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May 12, 2009

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PUBLIC SERVICE COMMISSION

Ms. Ilona Jeffcoat-Sacco
Executive Secretary
North Dakota Public Service Commission
600 E. Boulevard Avenue, Department 408
Bismarck, ND 58505-0480

**RE: Minnesota Power's Bison I Wind Project
Application for a Certificate of Site Compatibility for the Bison I Wind Project, Oliver and Morton counties,
North Dakota
Case No. PU-09-151**

Dear Ms. Jeffcoat-Sacco:

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 I Wind Project, Case No. PU-09-151.

In accordance with the North Dakota Public Service Commission's April 13, 2009 Motion, Minnesota Power previously sent a check for the \$85,000 filing fee for the Certificate of Site Compatibility application.

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

Sincerely,

David R. Moeller

cc: Jim Atkinson, Minnesota Power
Ron Gullicks, Minnesota Power
Todd Mattson – HDR Engineering, Inc.

7 **PU-09-151** Filed: 5/12/2009 Pages: 281
Application for Certificate of Site Compatibility

Allete, Inc.

David MuellerAttyForAllete dba Minn Pwr



Application to the North Dakota
Public Service Commission for
Certificate of Site Compatability

Case No: PU-09-151

Blison I Wind Project
Morton and Oliver Counties, North Dakota

May 2009



ONE COMPANY | *Many Solutions**

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1.0 Introduction

Minnesota Power (MP), 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 I Wind Project (the Project). The Project is located on approximately 15-square-miles in Morton and Oliver counties, North Dakota (Figure 1). This Project, the first phase of a multi-phase development will be 76 megawatts (MW) in size, consisting of up to 33 2.3-MW wind turbine generators. The turbines will be a Siemens model (SWT-2.3-101). Associated facilities include access roads, transformers, an electrical collection system, substation, permanent meteorological tower(s), and an operation and maintenance (O&M) facility. The 230-kilovolt (kV) overhead transmission line from the Project substation to the interconnection point (Square Butte Substation) will be evaluated in a separate application to the PSC.

MP provides retail electric service to northeastern Minnesota and wholesale service to 16 municipal customers in Minnesota and two private utilities in Wisconsin. MP 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, MP 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 in Oliver County, North Dakota. MP's next major project was construction in 2007 and 2008 of the Taconite Ridge I Wind Energy Center (25 MW), located in northeastern Minnesota. Taconite Ridge I began commercial operation in June 2008. Over the past several years, MP engaged in extensive development efforts to identify technically and economically viable renewable projects. MP is committed to minimizing the environmental impact of its facilities.

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

The North Dakota Energy Conversion and Transmission Facility Siting Act requires an application for a Certificate to meet the criteria set forth in North Dakota Century Code (NDCC) 49-22. The NDCC 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).

To the extent available, MP has presented information required by the North Dakota Energy Conversion and Transmission Facility Siting Act. MP has considered exclusion areas, avoidance areas, the selection criteria, and the policy criteria 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 required to fulfill the requirements for a Certificate with the PSC and notes where these requirements are addressed in this document.

MP will submit a Certificate of Corridor Compatibility (Corridor Certificate) and a Route Permit for a 230-kV transmission line associated with the Project in a separate application to the PSC. MP will also submit applications for a Special Use Permit to Morton County and a Conditional Use Permit to Oliver County for the Project.

**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, Figure 5 and 6
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
e.	One (1) copy of all design data reports separate from the application	Appendix A
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 B
	Provide a copy of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal, regional, state or local agency	Appendix B
Section C	Need for Facility	2.0

State Authority	Description	Section
1.	An analysis of the need for the proposed facility based on present and projected demand for the product or products to be produced by the proposed facility, including the most recent system studies supporting the analysis of the need	2.1
2.	A description of any feasible alternative methods of serving the need	2.2
3.	A statement justifying any deviations from the most recent Ten-Year Plan which the proposed facility may present	2.3
Section D	Location	1.3.3
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, Figures 1, 2 and 4
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	Figures 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, Figures 4 and 15
b.	Avoidance areas	3.2, Figures 4 and 17
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	Figures
a.	Map the criteria within the study area showing the proposed facility location. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be 0.5 inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Figures
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	Figures (PSC Staff supports not providing a Mylar map)

State Authority	Description	Section
NDCC 49-22-09	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 and a lower return on investment.
- **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 such as major bird migration pathways, areas of particularly sensitive habitats, or conflicting activities (e.g., airports).

The proposed Project location in Morton and Oliver 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 MP 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 Morton and Oliver counties' wind siting requirements, and communications with local, state and federal agencies. In addition, MP has sought input from landowners regarding the location of wind facilities. During May and June, MP will conduct a number of field studies such as wetland, biological, and cultural resource surveys. After these field studies and additional analyses have been completed, MP will provide the PSC with updated turbine locations prior to the public hearing.

Once the PSC issues the Certificate, MP would complete any remaining studies required by the Certificate or MP's siting process, including 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 76-MW Project will be submitted to the PSC prior to construction.

Wind projects occupy large areas and must conform to Certificate conditions while optimizing the wind resource at the site. With Certificate conditions in place, the developer is able to complete detailed design and construction.

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

1.3 Project Summary

MP studied potential wind resource locations in North Dakota for siting a 76-MW wind generation facility. Based on this review, MP selected a study area northwest of New Salem, North Dakota, for additional study and preparation of this application for a Certificate to the PSC.



1.3.1 Project Study Area Alternatives

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

MP has identified a number of other areas that meet its siting criteria and could feasibly be developed for wind energy (e.g., Case No. PU-08-847). However, because MP intends to develop multiple wind energy projects in North Dakota, these areas are not considered alternatives to this specific Project.

1.3.2 Project Study Area Selection

Figure 1 identifies the vicinity analyzed to select the proposed Project study area. The study area was identified as optimal from wind resource, land availability, transmission interconnection, environmental, and economic perspectives.

