Link
Chief
Conservation & Communication Division

js

North Dakota Geological Survey

Edward C. Murphy - State Geologist

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.state.nd.us/ndgs

March 22, 2013

Mr. Thomas M. Janssen
Merjent
800 Washington Avenue North
Suite 315
Minneapolis, Minnesota 55401

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. Janssen:

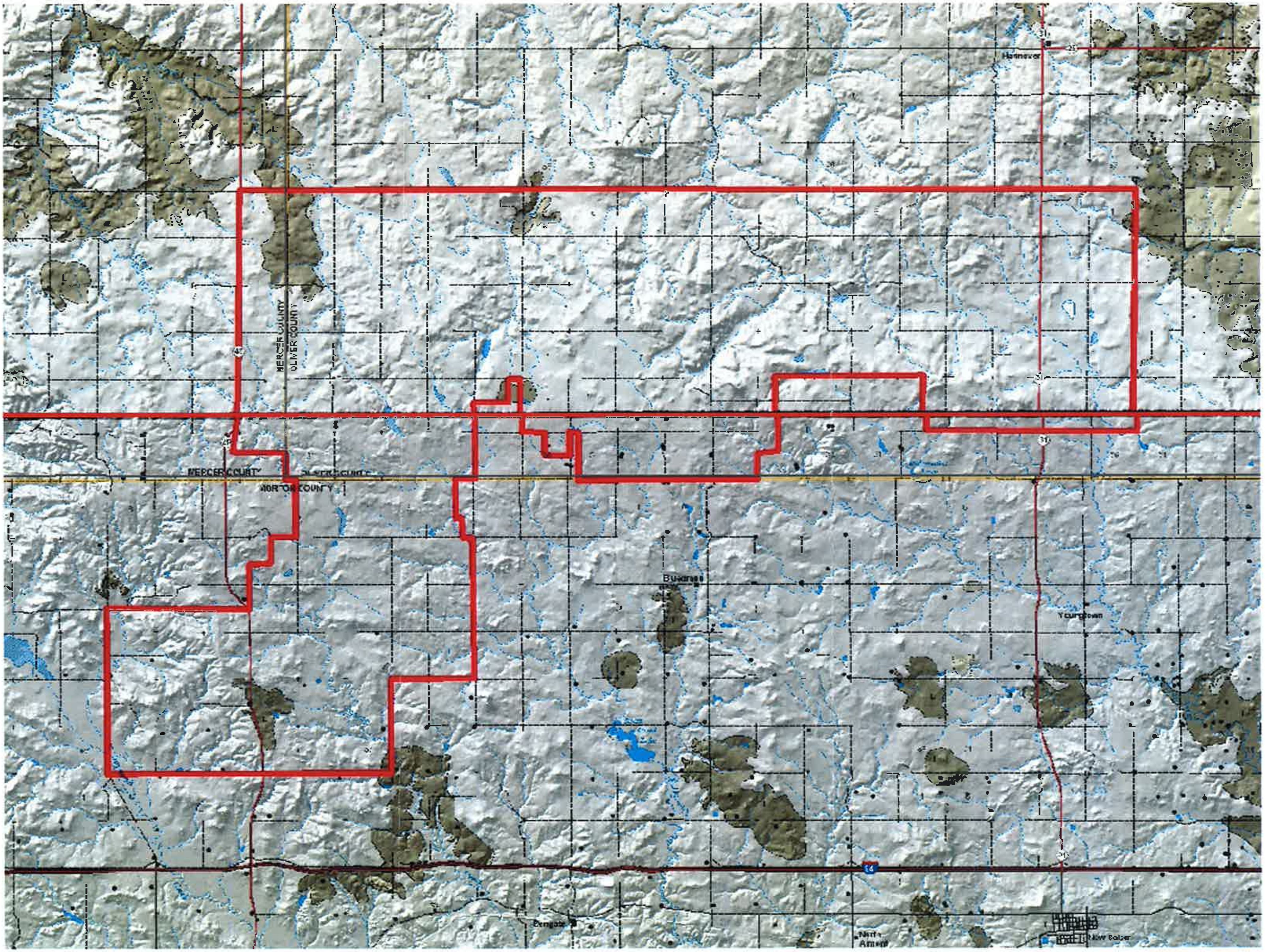
Enclosed please find a map of the economically mineable lignite deposits (in brown) within the area of the proposed Bison 4 wind project. Both 1:100,000 and 1:24,000 scale maps of these deposits are posted on our website under "coal maps."

Please contact me if you have any questions.

Sincerely,

Edward C. Murphy
State Geologist

600 E Boulevard Ave - Dept 405, Bismarck, North Dakota 58505-0840 Phone (701)328-8000 Fax (701)328-8010



Hannover
MERCER COUNTY
OLIVER COUNTY

Jack Dalrymple, Governor
Mark A. Zimmerman, 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

April 16, 2013

Ms. Thomas M. Janssen
Mergent
Suite 315
800 Washington Ave. N
Minneapolis, MN 55401

Re: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Ms. Janssen,

The North Dakota Parks and Recreation Department (the Department) has reviewed the above referenced proposed construction of a wind energy conversion facility, in Oliver, Morton and Mercer counties, North Dakota.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare plants 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 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 several species of concern documented within sections and in adjacent sections to project area. Please see the attached spreadsheet and map for more information on these occurrences.

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.

It is our policy to charge 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.

We appreciate your commitment to rare plant, animal and ecological community conservation, management and inter-agency cooperation to date. For additional information please contact me at (701-328-5370 or kgduttenhefner@nd.gov) of our staff. Thank you for the opportunity to comment on this proposed project.

Sincerely,

Kathy Duttenhefner

Kathy Duttenhefner, Coordinator
Natural Resources Division

R.USNDNHI*2013-044 KD4/16/2013DL4.18.2013

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

INVOICE NO: 0161
DATE4/16/2013

Ms. Thomas M. Janssen
Mergent
Suite 315
800 Washington Ave. N

CONTACT	REFERENCE NO.	DATE SHIPPED	SHIPPED VIA	F.O.B. POINT	TERMS
K.Duttenhefner	NHI_2013_044	4/16/2013	usps		

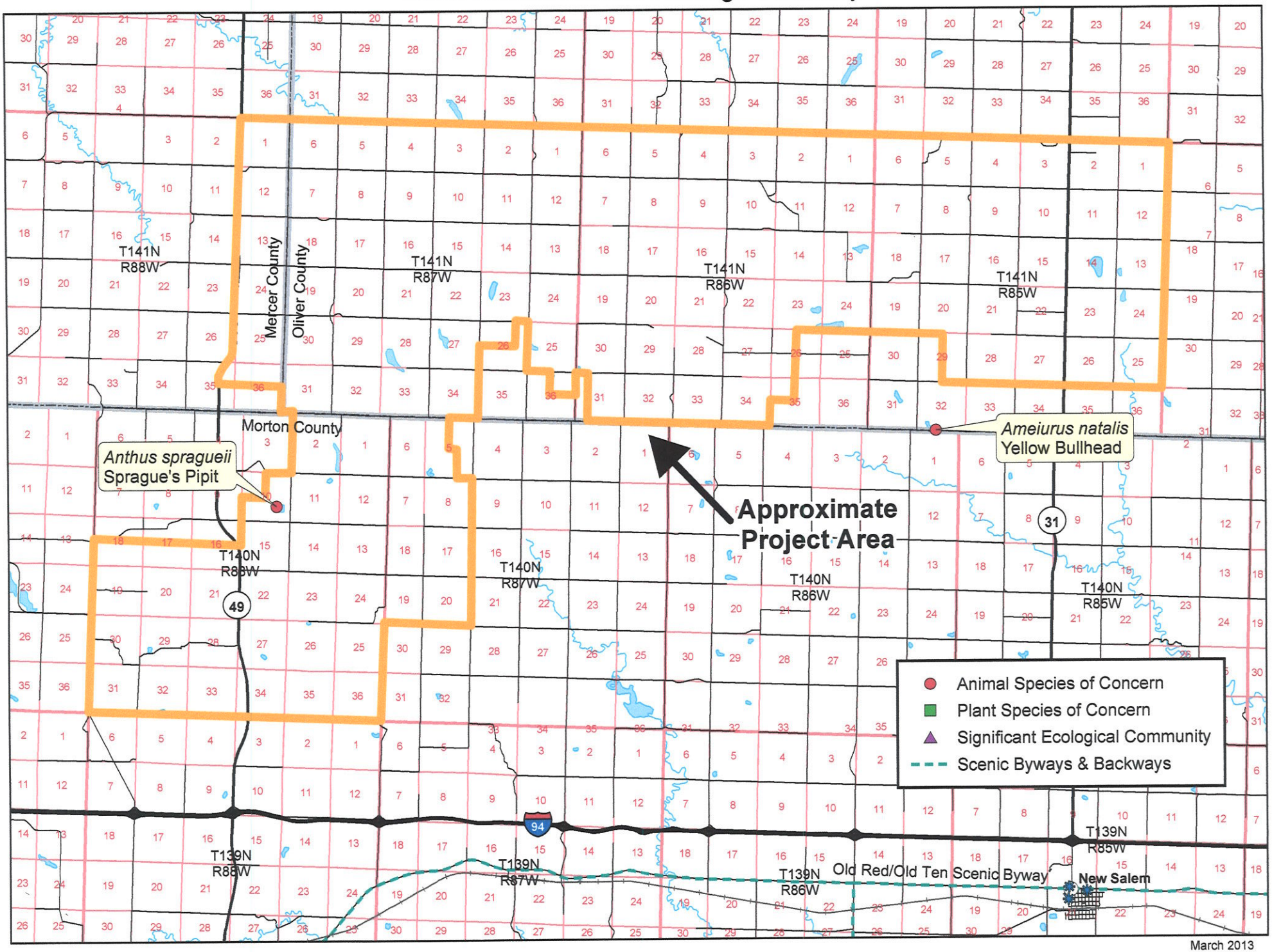
QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT
1	Data retrieval, data analysis, manual and computer searches, packaging and collection of data. Project: Minnesota Power Bison 4 Wind Energy Conversion Project	$ 60.00	$ 60.00
		SUBTOTAL	$ 60.00
		SALES TAX	
		SHIPPING & HANDLING	
		TOTAL DUE	$ 60.00