The site was selected based on good land compatibility and accessibility, excellent wind resources, and proximity to a transmission grid interconnection point. South central North Dakota is well suited for wind development because it features large open terrain without trees. An additional key advantage to wind development in North Dakota is the land area available for wind turbine siting. Within 20 miles of Center, North Dakota, there are hundreds of square miles that may be screened for wind development. MP has secured a sufficient amount of wind easement options to support several planned wind projects.

South central North Dakota has higher average wind speeds than most other buildable areas in the Midwest. In evaluating these wind resources in Morton and Oliver counties, MP retained WindLogics in 2006 to assist with wind prospecting within 25 miles of Center, North Dakota. This evaluation indicated a high annual capacity factor of 40-45 percent (depending on turbine selection) in the area. Evaluation results then guided the siting and installation of four meteorological towers in the study area. Data produced by the wind measurement equipment on these meteorological towers has been used to further evaluate the siting area and help determine turbine locations.

In determining the appropriate location for the turbines, optimum elevations were evaluated to take advantage of strong prevailing north and south winds. The Bison I Project will have annual average winds speeds of 8 meters per second (mps) (17 miles per hour (mph)) or higher, comparable to wind power class ratings of 5 and 6, indicating an excellent wind resource, as shown by the prospecting map in Figure 10. These wind speeds support a projection of 45 percent capacity factor for the turbine selected. The location of the Bison I Project site combines this strong wind resource with proximity to the existing Square Butte Direct Current (DC) transmission line to provide lower cost, renewable energy to meet MP customer's power needs. As MP has informed the PSC, MP is in the process of acquiring the DC Line from



Square Butte. The proposed study area was selected considering the exclusion and avoidance criteria outlined in North Dakota Administrative Code (NDAC) 69-06-08, and was chosen as the location for the proposed wind generation site.

1.3.3 Proposed Site

Leases from landowners have been obtained for the Project study area. The Project site was selected to include all areas within the Project study area so MP can optimize wind resources, transmission interconnection opportunities, and economic factors, while avoiding and minimizing impacts to the environmental resources. The Project site is located in Morton and Oliver counties within the following townships, ranges, and sections (Table 1-2):

**Table 1-2
Project Site Location**

County	Township	Range	Sections
Morton	140N	86W	2-5, 8-11, 15- 17, 20
Oliver	141N	85W	29- 34
	141N	86W	25, 26, 35, 36

The Project site is approximately 9,543 acres (14.9 mi²) and the southern border of the site is located approximately 8 miles northwest of the City of New Salem. The turbines will be placed throughout the Project site. The Project's location is shown in Figure 2 and Figure 3. Detailed locations of wind turbine generators will be provided a minimum of one week in advance of public hearings. However, the Project site will generally occupy less than one percent of the total land area.

1.3.4 Projected Output

The Project will have a nameplate (gross) capacity of approximately 76-MW. Assuming net capacity factors of 45 percent, projected average annual output is estimated at 300,000 MWh. This comparatively high capacity factor is due to the use of longer blades, which significantly increases the swept area for each blade revolution. As with all wind projects, output is dependent upon wind resource, final design, site-specific features, and equipment.

1.4 Project Schedule

The commercial operation date is dependent upon permitting approval and other development activities. MP plans to begin construction in the fall 2009, provided all pre-construction permits and approvals have been obtained.

- **Certificate of Site Compatibility:** MP anticipates the Certificate will be approved in August 2009.



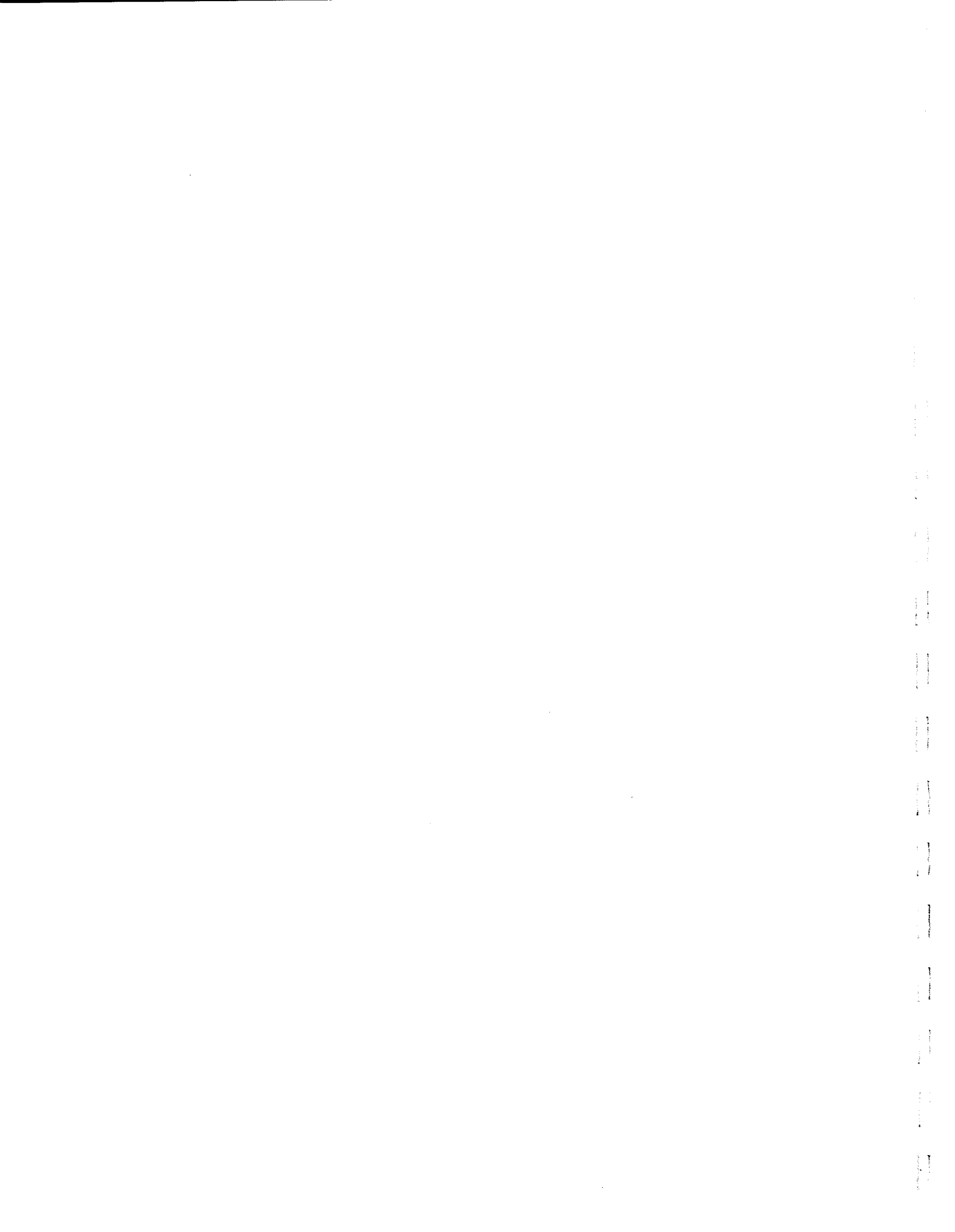
- **Land Acquisition:** MP has secured sufficient easement options from landowners to develop a 76-MW project.
- **Permits:** MP is responsible for undertaking all required environmental studies, and will obtain all permits and licenses that are required following issuance of the Certificate. Completing permits is on the “critical path” for the Project and will allow MP to move forward with other commitments, including ordering long-lead time equipment.
- **Equipment Procurement, Manufacture, and Delivery:** MP has a contract with Siemens to deliver 16 turbines in the fall of 2010 (Phase 1A) and 17 turbines in the fall of 2011 (Phase 1B).
- **Construction:**
 - Project construction for Phase 1A (16 wind turbine generators) will likely begin in the fall of 2009, subject to road restrictions and weather. Construction of the access roads, wind turbine generator foundations, 34.5 kV electrical collector system, and communication system for the Phase 1A wind turbine generators, along with the 34.5/230 kV collector substation and the operation and maintenance facility, will be completed in spring and summer of 2010. Erection of the Phase 1A wind turbine generators will be completed in the fall of 2010.
 - Project construction for Phase 1B (17 wind turbine generators) will likely begin in the fall of 2010, subject to road restrictions and weather. Construction of the access roads, wind turbine generator foundations, 34.5 kV electrical collector system, and communication system for the Phase 1B wind turbine generators will be completed in spring and summer of 2011. Erection of the Phase 1B wind turbine generators will be completed in the fall of 2011.
- **Test and Operations:** Testing for Phase 1A would begin in September or October of 2010. Testing for Phase 1B would begin in September or October of 2011.
- **Commercial Operation:** MP expects commercial operation will occur in November or December of 2010 for the 16 Phase 1A turbines and November or December 2011 for the 17 Phase 1B turbines.

As discussed in Section 1.3.4, the capacity factor is dependent upon the final design equipment and site-specific features. The typical capacity factor for wind projects in the Great Plains Region is approximately 35 to 40 percent.

No expansions or modifications to the Bison I Wind Project are anticipated at this time, though MP is planning on building additional wind facilities in North Dakota. The proposed Project substation will be designed for additional capacity to accommodate future wind generation development in the area. MP will submit applications for any future additional wind generation facilities using this substation.

1.5 Project Ownership

MP will construct and own the Bison I Wind Project, including all equipment up to the interconnection point at the Square Butte Substation. MP is a Minnesota corporation and a public utility in the State of Minnesota under Minn. Stat. § 216B.02, subd. 4. The output of the Project will be used by MP to serve the renewable energy needs of its customers.





2.0 Need for Facility

2.1 Need Analysis

Deregulation of the electric industry and current energy supply issues have emphasized the need for new and diverse energy sources. Existing and potential future state and federal policies, 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. MP will be using the output from the Project to meet the State of Minnesota Renewable Energy Standard (RES) under Minn. Stat. § 216B.1691. Under the Minnesota RES, MP is required to generate or procure sufficient electricity generated by an eligible renewable energy technology (which includes wind energy). The following standard percentages of MP's total Minnesota retail electric sales must be generated by eligible energy technologies by the end of the year indicated: 12 percent by 2012, 17 percent by 2016, 20 percent by 2020, and 25 percent by 2025. Currently, approximately 11 percent of MP's total Minnesota retail electric sales are generated by eligible energy technologies. The Bison I Wind Project is an integral part of the MP's plans for obtaining 25 percent of its electricity for its retail customers from renewable energy sources by the year 2025. According to the Department of Energy, coal generation is currently the primary energy source in North Dakota (EIA 2009). MP currently purchases 227.5 MW of capacity and energy from the Milton R. Young Unit 2 lignite coal station, and transmits that power along Square Butte's DC Line to MP's service territory. Hydroelectric power and other renewables account for most of the state's non-coal-generated electricity. As of December 31, 2008, approximately 714 MW of wind generation was installed in the state (AWEA 2009).

Wind-powered electric generation is entirely dependent upon the availability of the wind resource at a specific location. Depending on air density, rotor area, and wind speed, the energy generated at a wind turbine can increase exponentially. For example, a doubling of the wind speed increases the available energy by a factor of eight times. North Dakota has been identified as having more available wind for development than any other state, capable of developing over 138,000 MW (AWEA ND 2009). Table 2-1 shows the existing (as of 12/31/08) and potential wind power development for North Dakota and Minnesota and the surrounding states.