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



March 2013

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
Ameiurus natalis	Yellow Bullhead	SU	G5		141N085W - 32; 140N086W - 01	Morton, Oliver	1971-06-18		S
Anthus spragueii	Sprague's Pipit	S3	G4	C	140N088W - 10	Morton	1976-05		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

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

April 9, 2013

Thomas Janssen
Merjent
800 Washington Ave N, STE 315
Minneapolis, MN 55401

Dear Mr. Janssen:

This is in response to your request for review of environmental impacts associated with the Minnesota Power Bison 4 Wind Energy Conversion Project.

The proposed project has been reviewed by State Water Commission staff and the following comments are provided:

- There are no floodplains identified and/or mapped where this proposed project is to take place. The area is designated as a Zone D. It is also believed that the project will not affect an identified floodplain as identified by the National Flood Insurance Program (NFIP). The NFIP maps used to make this determination are: Oliver County - unmapped, Mercer County – unmapped, and Morton County, Panel #38059C0075D, 38059C0100D, and 38059C0125D, Date 4/19/2005.

- A Surface Drain Permit may be needed from the State Engineer. The permit application form is enclosed. Please contact Dwight Comfort at 701-328-4949 if you have questions regarding the permit.

- The ND State Water Commission (Commission) maintains a network of observation/monitor water wells throughout the state, and many are located in public right-of-ways. The well location information can be obtained from the Commission's website at: http://swc.nd.gov.; then click on "Map and Data Resources"; and then click on "Ground /Surface Water". If water wells may be affected by your project or accidently damaged, please contact the Water Appropriations Division of the Commission at 701-328-2754.

- It is the responsibility of the project sponsor to ensure that local, state and federal agencies are contacted for any required approvals, permits, and easements.

- 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 701-328-4967.

Sincerely,

Linda Weispfenning
Water Resource Planner

LW:dp/1570
Encl.

APPLICATION FOR SURFACE DRAIN
OFFICE OF THE STATE ENGINEER
Water Development Division
SFN 2830 (8/11)

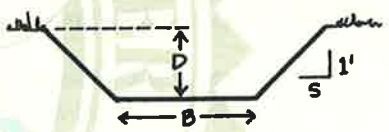
DATE RECEIVED BY OFFICE OF THE STATE ENGINEER

I, the undersigned, am applying for a permit under NDCC Section 61-32-03, to drain a pond, slough, lake, or sheetwater, or any series thereof, which has a watershed area comprising 80 acres or more.

No._____ (OSE USE ONLY)

This application must be accompanied by FSA aerial photos or equivalent showing the location of the proposed drain(s).

(1)	WATER RESOURCE DISTRICT IN WHICH PROJECT IS LOCATED:				
(2)	LEGAL DESCRIPTION - DRAIN CENTERLINE: [use separate sheet(s) if necessary]	1/4	SECTION	TOWNSHIP	RANGE
		1/4	SECTION	TOWNSHIP	RANGE
		1/4	SECTION	TOWNSHIP	RANGE
(3)	LEGAL DESCRIPTION - DRAIN OUTLET:	1/4 1/4	SECTION	TOWNSHIP	RANGE
(4)	PURPOSE:				
(5)	Drain Method: ☐ Pumping ☐ Filling ☐ Gravity				
(6)	DESCRIPTION OF AREA TO BE DRAINED:				
	TOTAL Drainage Area Acres		Project Drainage Area Acres		
	Water Area Acres		Average Depth of Water Feet		
(7)	DESCRIPTION OF DRAIN:				
	Pumping Rate (if applicable) gpm / cfs		Fill Volume (if applicable) cubic yards	Bottom Width (B)	Feet
	TOTAL Length of Drain Feet		Length of Drain Project Feet	Side Slopes (S)	:1 Foot
(8)	Anticipated completion date:		(9) Assessment drain? ☐ YES ☐ NO	Maximum Cut (D)	Feet
(10)	Do you own the land to be drained in fee? ☐ YES ☐ NO If NO, give the name and address of the legal landowner(s):				



The filing of this application and its approval does not relieve the applicant and/or landowner(s) from any responsibility or liability for damages resulting from the construction, operation or failure of this drain.

APPLICANT'S CERTIFICATION

I understand that I must undertake and agree to pay the expense incurred in making an investigation. If the investigation discloses that the quantity of water to be drained will flood or adversely affect downstream lands, I will be required to obtain flowage easements and must file the easements in the office of the county recorder before a permit may be issued. My signature below acknowledges that I have read and agree to these statements, and will adhere to the conditions given on the back of this application.

NAME (PRINT OR TYPE):	DATE SUBMITTED:
ADDRESS:	PHONE NO:
CITY, STATE, ZIP CODE:	
SIGNATURE (Owner of the land on which the project is located or legal entity sponsoring project):	

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

March 22, 2013

Mr. Thomas M. Janssen
Senior Analyst
Merjent
800 Washington Avenue North, Suite 315
Minneapolis, MN 55401

ND SHPO REF: 13-0702 PSC/Minnesota Power Bison 4 Wind Energy Conversion Project, Oliver, Morton and Mercer Counties, North Dakota

Dear Mr. Janssen,

We reviewed your preliminary information on ND SHPO REF: 13-0702 PSC/Minnesota Power Bison 4 Wind Energy Conversion Project, Oliver, Morton and Mercer Counties, North Dakota. There is potential for unrecorded and recorded cultural resource properties in a variety of physiographic settings in the overall project area. If the project requires permits issued by a federal and/or state agency (e.g., WAPA, RUS, COE, USFWS, BOR) then the respective agencies are to be consulted regarding their recommendations on the project. As a potential federal undertaking, we encourage agency consultation as part of the review process. Consultation should also include tribal nations, North Dakota Indian Affairs, and ND DOT regarding any Scenic Byways.

We recommend a Class I Cultural Resource Inventory (file and records search with project maps) submittal. A Class II (reconnaissance) survey is warranted for standing structures in the visual Area of Potential Effect (APE), with a Class III (pedestrian) survey for those in the APE and over 50 years of age or older. Staff from this office can assist with narrowing the visual APE. Class III (pedestrian) surveys will be warranted for all areas directly impacted by the project, including crane paths, access roads, transmissions lines and turbine pads. We encourage that tribal monitors be invited to survey the APE. As part of the Class III Inventory, NDCRS site updates should be submitted on all sites resurveyed.

Thank you for the opportunity to review this project to date. We look forward to further review of cultural resource surveys and site forms. If you have any questions please contact Paul Picha, Chief Archaeologist (701) 328-3574 or Susan Quinnell, Review and Compliance Coordinator at (701) 328-3576, e-mail squinnell@nd.gov

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota) and
Director, State Historical Society of North Dakota

C: Patrick Fahn, PSC

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640

REPLY TO
ATTENTION OF

March 25, 2013

North Dakota Regulatory Office

NWO-2009-0884-BIS

Mr. Thomas Janssen
Merjent Inc
800 Washington Avenue Suite 315
Minneapolis, Minnesota 55401

Dear Mr. Janssen:

This is in response to your letter dated March 18, 2013, on behalf of Minnesota Power, requesting Department of the Army (DA), US Army Corps of Engineers (Corps) comments regarding a project to construct a wind energy conversion facility, called Bison 4 Wind Energy Conversion Project located in Oliver, Morton, and Mercer Counties, North Dakota.

Corps regulatory offices administer Section 10 of the Rivers and Harbors Act (Section 10) and Section 404 of the Clean Water Act (Section 404). Section 10 regulates work in or affecting navigable waters. Section 404 regulates the discharge of dredge or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in the waters of the United States.

Nationwide Permit 12 authorizes activities for the construction of utility lines. A copy of this nationwide permit and conditions is enclosed. **The nationwide permit and conditions are submitted only for informational purposes and in no way is it, or this letter, to confirm that your activity complies with the nationwide permit and conditions.** As explained within Nationwide Permit 12, the permittee is required to submit a pre-construction notification to the Corps of Engineers prior to construction if any of seven criteria are met.

If your proposal would require a Section 10 and/or Section 404 permit, please complete and submit the enclosed Corps of Engineers permit application to the US Army Corps of Engineers, North Dakota Regulatory Office, 1513 South 12th Street, Bismarck, North Dakota 58504. If you are unsure if a permit is required, you may submit an application, or, a letter requesting a jurisdictional determination. Include a project location map, description of work, and construction methodology when submitting either.

If we can be of further assistance or should you have any questions regarding our program, please do not hesitate to contact this office by letter or phone at (701) 255-0015.

Sincerely,

Daniel E. Cimarosti
State Program Manager
North Dakota Regulatory Office

Enclosures

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
North Dakota Field Office
99 23rd Avenue West – Suite A
Dickinson, North Dakota 58601-2619
www.blm.gov/mt

In Reply Refer To:

LRG

March 26, 2013

Merjent
Thomas M. Janssen, Senior Analyst
800 Washington Avenue North, Suite 315
Minneapolis, MN 55401

Re: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. Janssen:

Thank you for your letter notifying the Bureau of Land Management of the above-mentioned proposed project in Oliver, Morton, and Mercer counties in North Dakota. Upon reviewing the project description and the associated maps, the Bureau of Land Management has no comments to submit.

Once again, thank you for the opportunity to comment. If you have any questions, please contact Linda Gisvold at 701-227-7711.

Sincerely,

Allen Ollila
Acting Field Manager

merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Ms. Mary Podoll, State Conservationist
Natural Resources Conservation Service
North Dakota State Office
220 East Rosser Avenue, Federal Building, Room 270
Bismarck, ND 58501

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Ms. Mary Podoll:

Minnesota Power is planning to construct a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project ("Project"), in Oliver, Morton, and Mercer counties in North Dakota. Minnesota Power has retained Merjent, Inc. ("Merjent") to assist with the environmental permitting process for the project.

An overview of the proposed Project area is illustrated in the enclosed maps (see Figure 1 and Figure 2). The table on the following page includes townships, ranges, and sections encompassed within the Project boundary. The Project will interconnect with a new substation to be built by Minnesota Power that is an extension of the existing 230 kV transmission line from the existing Bison Substation to the Square Butte Substation. The wind energy will then be transmitted via Minnesota Power's existing 250 kV DC Line and existing AC transmission system as available, and is intended to be used to meet Minnesota Power's customer needs.

Minnesota Power plans to submit an application to the North Dakota Public Service Commission ("Commission") for a Certificate of Site Compatibility ("Certificate") for the Project pursuant to Chapter 49-22 of the North Dakota Century Code and Article 69-06 of the North Dakota Administrative Code. The Certificate application is scheduled to be filed in April 2013 in order to obtain Commission approval by August 2013. Minnesota Power plans to begin construction fourth quarter of 2013.

County	Township	Range	Sections
Mercer	141N	R88	1, 2, 12, 13, 24, 25, 26, 35, 36
	142N	R88	35, 36
Morton	139N	87W	6
	139N	88W	1, 2, 3, 4, 5, 6
	139N	89W	1
	140N	86W	4, 5, 6
	140N	87W	1, 2,, 4, 5, 6, 7, 8, 9, 16, 17, 18, 19, 20, 21, 28, 29, 30, 31
	140N	88W	1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
	140N	89W	13, 24, 25, 36
Oliver	141N	84W	6, 19, 30, 31
	141N	85W	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 36
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	141N	87W	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
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The purpose of this letter is to provide notification of the proposed Project and to seek your comments. Copies of all correspondence received in response to this letter will be included with the Certificate application for the Commission's records. Therefore, Minnesota Power respectfully requests receipt of your comments by April 18, 2013.

If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

Sincerely,

Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
Figure 2 – Project Overview Map – Aerial Photograph Map

merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

Mr. Wayne Stenehjem
North Dakota Attorney General
State Capitol
600 E. Boulevard Ave., Dept. 125
Bismarck, ND 58505

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. Wayne Stenehjem:

Minnesota Power is planning to construct a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project ("Project"), in Oliver, Morton, and Mercer counties in North Dakota. Minnesota Power has retained Merjent, Inc. ("Merjent") to assist with the environmental permitting process for the project.

An overview of the proposed Project area is illustrated in the enclosed maps (see Figure 1 and Figure 2). The table on the following page includes townships, ranges, and sections encompassed within the Project boundary. The Project will interconnect with a new substation to be built by Minnesota Power that is an extension of the existing 230 kV transmission line from the existing Bison Substation to the Square Butte Substation. The wind energy will then be transmitted via Minnesota Power's existing 250 kV DC Line and existing AC transmission system as available, and is intended to be used to meet Minnesota Power's customer needs.

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The purpose of this letter is to provide notification of the proposed Project and to seek your comments. Copies of all correspondence received in response to this letter will be included with the Certificate application for the Commission's records. Therefore, Minnesota Power respectfully requests receipt of your comments by April 18, 2013.

If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

Sincerely,

Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
Figure 2 – Project Overview Map – Aerial Photograph Map

merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Office of the Governor
State of North Dakota
600 East Boulevard Avenue
Bismarck, ND 58505-0001

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

To Whom It May Concern:

Minnesota Power is planning to construct a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project ("Project"), in Oliver, Morton, and Mercer counties in North Dakota. Minnesota Power has retained Merjent, Inc. ("Merjent") to assist with the environmental permitting process for the project.

An overview of the proposed Project area is illustrated in the enclosed maps (see Figure 1 and Figure 2). The table on the following page includes townships, ranges, and sections encompassed within the Project boundary. The Project will interconnect with a new substation to be built by Minnesota Power that is an extension of the existing 230 kV transmission line from the existing Bison Substation to the Square Butte Substation. The wind energy will then be transmitted via Minnesota Power's existing 250 kV DC Line and existing AC transmission system as available, and is intended to be used to meet Minnesota Power's customer needs.

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If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

Sincerely,

Thomas M. Janssen
Senior Analyst

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

North Dakota Aeronautics Commission
2301 University Drive, Bldg. 1652-22
P.O. Box 5020
Bismarck, ND 58502-5020

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

To Whom It May Concern:

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Sincerely,

Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

North Dakota Department of Transportation
608 East Boulevard Avenue
Bismarck, ND 58505-0700

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

To Whom It May Concern:

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If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

Sincerely,

Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

North Dakota Department of Agriculture
600 East Boulevard Avenue
Dept. 602
Bismarck, ND 58505-0020

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

North Dakota Department of Health
600 East Boulevard Avenue
Bismarck, ND 58505-0200

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

North Dakota Department of Human Services
600 East Boulevard Avenue
Dept. 325
Bismarck, ND 58505-0250

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800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

North Dakota Department of Labor
600 East Boulevard Avenue
Dept. 406
Bismarck, ND 58505-0340

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

North Dakota Department of Career and Technical Education
State Capitol—15th Floor
600 E. Boulevard Avenue, Dept. 270
Bismarck, ND 58505-0610

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Mr. Paul Govig, Director
North Dakota Department of Commerce
Division of Community Services
P.O. Box 2057
Bismarck, North Dakota 58502-2057

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

Paul Lucy, Director
North Dakota Department of Commerce
Economic Development & Finance Division
P.O. Box 2057
Bismarck, North Dakota 58502-2057

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. Paul Lucy:

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	140N	87W	1, 2,, 4, 5, 6, 7, 8, 9, 16, 17, 18, 19, 20, 21, 28, 29, 30, 31
	140N	88W	1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
	140N	89W	13, 24, 25, 36
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	142N	84W	31
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If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

Sincerely,

Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
Figure 2 – Project Overview Map – Aerial Photograph Map

merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Mr. Michael Haupt
North Dakota Department of Trust Lands
1707 N. 9th Street
P.O. Box 5523
Bismarck, ND 58506-5523

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. Michael Haupt:

Minnesota Power is planning to construct a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project ("Project"), in Oliver, Morton, and Mercer counties in North Dakota. Minnesota Power has retained Merjent, Inc. ("Merjent") to assist with the environmental permitting process for the project.

An overview of the proposed Project area is illustrated in the enclosed maps (see Figure 1 and Figure 2). The table on the following page includes townships, ranges, and sections encompassed within the Project boundary. The Project will interconnect with a new substation to be built by Minnesota Power that is an extension of the existing 230 kV transmission line from the existing Bison Substation to the Square Butte Substation. The wind energy will then be transmitted via Minnesota Power's existing 250 kV DC Line and existing AC transmission system as available, and is intended to be used to meet Minnesota Power's customer needs.