**Table 2-1
Midwest Wind Power**

	Existing (MW)	20% Wind Energy by 2030 (MW)	Renewable Portfolio Standard
Illinois	915	>10,000	25% by 2025
Iowa	2,790	>10,000	None
Minnesota	1,752	5,000 - 10,000	25% by 2025
Nebraska	73	5,000 - 10,000	None
North Dakota	714	1,000 - 5,000	None
South Dakota	187	5,000 - 10,000	10% by 2015
Wisconsin	395	1,000 - 5,000	10% by 2015
Total	6,826	37,000 - >60,000	

Sources: AWEA U.S. 2009, US DOE 2008, AWEA 2008

Electrical utilities such as MP are instrumental in meeting regional energy needs, stabilizing energy costs, and enhancing energy reliability. North Dakota has a unique opportunity to help meet these energy needs with clean, efficient, renewable energy. The Project offers North Dakota and surrounding region the opportunity to add to capacity adequacy requirements, to stabilize wholesale power prices, and to provide electricity from a clean, cost-effective renewable energy generation facility. MP intends for the Project to be a significant source of energy for meeting the region's needs over the next 35 years.

2.2 Alternatives

There are a number of traditional alternatives for generating electricity including the burning of coal or natural gas. Generation alternatives that satisfy Minnesota's RES requirements include wind, solar, hydroelectric, and biomass. Given limitations associated with solar, hydroelectric, and biomass, wind energy is currently the most economic and technologically feasible of the renewable alternatives to meet MP's near term requirements of increasing its renewable energy generation. As such, no other alternative was considered to the Bison I Wind Project.

2.3 Ten-Year Plan

MP will file a Ten-Year Plan with the PSC by July 2009.

3.0 Site Selection Criteria

MP is evaluating the proposed 9,543-acre (14.9 mi²) site to determine appropriate locations for up to 33 wind turbines. Siting turbines is a process through which input from several different entities is considered. Initially, several study areas were considered based on the expected wind resources and transmission availability. The Bison I study area was identified as an optimal site from an environmental, wind resource, and economic perspective (Figure 1).

MP negotiated with landowners to secure wind lease options and then identified 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 Morton and Oliver counties wind siting requirements, and communications with local, state, and federal agencies. MP has used this siting process in recent wind turbine projects in Minnesota. Through this process, MP 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. MP has reviewed the criteria in the NDAC, Title 69, Chapter 69-06-08, and has factored these criteria into site design. These criteria are discussed in this section.

3.1 Exclusion Areas

Per Section 69-06-08-01-1 of the NDAC, the following geographical areas (Table 3-1) "Shall be excluded in the consideration of a site for an energy conversion facility, and shall include a buffer zone of a reasonable width to protect the integrity of the area." Exclusion areas are mapped in Figure 1 and Figure 4.



**Table 3-1
Exclusion Areas**

Exclusion Area	Present within Project Site?	Proposed Buffer	Section Addressed
Designated or registered national areas: 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, Figures 1 and 4
Designated or registered state areas: 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.	No		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 affect less than 0.1% of the yearly production for the top five commodities in Morton and Oliver counties.	7.10, 7.11, Figure 15
Irrigated land	Yes	No conflicts with irrigated land are anticipated. One parcel of land with an irrigation permit was identified within the Townships affected by the Project site. MP will avoid this parcel of land. No impacts are anticipated.	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

3.2 Avoidance Areas

Per Section 69-06-08-01-2 of the NDAC, the following geographical areas (Table 3-2) “Shall not be approved as a site for an energy conversion facility unless the applicant shows that under the circumstances there is no reasonable alternative.” In determining whether an avoidance area should be designated for a facility, the PSC may consider among other things, the proposed management of adverse impacts, the orderly siting of facilities, system reliability and integrity, the efficient use of resources, and alternative sites. Avoidance areas are mapped in Figure 1 and Figure 4.

**Table 3-2
Avoidance Areas**

Avoidance Areas	Present within Project Site?	Proposed Buffer	Section Addressed
Historical resources which are not designated as exclusion areas	Unknown	In consultation with the North Dakota State Historic Preservation Office (SHPO), a professional archaeologist would establish buffers appropriate to the resource, once historic resources have been identified.	7.8, Appendix B
Areas within the city limits of a city or the boundaries of a military installation	No		7.3, Figures 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 and will be kept alive for three years.	7.14, 7.15, Figures 4, 14 and 17
Areas of recreational significance which are not designated as exclusion areas	No		7.9

3.3 Selection Criteria

Per Section 69-06-08-01-3 of the NDAC, 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 Criteria	Potential Adverse Effects	Section Addressed
Impact Upon Agriculture:		
Agricultural production	The placement of all 33 turbines will impact approximately 2 acres of land and an additional 39 acres due to the permanent access roads. This would result in an insignificant impact to agricultural production.	7.10
Family farms and ranches	No turbines will be placed within 1,500 feet of family homes. Land area lost to the construction of access roads and turbines and aesthetic impacts are the potential adverse effects to family farms; however, wind lease payments to farmers will provide a supplemental source of income.	7.2, 7.3, 7.10, Figures 2, 3 and 4
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, where impacts are expected, has expressed concerns related to economically suitable irrigation on their land.	7.10, Figures 16 and 17
Surface drainage patterns and ground water flow patterns	No impacts to surface drainage patterns or groundwater flow patterns are anticipated.	7.12, 7.13, 7.14, Figure 17
The agricultural quality of the cropland	No impacts to the agricultural quality of the cropland are anticipated. If compaction of soils occurs during construction, MP 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 adverse effects are expected.	7.4
Governmental services and facilities	Governmental services and facilities will not be adversely impacted.	7.4
General and mental health care facilities	General and mental health care facilities will not be adversely impacted.	7.4
Recreational programs and facilities	No adverse 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 adverse impacts anticipated.	7.4
Utility services	MP will utilize station service from the local electrical utility. MISO will suggest appropriate configurations for the electrical system, and MP will abide by the recommendations to prevent adverse impacts to the transmission system.	2.0, 7.4
Impact Upon:		
Local institutions	No adverse impacts are anticipated.	7.4