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Energy Infrastructure and Impact Office
North Dakota Department of Trust Lands
1707 N. 9th Street, P.O. Box 5523
Bismarck, ND 58506-5523

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
Figure 2 – Project Overview Map – Aerial Photograph Map

merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

North Dakota Farm Service Agency
1025 28th St. S.
Fargo, ND 58103

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

To Whom It May Concern:

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Enclosures: Figure 1—Project Overview Map – Topographic Map
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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58501-5095

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

To Whom It May Concern:

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merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

North Dakota Geological Survey
600 East Boulevard Avenue
Bismarck, ND 58505-0840

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

North Dakota Indian Affairs Commission
State Capitol Building, 600 East Boulevard Avenue
1st Floor, Judicial Wing—Room #117
Bismarck, ND 58505

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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Thomas M. Janssen
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merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

May 1, 2013

Karlene Fine
North Dakota Industrial Commission
State Capitol 14th Floor
600 E. Boulevard Ave., Dept. 405
Bismarck, ND 58505-0840

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Ms. Karlene Fine:

Minnesota Power is planning to construct a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project ("Project"), in Oliver and Mercer counties in North Dakota. Minnesota Power has retained Merjent, Inc. ("Merjent") to assist with the environmental permitting process for the project.

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Job Service North Dakota
P.O. Box 5507
Bismarck, ND 58506-5507

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

To Whom It May Concern:

Minnesota Power is planning to construct a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project ("Project"), in Oliver, Morton, and Mercer counties in North Dakota. Minnesota Power has retained Merjent, Inc. ("Merjent") to assist with the environmental permitting process for the project.

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	142N	R88	35, 36
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	140N	89W	13, 24, 25, 36
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	142N	84W	31
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The purpose of this letter is to provide notification of the proposed Project and to seek your comments. Copies of all correspondence received in response to this letter will be included with the Certificate application for the Commission's records. Therefore, Minnesota Power respectfully requests receipt of your comments by April 18, 2013.

If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

Sincerely,

Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
Figure 2 – Project Overview Map – Aerial Photograph Map

merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

North Dakota Parks and Recreation Department
1600 E. Century Avenue, Suite 3
Bismarck, ND 58503-0649

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merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

May 1, 2013

North Dakota Pipeline Authority
State Capitol 14th Floor
600 E. Boulevard Ave., Dept. 405
Bismarck, ND 58505-0840

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Jerry Lein
North Dakota Public Service Commission
600 E. Blvd, Dept 408
Bismarck, North Dakota 58505-0480

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. Jerry Lein:

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Mr. Scott Hochhalter, State Soil Specialist
North Dakota State Soil Conservation Committee
NDSU Extension Service
2718 Gateway Ave., Suite 104
Bismarck, ND 58503

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

May 1, 2013

North Dakota Transmission Authority
C/O North Dakota Industrial Commission
State Capitol 14th Floor
600 E. Boulevard Ave., Dept. 405
Bismarck, ND 58505-0840

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p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Mr. Todd Sando, State Engineer
North Dakota State Water Commission
900 East Boulevard Avenue, Dept. 770
Bismarck, ND 58505-0850

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Merlan E. Paaverud, Jr.
State Historical Society of North Dakota
State Historic Preservation Office
612 East Boulevard Ave.
Bismarck, North Dakota 58505

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Jeffrey Towner
U.S. Fish and Wildlife Service
North Dakota Field Office
3425 Miriam Avenue
Bismarck, North Dakota 58501-7926

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. Jeffrey Towner:

Minnesota Power is planning to construct a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project ("Project"), in Oliver, Morton, and Mercer counties in North Dakota. Minnesota Power has retained Merjent, Inc. ("Merjent") to assist with the environmental permitting process for the project.

An overview of the proposed Project area is illustrated in the enclosed maps (see Figure 1 and Figure 2). The table on the following page includes townships, ranges, and sections encompassed within the Project boundary. The Project will interconnect with a new substation to be built by Minnesota Power that is an extension of the existing 230 kV transmission line from the existing Bison Substation to the Square Butte Substation. The wind energy will then be transmitted via Minnesota Power's existing 250 kV DC Line and existing AC transmission system as available, and is intended to be used to meet Minnesota Power's customer needs.

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	142N	R88	35, 36
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	139N	88W	1, 2, 3, 4, 5, 6
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If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

Sincerely,

Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
Figure 2 – Project Overview Map – Aerial Photograph Map

merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

Mr. Daniel E. Cimarosti
U.S. Army Corps of Engineers
North Dakota Regulatory Office
1513 South 12th Street
Bismarck, North Dakota 58504

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. Daniel E. Cimarosti:

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Thomas M. Janssen
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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

U.S. Bureau of Reclamation
Dakotas Area Office
304 East Broadway Ave.
Bismarck, ND 58501

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

To Whom It May Concern:

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Mr. Rick Rymerson, Field Manager
U.S. Bureau of Land Management
North Dakota Field Office
99 23rd Avenue West, Suite A
Dickinson, ND 58601

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. Rick Rymerson:

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Mercer County Auditor
Mercer County Courthouse
P.O. Box 39
Stanton, ND 58571

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

Mercer County Emergency Services
1021 Arthur Street
Stanton, ND 58571

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merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

Mercer County Highway Department
1209 7th Street Northeast
Beulah, ND 58523

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Mercer County Planning and Zoning Administrator
Mercer County Courthouse
P.O. Box 39
Stanton, ND 58571

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	139N	89W	1
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	140N	89W	13, 24, 25, 36
Oliver	141N	84W	6, 19, 30, 31
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	142N	84W	31
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If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

Sincerely,

Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
Figure 2 – Project Overview Map – Aerial Photograph Map

merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

Mercer County Water Resource Board
206 Central Avenue North
Hazen, ND 58545

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

To Whom It May Concern:

Minnesota Power is planning to construct a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project ("Project"), in Oliver, Morton, and Mercer counties in North Dakota. Minnesota Power has retained Merjent, Inc. ("Merjent") to assist with the environmental permitting process for the project.

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If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

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Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Sandy Olin
Oliver County Emergency Management
P.O. Box 382
Center, ND 58530-0382

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Ms. Sandy Olin:

Minnesota Power is planning to construct a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project ("Project"), in Oliver, Morton, and Mercer counties in North Dakota. Minnesota Power has retained Merjent, Inc. ("Merjent") to assist with the environmental permitting process for the project.

An overview of the proposed Project area is illustrated in the enclosed maps (see Figure 1 and Figure 2). The table on the following page includes townships, ranges, and sections encompassed within the Project boundary. The Project will interconnect with a new substation to be built by Minnesota Power that is an extension of the existing 230 kV transmission line from the existing Bison Substation to the Square Butte Substation. The wind energy will then be transmitted via Minnesota Power's existing 250 kV DC Line and existing AC transmission system as available, and is intended to be used to meet Minnesota Power's customer needs.

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If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

Sincerely,

Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
Figure 2 – Project Overview Map – Aerial Photograph Map

merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Oliver Soil Conservation District
345 Center Avenue South
Box 87
Center, ND 58530-0087

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

To Whom It May Concern:

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Sincerely,

Thomas M. Janssen
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merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

Mr. Bruce Nelson
Oliver County Highway Department
115 West Main
P.O. Box 188
Center, ND 58530-0188

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. Bruce Nelson:

Minnesota Power is planning to construct a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project ("Project"), in Oliver, Morton, and Mercer counties in North Dakota. Minnesota Power has retained Merjent, Inc. ("Merjent") to assist with the environmental permitting process for the project.

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Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
Figure 2 – Project Overview Map – Aerial Photograph Map

merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Mr. John Wicklund
Oliver County Planning and Development Department
P.O. Box 188
Center, ND 58530-0188

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. John Wicklund:

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merjent

p 612.746.3660 ▪ f 612.746.3679

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

March 18, 2013

Oliver County Park Board
P.O. Box 188
Center, ND 58530-0188

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

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Senior Analyst

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merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Ms. Judith Hintz
Oliver County Auditor's Office
P.O. Box 188
Center, ND 58530-0188

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Ms. Judith Hintz:

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Oliver	141N	84W	6, 19, 30, 31
	141N	85W	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 36
	141N	86W	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35
	141N	87W	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
	142N	84W	31
	142N	85W	31, 32, 33, 34, 35, 36
	142N	86W	31, 32, 33, 34, 36
	142N	87W	31, 32, 33, 34, 35, 36

The purpose of this letter is to provide notification of the proposed Project and to seek your comments. Copies of all correspondence received in response to this letter will be included with the Certificate application for the Commission's records. Therefore, Minnesota Power respectfully requests receipt of your comments by April 18, 2013.

If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

Sincerely,

Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
Figure 2 – Project Overview Map – Aerial Photograph Map

merjent

800 Washington Avenue North ▪ Suite 315 ▪ Minneapolis, Minnesota ▪ 55401

p 612.746.3660 ▪ f 612.746.3679

March 18, 2013

Mr. Duane Bueligen, Chairman
Oliver County Water Resource Board
P.O. Box 355
Center, ND 58530-0355

RE: Minnesota Power Bison 4 Wind Energy Conversion Project

Dear Mr. Duane Bueligen:

Minnesota Power is planning to construct a wind energy conversion facility, called the Bison 4 Wind Energy Conversion Project ("Project"), in Oliver, Morton, and Mercer counties in North Dakota. Minnesota Power has retained Merjent, Inc. ("Merjent") to assist with the environmental permitting process for the project.

An overview of the proposed Project area is illustrated in the enclosed maps (see Figure 1 and Figure 2). The table on the following page includes townships, ranges, and sections encompassed within the Project boundary. The Project will interconnect with a new substation to be built by Minnesota Power that is an extension of the existing 230 kV transmission line from the existing Bison Substation to the Square Butte Substation. The wind energy will then be transmitted via Minnesota Power's existing 250 kV DC Line and existing AC transmission system as available, and is intended to be used to meet Minnesota Power's customer needs.

Minnesota Power plans to submit an application to the North Dakota Public Service Commission ("Commission") for a Certificate of Site Compatibility ("Certificate") for the Project pursuant to Chapter 49-22 of the North Dakota Century Code and Article 69-06 of the North Dakota Administrative Code. The Certificate application is scheduled to be filed in April 2013 in order to obtain Commission approval by August 2013. Minnesota Power plans to begin construction fourth quarter of 2013.

County	Township	Range	Sections
Mercer	141N	R88	1, 2, 12, 13, 24, 25, 26, 35, 36
	142N	R88	35, 36
Morton	139N	87W	6
	139N	88W	1, 2, 3, 4, 5, 6
	139N	89W	1
	140N	86W	4, 5, 6
	140N	87W	1, 2,, 4, 5, 6, 7, 8, 9, 16, 17, 18, 19, 20, 21, 28, 29, 30, 31
	140N	88W	1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
	140N	89W	13, 24, 25, 36
Oliver	141N	84W	6, 19, 30, 31
	141N	85W	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 36
	141N	86W	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35
	141N	87W	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
	142N	84W	31
	142N	85W	31, 32, 33, 34, 35, 36
	142N	86W	31, 32, 33, 34, 36
	142N	87W	31, 32, 33, 34, 35, 36

The purpose of this letter is to provide notification of the proposed Project and to seek your comments. Copies of all correspondence received in response to this letter will be included with the Certificate application for the Commission's records. Therefore, Minnesota Power respectfully requests receipt of your comments by April 18, 2013.

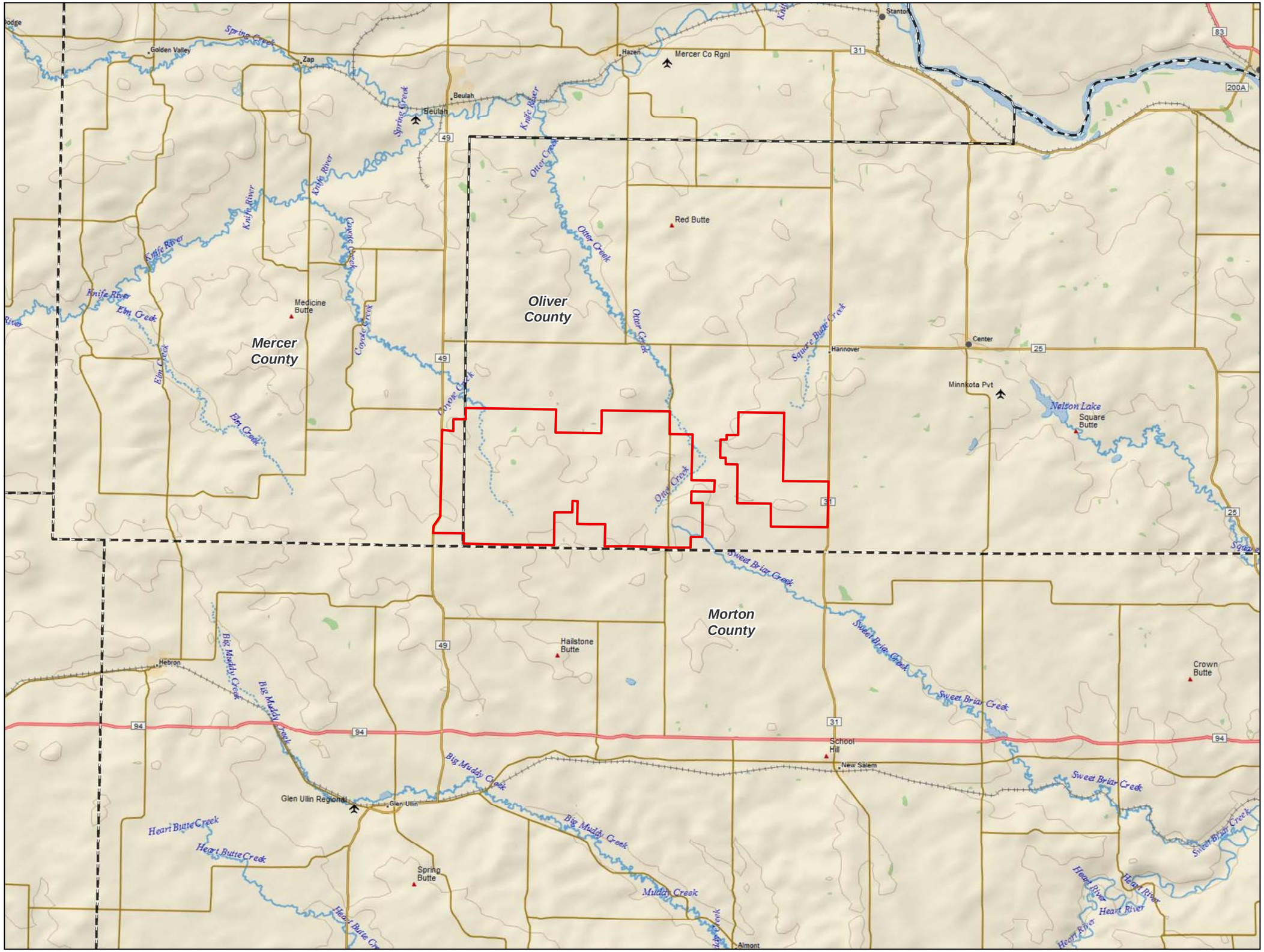
If you have comments regarding this proposed project, you are encouraged to contact me at the address provided on the letterhead of this letter, by e-mail at tjanssen@merjent.com, or by phone at 612.746.3664.

Sincerely,

Thomas M. Janssen
Senior Analyst

Enclosures: Figure 1—Project Overview Map – Topographic Map
Figure 2 – Project Overview Map – Aerial Photograph Map