Selection Criteria	Potential Adverse Effects	Section Addressed
Noise sensitive land uses	The noise sensitive land uses within the Project site are the residences near turbine locations. As long as no turbines are sited within 1,500 feet of a sensitive land use for the 2.3-MW turbines, noise levels will not exceed the allowable 50 dBA (A-weighted decibel) standard.	7.6, Figures 2, 3, 4, and 11
Rural residences and businesses	No turbines will be placed within 1,500 feet of family homes.	7.2, 7.3, 7.10, Figures 2, 3, and 4
Aquifers	No impacts are anticipated.	7.12
Impact Upon:		
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, there is a potential for avian and bat collisions with the turbines for the Project, but the impact is expected to be minimal. Mitigative measures in turbine siting will further minimize the potential for these impacts. MP will conduct pre-construction avian monitoring and post-construction monitoring for avian and bat species.	7.10, 7.16, 7.17, Appendix B
Plant life	For the 2.3-MW turbines, approximately 41 acres of land will be permanently impacted for the turbines and access roads. The land where the turbines will be sited is primarily tilled and rangeland.	7.10, 7.15, Figure 14
Temporary and permanent housing	Temporary housing will be utilized during construction. No adverse 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

Per Section 69-06-08-01-4 of the NDAC, the PSC may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in a proper case may require the adoption of such policies and practices (Table 3-4).



**Table 3-4
Policy Criteria**

Policy Criteria	Suitable Policy or Practice of Applicant	Section Addressed
Recycling of the conversion byproducts and effluents	Not applicable.	N/A
Energy conservation through location, process, and design	MP is developing the site to maximize the energy output. MP 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, MP's acquisition 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	MP will use local labor to the extent practicable. MP 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, Figure 9
Economies of construction and operation	MP will utilize local contractors to the extent practicable.	7.2
Secondary uses of appropriate associated facilities for recreation and enhancement of wildlife	None	N/A
Use of citizen coordinating committees	MP 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	Due to the need to transmit and utilize this wind energy in MP's service territory to meet State of Minnesota renewable mandates, MP cannot make this commitment.	2.1, 6.1
Labor relations	No labor relations will be affected.	7.2
The coordination of facilities	Existing facilities and facility corridors were considered in the location of the Project and its associated facilities.	3.0, 3.6
Monitoring of impacts	MP and the construction contractor will employ Best Management Practices (BMPs) during construction to monitor soil impacts and segregate topsoil. MP will monitor tree and shrub replacement for three years, if needed. MP proposes to monitor for bird and bat mortality following construction.	7.11, 7.15, 7.16

3.5 Design and Construction Limitations

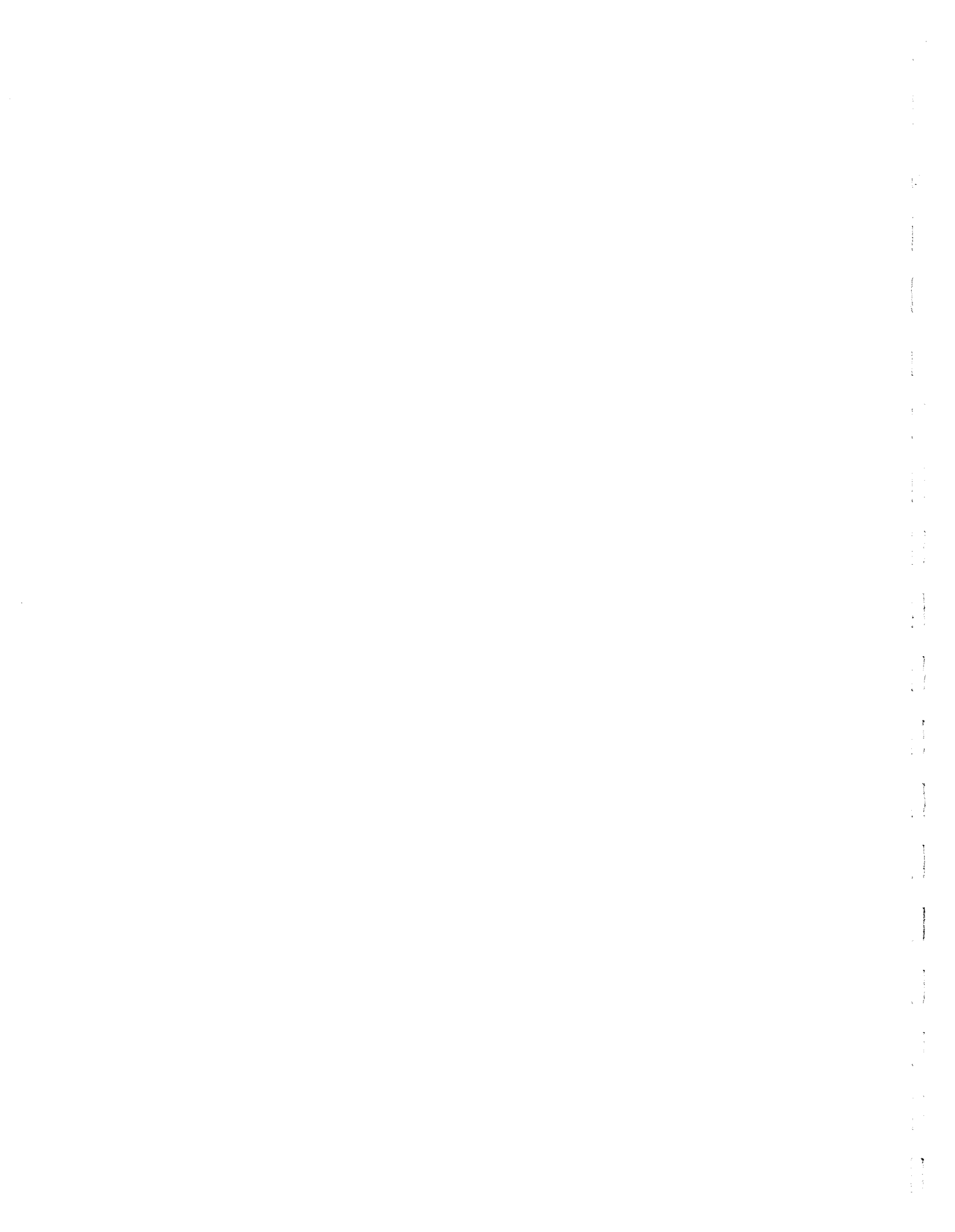
In general, there are two design and construction limitations when building any wind farm: wind resources and site control. The wind resource is essential to selecting and designing a wind farm. MP conducts a thorough analysis of sites they select to ensure that each has ample wind energy to generate revenue for the wind farm. For site control, MP 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. Morton County has established setbacks from property boundaries and road rights-of-way (ROW), and the PSC has established a voluntary setback from 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