Exhibits



0 2 4 Miles

1 inch = 4 miles

N W E S

Preliminary Project Boundary

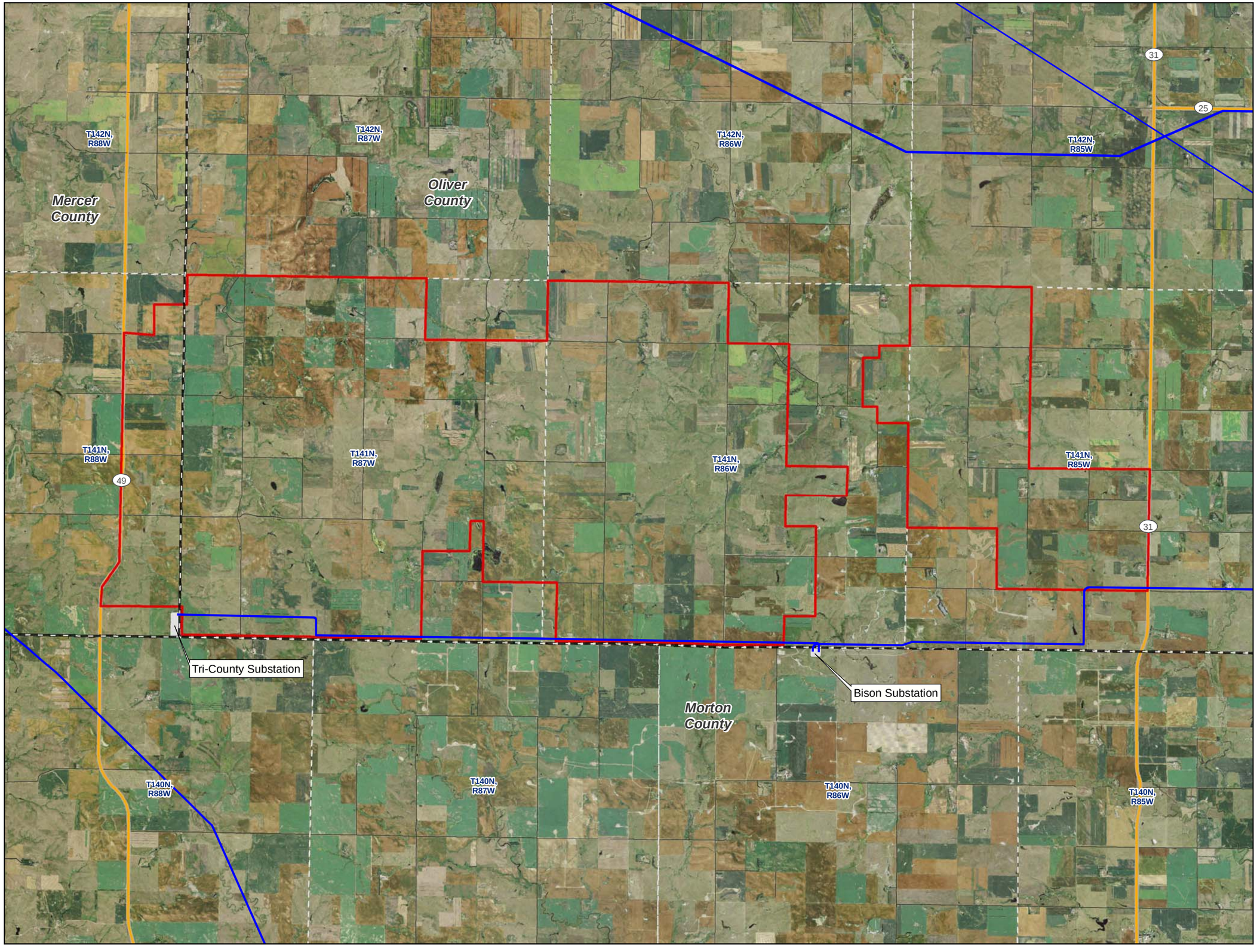
County Boundary

Exhibit 1
Preliminary Project Study Area Map

Minnesota Power
Bison 4 Wind Project

Mercer and Oliver Counties, North Dakota

Source: Z:\Clients\M_P\MN_Power\Bison_4_Wind_Farm_Project\ArcGIS\2013\03\Figures\Bison_4_Project_Location_Exhibit_1.mxd
Date: (5/3/2013)



0 0.75 1.5 Miles

1 inch = 1.5 miles

N W E S

Preliminary Project Boundary

High Voltage Transmission Line

PLSS Township Boundary

County Boundary

Major Road

Local Road

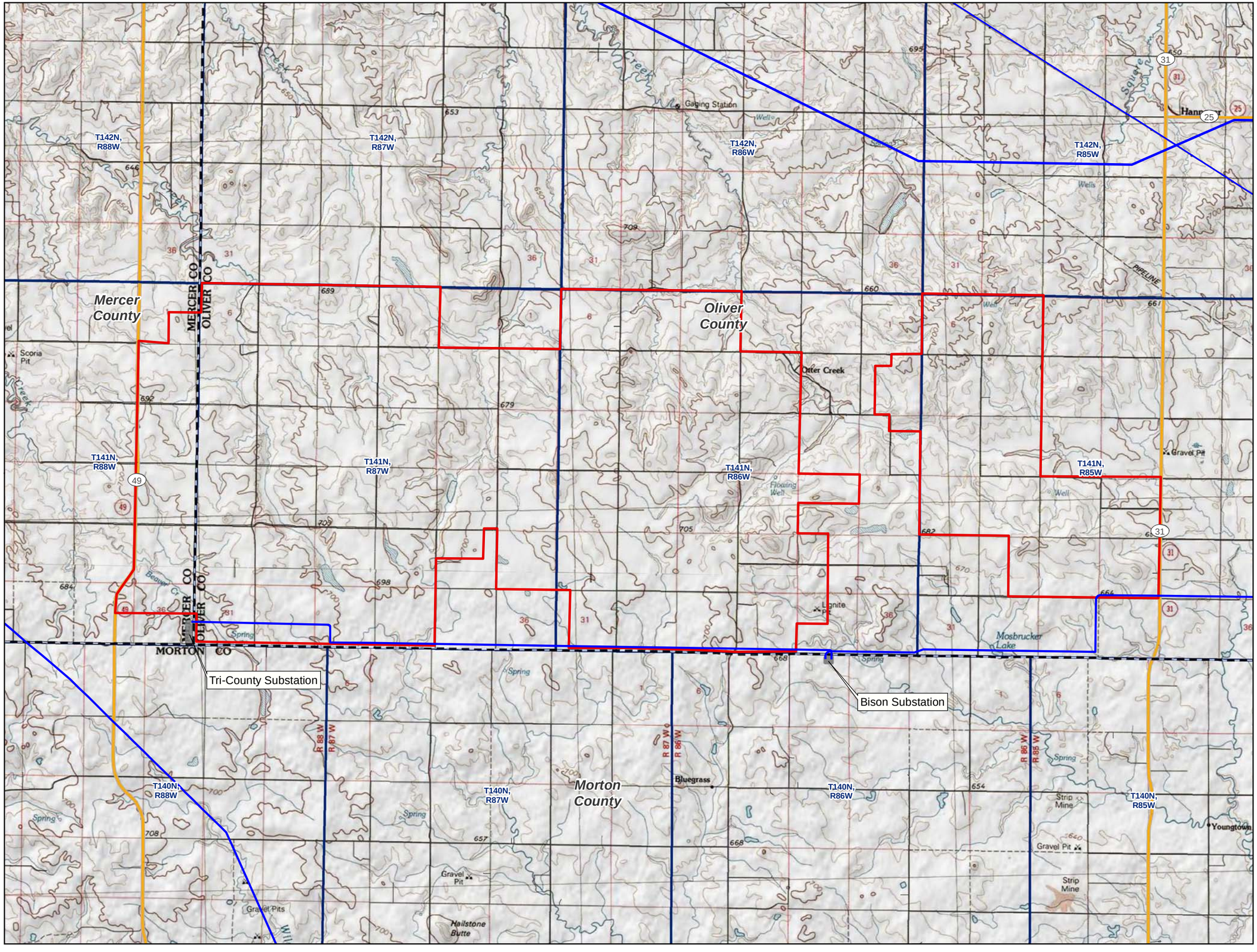
Exhibit 2
Preliminary Layout - 2010 Imagery

Minnesota Power
Bison 4 Wind Project

Mercer and Oliver Counties, North Dakota

Source: Z:\Clients\M_P\MN_Power\Bison_4_Wind_Farm_Project\ArcGIS\2013\03\Figures\Bison_4_Project_Location_Exhibit_2.mxd

Date: (5/3/2013)



0 0.75 1.5 Miles

1 inch = 1.5 miles

N W E S

- Preliminary Project Boundary
- High Voltage Transmission Line
- PLSS Township Boundary
- County Boundary
- Major Road
- Local Road

Exhibit 3
Preliminary Layout - USGS Topographic Map

Minnesota Power
Bison 4 Wind Project

Mercer and Oliver Counties, North Dakota

Source: Z:\Clients\MP_PWN_PowerBison_4_Wind_Farm_Project\ArcGIS\2013\03\Figures\Bison_4_Project_Location_Exhibit_3.mxd
Date: (5/3/2013)

Mercer County

Oliver County

Morton County

0 0.75 1.5 Miles

1 inch = 1.5 miles

N
W E
S

- Occupied Residence
- Threatened or Endangered Species
- 230kV Line
- Preliminary Project Boundary
- 1400ft Occupied Dwelling Setback
- 544ft Maintained Road Setback
- 544ft Transmission Line Setback
- NHD Stream
- Cultural Site
- NWI Wetland
- GAP Landcover Praire
- Areas of Prime Farmland
- County Boundary

Exhibit 4
Exclusion and Avoidance Areas

Minnesota Power Bison 4 Wind Project

Mercer and Oliver Counties, North Dakota

Source: Z:\Clients\M_P\MN_Power\Bison_4_Wind_Farm_Project\ArcGIS\2013\03\Figures\Bison_4_Project_Location_Exhibit_4.mxd

Date: (5/3/2013)

Mercer County

Oliver County

Morton County

0 0.75 1.5 Miles

1 inch = 1.5 miles

N
W E
S

Preliminary Project Boundary

County Boundary

National Landcover Data (NLCD)