Economics were an importation consideration when selecting a location for the Project. 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. Another controlling factor of the economics of the Project site is proximity to a point of interconnection with the existing transmission network. The Project site enjoys a favorable location, requiring only a relatively short (22-mile) generator outlet to connect with the existing Square Butte Substation and the 250 kV DC line or the AC (alternating current) transmission system, as available.

Another important economic consideration related to the Project is the need to qualify for the Production Tax Credit (PTC). The Federal PTC is approximately 2.1 cents per kilowatt hour (kWh) and is set to expire at the end of 2012 (AWEA PTC 2009). MP has committed to the Minnesota Public Utilities Commission (MPUC) that any PTC benefits will be passed onto MP customers (MPUC Docket No. E015/M-09-285).





4.0 General Description of the Proposed Facility

4.1 Wind Power Technology

As wind passes over the blades of a wind turbine, it creates lift and causes the rotor to turn. The rotor is connected by a hub and main shaft to a system of gears, which are connected to a generator. Figure 5 shows a representative wind turbine with dimensions characteristic of the turbine type selected for this Project. MP is proposing to use 33 Siemens 2.3-MW wind turbines. In addition to the 33 turbine locations, MP has accounted for many alternate turbine locations in its layout of the Bison I Wind Project.

The Siemens 2.3-MW utility-grade wind turbine has a nominal nameplate rating of 2,300 kW. Each turbine will have an 80 meter (262 ft) or site-specific hub height and a 101 meter (331.4 ft) rotor diameter (RD) (Figure 5). The Siemens 2.3-MW turbine begins operation in wind speeds of 4 m/s (8.9 mph) and reaches its rated capacity (2.3 MW) at wind speeds of 12 to 13 m/s (26.8 to 29.0 mph). The turbine is designed to operate in wind speeds of up to 25 m/s (55.9 mph) and can withstand sustained wind speeds of more than 55 m/s (123.0 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 pad-mounted transformer where the voltage is raised (stepped up) to power collection-line voltage of 34.5 kV. The electricity is collected by a system of underground or overhead power collection lines within the Project site. Both power collection lines and communication cables will be buried underground or may be constructed as overhead lines where site specific considerations require. 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, MP will obtain easements for the necessary property.

The 34.5 kV collector system transmits power to the Project collector substation. At the Project substation, the power will be transformed to 230 kV and transmitted via overhead 230 kV transmission lines, interconnecting with the transmission grid at the existing Square Butte Substation. Electrical energy is converted from AC to DC via a DC converter station within the Square Butte Substation. Electrical energy from the Bison I Wind Project will be transmitted to customers via the existing Square Butte DC Line which extends from the Square Butte Substation to Minnesota Power's Arrowhead Substation located near Duluth, Minnesota



Electrical energy may also reach MP 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. Figure 6 is a diagram of the path of energy from a wind project to energy users.

MP 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.

Morton County has recently established setbacks for wind turbine towers from property boundaries, road ROWs, and occupied residences. Each wind turbine must be no less than 1.25 times its total height, or 1,320 feet (whichever is greater), from the nearest occupied dwelling, commercial building, or publicly used structure or facility, and state and county parks. From public road and aboveground transmission lines, turbines must be located no less than 250 feet from the center line of the existing ROW. And from the wind energy facility perimeter, each turbine must be set back no less than 1.0 to 1.5 times the rotor diameter.

Morton County General Provisions require that MP place electrical line, known as collectors, and communication cable underground when located on private property. Collectors and cable shall also be placed within or adjacent to the land necessary for wind turbine access roads unless otherwise negotiated with the affected landowner (does not apply to feed lines). Overhead collection facilities may be permitted where necessary.

Morton County General Provisions also require that MP shall not place overhead feeder lines on public road or drainage easement rights of way. When placing feeders on private property, MP shall place the feeder in accordance with the easement negotiated with the affected landowner. If MP cannot place overhead feeder lines on private property a request may be made to place them on public rights of way with approval from the governmental unit responsible for the affected right of way. Oliver County has no established setbacks for wind turbine towers. However, the PSC has asked MP for a voluntary setback of 1,500 feet from occupied residences. MP will comply with this voluntary setback in both Morton and Oliver counties. MP will request a Conditional Use Permit from Oliver County and a Special Use Permit from Morton County. Table 4-1 identifies the most conservative setbacks applicable to the Project.