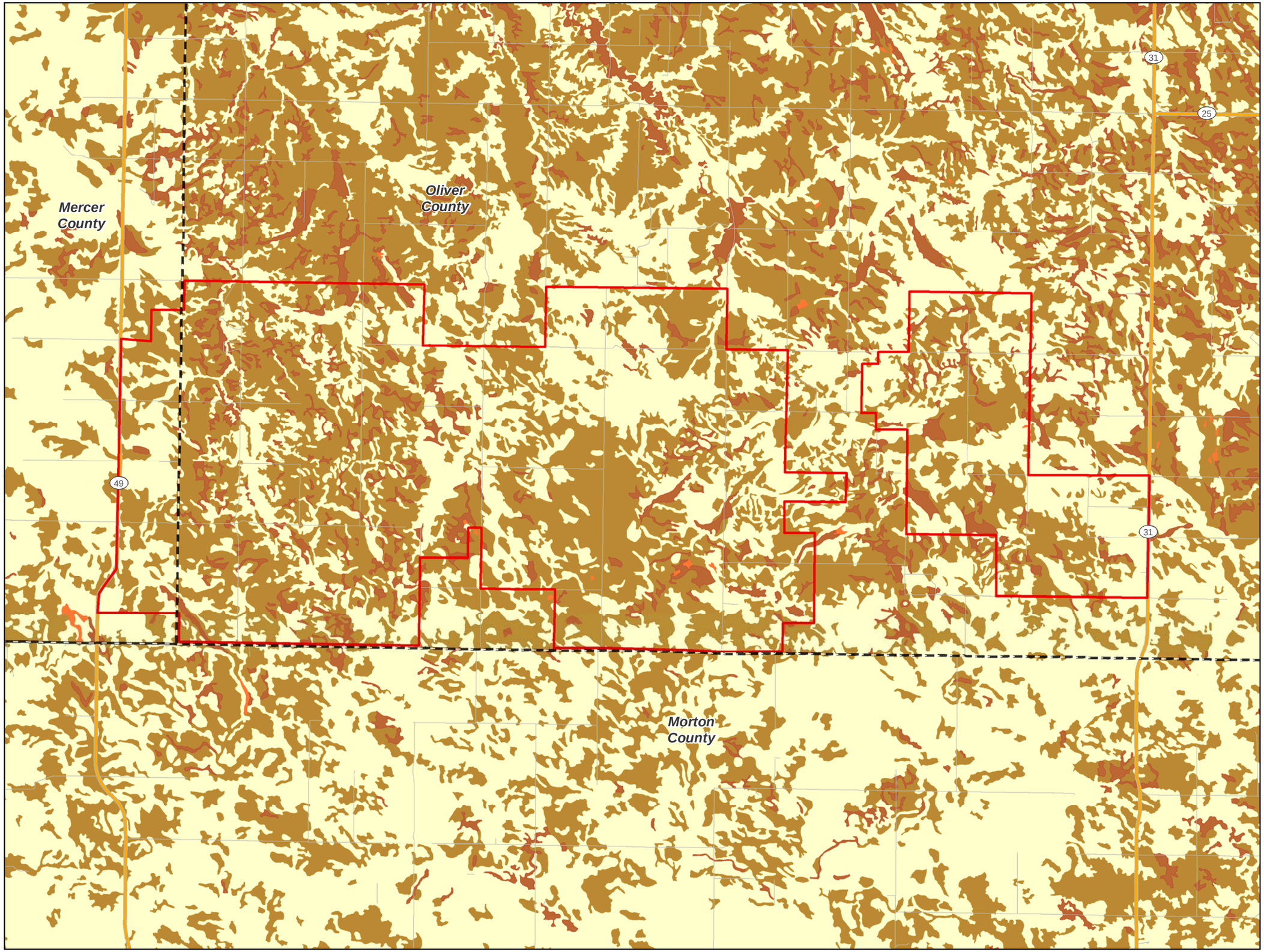
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

Exhibit 5
NLCD Land Cover

Minnesota Power
Bison 4 Wind Project

Mercer and Oliver Counties, North Dakota

Source: Z:\Clients\MP_PWN_PowerBison_4_Wind_Farm_Project\ArcGIS\2013\03\Figures\Bison_4_Project_Location_Exhibit_5.mxd
Date: (5/3/2013)



0 0.75 1.5 Miles

1 inch = 1.5 miles

N
W E
S

Preliminary Project Boundary

County Boundary

Farmland Classification

- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained
- Not prime farmland

Exhibit 6
Prime Farmland Soil Distribution

Minnesota Power
Bison 4 Wind Project

Mercer and Oliver Counties, North Dakota

Source: Z:\Clients\M_P\MN_Power\Bison_4_Wind_Farm_Project\ArcGIS\2013\03\Figures\Bison_4_Project_Location_Exhibit_6.mxd
Date: (5/3/2013)

Mercer County

Oliver County

Morton County

0 0.75 1.5 Miles

1 inch = 1.5 miles

N
W E
S

Preliminary Project Boundary

County Boundary

Soil Parent Material Boundary

- alluvium and/or residuum
- clayey alluvium
- clayey alluvium derived from sedimentary rock
- clayey residuum weathered from shale
- coarse-loamy alluvium derived from sedimentary rock
- coarse-loamy residuum weathered from calcareous sandstone
- coarse-loamy residuum weathered from sandstone
- eolian deposits over fine-loamy till
- fine-loamy residuum weathered from sandstone
- fine-loamy residuum weathered from sedimentary rock
- fine-loamy till
- fine-silty alluvium derived from sedimentary rock
- fine-silty glaciolacustrine deposits
- fine-silty residuum weathered from sedimentary rock
- loamy alluvium derived from sedimentary rock
- loamy residuum weathered from mudstone

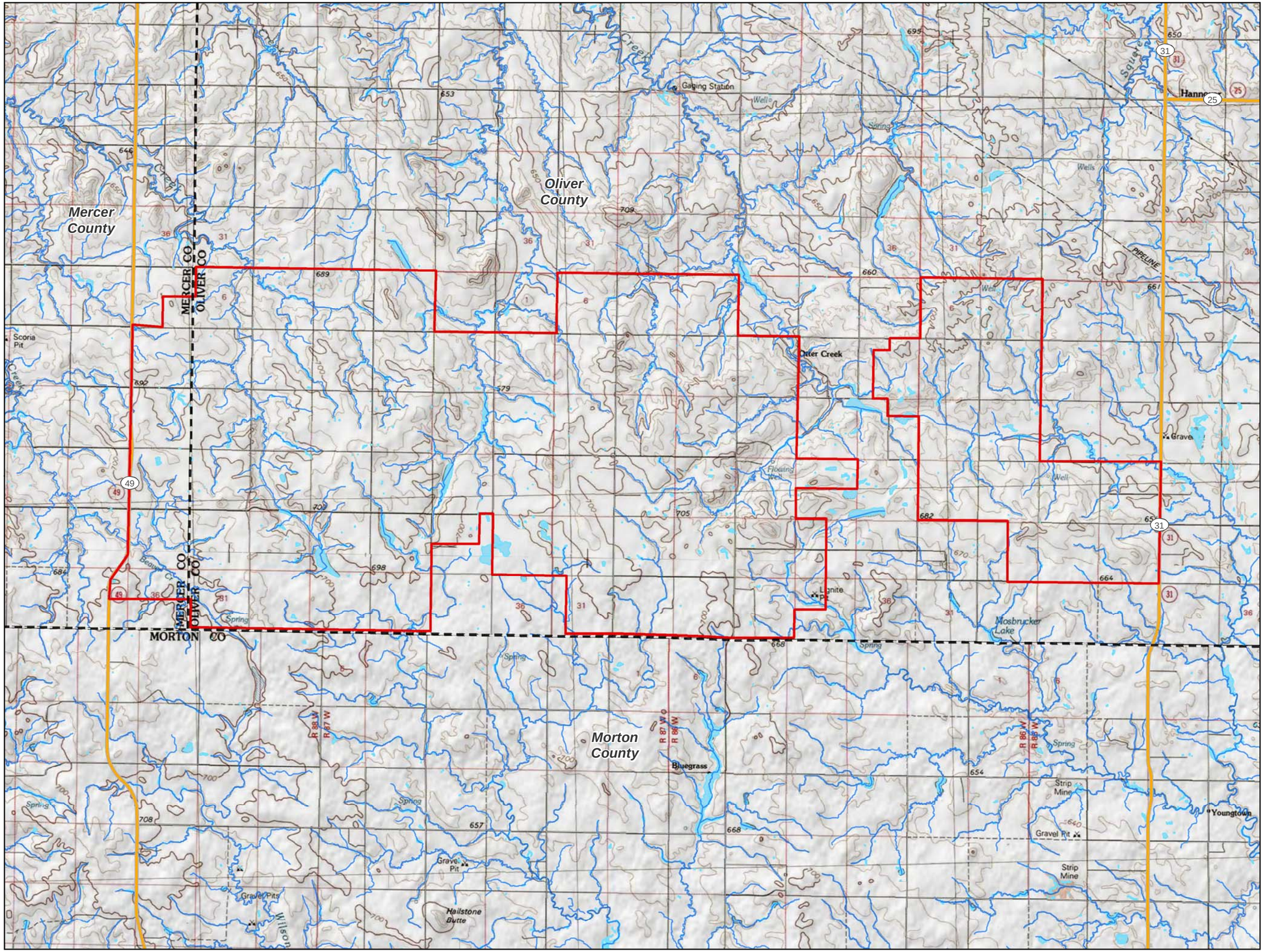
Exhibit 7
Soil Parent Material

Minnesota Power
Bison 4 Wind Project

Mercer and Oliver Counties, North Dakota

Source: Z:\Clients\M_P\MN_Power\Bison_4_Wind_Farm_Project\ArcGIS\2013\03\Figures\Bison_4_Project_Location_Exhibit_7.mxd

Date: (5/3/2013)