**Table 4-1
Setback distances for Wind Turbines**

Setback Type	ND Public Service Commission	Oliver County	Morton County
Occupied Residence	1,500 feet (voluntary)	N/A	1.25 X the total height of the turbine or 1,320 feet, whichever is greater
Wind Energy Facility Perimeter	N/A	N/A	1 to 1.5 times the rotor diameter of the wind turbine
Road ROW	N/A	N/A	250 feet from the center line of the existing road ROW
Transmission Line	N/A	N/A	250 feet from the center line of the existing road ROW

4.2 Associated Facilities

In addition to the wind turbines and the step-up transformers, the Project will include several miles of permanent access roads that allow for easy access to the wind turbines year-round. These roads will typically be 16 to 23 feet wide and low profile to allow cross-travel by farm equipment and turbine maintenance equipment. MP will work closely with the landowners in locating access roads to minimize land use disruptions. Consideration will be taken in locating access roads to minimize impact on current or future row crop agriculture, grazing, and environmentally sensitive areas.

An Operations and Maintenance (O&M) building will be constructed within the Project site. The Project substation will be located in Section 4 of Township 140N, Range 86W. See Section 6.5.4 for a description of the O&M building.

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

The 34.5/230kV collector substation will increase the voltage in order to facilitate the efficient transmission of the wind-generated energy to the existing Square Butte Substation along a new 230 kV transmission line. The footprint of the Project substation and O&M building will be approximately 6 acres. MP has constructed four temporary meteorological towers on and in the vicinity of the Project site. It is anticipated that the site will include one or more permanent meteorological towers.

4.3 Land Rights

MP has obtained wind rights and easements for a 76 MW project. Land rights will encompass the proposed wind farm and all associated facilities, including but not limited to wind and buffer easements, wind turbines, access, underground collector and feeder lines, overhead transmission lines located on public roads when necessary, and possibly land to mitigate environmental impacts incurred due to development.



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. The site boundary encompasses an area of approximately 9,543 acres. However, the land occupied by the wind farm would be less than one percent of this area, assuming up to 33 turbines and access roads. It is anticipated that the area of direct land use for the turbines and associated facilities would be approximately 47 acres. This would include an estimated 14 miles of 16-to 23-foot-wide access roads for the 2.3-MW turbines. See Section 7.0 for a detailed description of the Project and site impacts. Detailed 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 United States Department of Energy (DOE) wind map for the state of North Dakota indicates that the wind resources within the Project area are Class 5 and Class 6 (Figure 10). MP has reviewed and analyzed meteorological information for the Morton and Oliver county areas and the Project site. This information is described in Section 5.3.

5.3 Wind Characteristics at Project Site

The Project will have annual average winds speeds of 8 mps (equivalent to 17.8 mph) or higher, comparable to wind power class ratings of 5 and 6, indicating an excellent wind resource. These wind speeds support a projection of 45 percent capacity factor for the Siemens turbine that will be used. The location of the Bison I Wind Project combines the strength of a strong wind resource with the proximity to the DC Line to provide lower cost, renewable energy generation to meet customer power needs.

In evaluating these wind resources in Oliver and Morton counties, MP retained WindLogics in 2006 to assist with wind prospecting within 25 miles of Center, North Dakota. This evaluation indicated a high annual capacity factor of 40-45 percent (depending on turbine selection) in the area. Evaluation results then guided the siting and installation of four meteorological towers in this study area. Data produced by the wind measurement equipment on these meteorological towers has been used to further evaluate the siting area. In determining the appropriate location of the turbines, optimum elevation level placement was evaluated to take advantage of strong prevailing north and south winds.





6.0 Engineering and Operational Design Analysis

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

6.1 Bison I Project Layout and Associated Facilities

The Project will consist of an array of wind turbines, transformers, underground electrical collector and communication cables, and access roads. In addition, the Project facilities will include a collector substation, maintenance and operation facility and a 230kV transmission line that will deliver the electricity to the existing Square Butte Substation.

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

The electrical system design and interconnection details will be determined through studies and discussions with MISO. The 34.5 kV electrical collector system will deliver power to the Project 34.5/230 kV collector substation which will transform the energy to facilitate the efficient transmission of the power to the Square Butte Substation via a 230 kV overhead transmission line.

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

6.2 Description of Wind Turbines

6.2.1 Turbine

MP proposes to use the Siemens 2.3-MW turbine (model SWT-2.3-101). Figure 5 illustrates the general components and dimensions of this turbine. The Siemens 2.3 MW turbine begins operation in wind speeds of 4 m/s (8.9 mph) and reaches its rated capacity (2.3 MW) at a wind speed of 12 to 13 m/s (26.8 to 29.0 mph). The turbine is designed to operate in wind speeds of up to 25 m/s (55.9 mph) and can withstand sustained wind speeds greater than 55 m/s (123.0 mph).



The Siemens 2.3 MW turbines 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 2.3 MW turbines 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 MP 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. MP will maintain a database for tracking each wind turbine's operational history.

Other specifications of the turbines include:

- Rotor-blade pitch regulation
- Gearbox with three-stage planetary-helical gear system
- A full-span pitching aerodynamic braking system with hydraulic activation
- Electromechanically driven yaw systems

6.2.2 Rotor

The rotor consists of three blades mounted to a rotor hub. The hub is attached to the nacelle, which houses the gearbox, generator, brake, cooling system, and other electrical and mechanical systems. The turbine design identifies a 101 m (331.3 ft) rotor diameter (RD). The swept area for the 101 m RD would be 8,000 m² (86,111.2 ft²). The rotor speed would be 6 to 16 rpm.