0 0.75 1.5 Miles

1 inch = 1.5 miles

N
W E
S

- Preliminary Project Boundary
- County Boundary
- NWI Wetland
- NHD Stream

Exhibit 8
National Wetlands Inventory

Minnesota Power
Bison 4 Wind Project

Mercer and Oliver Counties, North Dakota

Source: Z:\Clients\MP_PMN_PowerBison_4_Wind_Farm_Project\ArcGIS\2013\Figures\Bison_4_Project_Location_Exhibit_8.mxd
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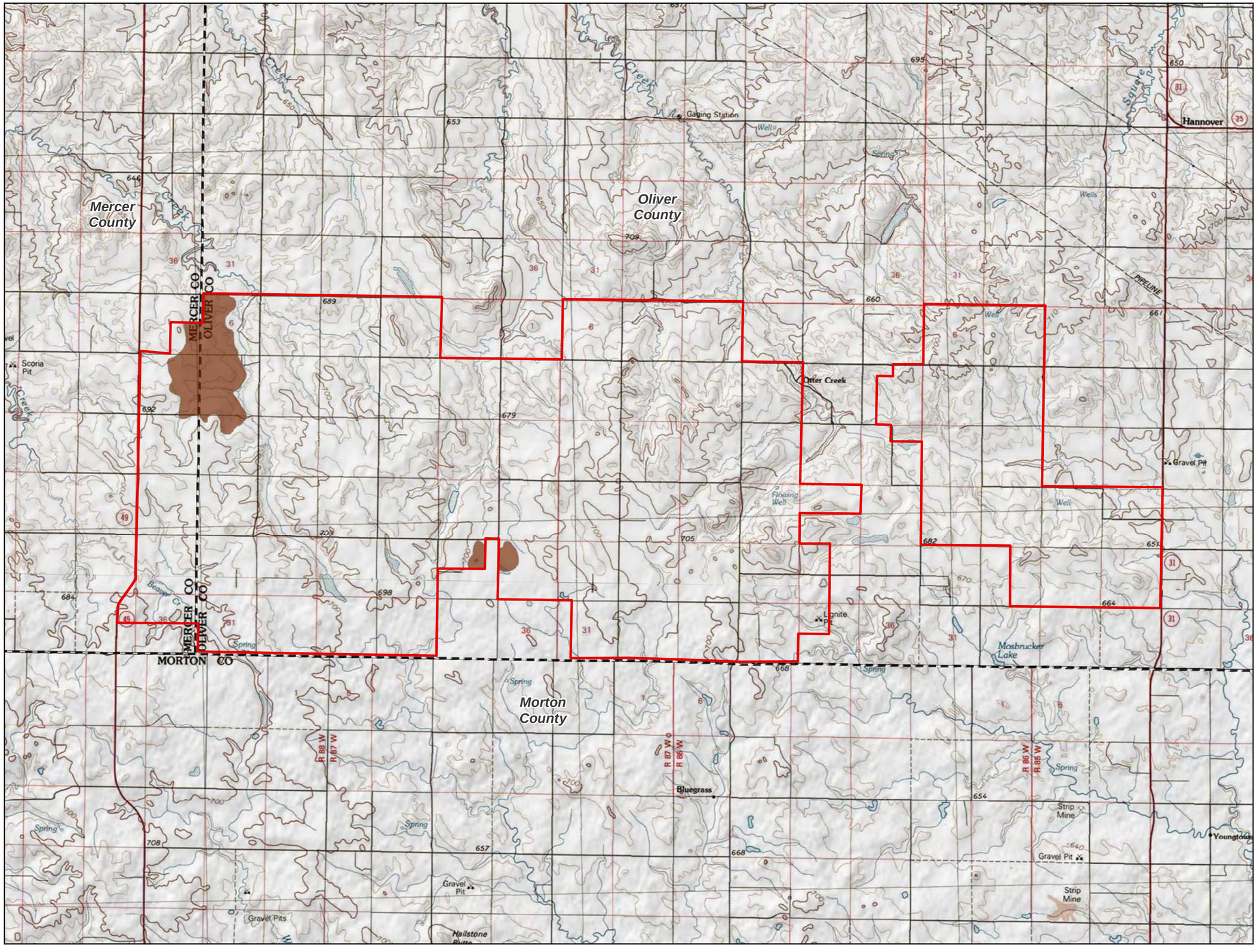


0 0.75 1.5 Miles

1 inch = 1.5 miles

N
W E
S

Preliminary Project Boundary

County Boundary

Economic Coal Deposit

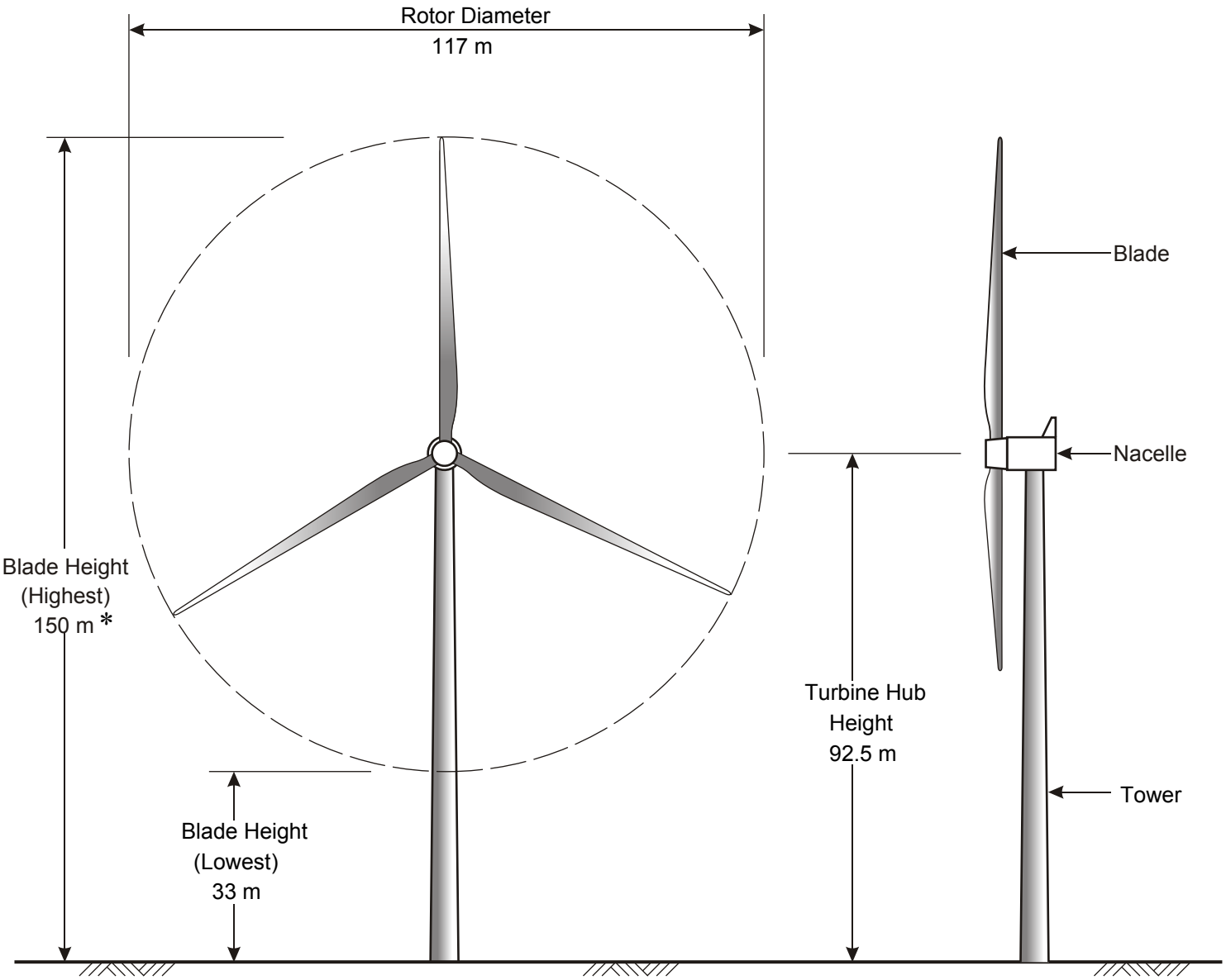
Exhibit 9
Lignite Resources

Minnesota Power
Bison 4 Wind Project

Mercer and Oliver Counties, North Dakota

Source: Z:\Clients\M_PMN_Powerdison_4_Wind_Farm_Project\ArcGIS\2013\03\Figure\Bison_4_Project_Location_Exhibit_9.mxd

Date: (5/3/2013)



Note: Based on a "Worst Case" Wind Turbine (3.0-3.3 MW)
Total Project Rated Capacity- Up to 210 MW

* Hub Height and Rotor Diameter is for a worst case scenario turbine.
No turbine being considered will be over 150 meters

Exhibit 10

WIND TURBINE DESIGN FEATURES
Minnesota Power
Bison 4 Wind Project