6.2.3 Tower

The towers are conical tubular steel with a hub height of 80 m (262.4 ft). The turbine towers, on which the nacelles are mounted, consist of three to four sections manufactured from certified steel plates. All welds are made in automatically controlled power-welding machines and are ultrasonically inspected during manufacturing per American National Standards Institute (ANSI) specifications. 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. One third to one half of the 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 the base of each turbine a step-up transformer will be installed to raise the voltage to power collection-line voltage of 34.5 kV. Power will run through an underground collection system to the Project 34.5/230 kV collector substation. Typically, the collector system is run adjacent to the Project access roads or along ROWs or easements. A new 230 kV transmission line will exit the Project collector substation and will transmit power 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 Bison I Wind Project will be transmitted to customers via the existing AC transmission system as available, and on the existing Square Butte DC Line which extends from the Square Butte Substation to Minnesota Power's Arrowhead Substation located near Duluth, Minnesota. The interconnection will require modifications to the existing 230 kV bus at the Square Butte Substation. The modifications will include the addition of high voltage switches, circuit breakers, power wiring, foundations and supporting structures, conduit, cable, and control equipment all within the existing fenced enclosure. All utility protection and metering equipment will meet MP and National Electric Safety Code (NESC) standards for parallel operations. The design team will ensure that proper interconnection protection is established. Detailed interconnection information will be supplied to the PSC in MP's application for a Corridor Certificate and Route Permit.

6.4 Bison I Wind Project Construction

Many activities must be completed prior to the proposed commercial production dates. Preconstruction, construction, and postconstruction activities for the Project include:

- Order all necessary wind turbine components including towers, nacelles, hubs and blades
- Complete environmental and archaeological surveys
- Complete preliminary survey and design to establish locations of wind turbine generators, access roadways, collector system, and collector substation
- Complete soil borings, testing, and analysis for proper foundation design and materials
- Finalize turbine micro-siting



- Obtain all required regulatory approvals
- Complete final design and construction of construction compound, access roads, and crane hardstandings to be used for construction and maintenance
- Complete final design and construction of wind turbine generator foundations
- Complete final design and construction of underground electrical collector system and communication system
- Design and construct the Project collector substation
- Design and construct 230 kV transmission line from collector substation to point of interconnection
- Design and construct modifications to existing 230 kV Square Butte Substation to accommodate interconnection
- Design and construct operation and maintenance facility
- Complete tower placement and wind turbine erection
- Complete commissioning and acceptance testing of facility
- Begin commercial production

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-foot 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.

MP will develop an improved crane-traveling surface that will be integral with the access roads. 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 (aggregate surfacing) will likely be 16 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. MP anticipates that ready-mix concrete will be available from existing suppliers in the area.

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

The 34.5/230 kV collector substation will require construction of cast-in-place reinforced-concrete foundations, erection of structural steel supports for electrical bus work and equipment, and installation of transformers, circuit breakers, switches, instrument transformers, and other electrical equipment. The collector substation will be located within a fenced enclosure and will include a prefabricated electrical equipment building equipped with control, protection, and communications panels, and other electrical equipment.

An operation and maintenance facility will be designed and constructed to accommodate personnel and equipment required for ongoing operation and maintenance of the Project. Electrical service for the facility will be provided by the local electrical utility. MP anticipates the need to develop a well to provide potable water for the facility. Wastewater treatment facilities will be provided in accordance with all applicable state and local requirements.

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. MP estimates that there will be 20 to 30 trips per day in the area 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. Figure 7 shows a typical wind turbine construction site.

6.4.1 Construction Management

MP 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
- Underground electrical collector system and communications installation
- Tower assembly and machine erection
- Collector substation construction
- Operation and maintenance facility construction
- 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 MP'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 80 meter (262.4 foot) tubular towers will be connected by anchor bolts 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 thick.

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
- Trenching and installation of underground 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
- Clearing and grading for Project 34.5/230 kV collector substation and O&M building
- Installation of site fencing and security

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 township and 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 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 two phases. The first phase is anticipated to occur in 2010 and will include 17 turbines. The second phase is anticipated to occur in 2011 and will include the remaining 16 turbines. Both phases 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, high voltage collection and feeder system, and the System Control and Data Acquisition (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.

MP has entered 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

MP 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 is 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

MP 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.

Once installed, the Project service and maintenance is carefully planned and divided into the following intervals:

- 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 up all bolts by 100 percent, a full greasing, and filtering of gear oil.
- 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.
- 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.
- Two Year Service Inspection.** The two year service inspection consists of the annual inspection tasks, plus checking and tightening of terminal connectors.
- 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 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:

- Maintenance on the wind turbines and on the mechanical, electrical power, and communications system



- Performance of all routine inspections
- Maintenance of all oil levels and changing oil filters
- 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.
- Maintenance and operation of Project substation
- 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

MP has entered 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

The O&M facility will be located near the Project substation. Typically, buildings used for this purpose are 5,000 square feet, and house all the necessary equipment to operate and maintain the Project.

6.6 Decommissioning and Restoration

MP 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 cables to a depth of twenty-four inches(60.96 centimeters)



- Removal of foundations, buildings, and ancillary equipment to a depth of 3 feet
- 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 reseeded 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.

MP 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.

MP will set aside decommissioning funds consistent with its obligations as a Minnesota public utility under Minn. Stat. § 216B.11, and Minn. Rules 7825.0600 and 7825.0700, to assure that MP will meet any decommissioning obligations. MP 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.

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. Wheat is the predominant crop in Morton and Oliver counties (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 641 to 719 meters (2,103 to 2,359 feet) above sea level.

7.2 Demographics

7.2.1 Description of Resources

The Project is located within a lightly populated rural area in south-central North Dakota. There is no indication of any new residential construction on the site. Information on demographics and housing for this section was taken from the 2000 U.S. Census.

The population of Morton County is 25,303. The population of Oliver County is 2,065. Table 7.2-1 summarizes the population and economic characteristics within the Project area. The data for the townships is at the Census Tract level, which includes data from surrounding townships and accounts for the ranges given.

According to the 2000 U.S. Census, the largest industry employing residents of Oliver County is Agriculture, with the second largest industry being Educational, Health, and Social Services. The largest industry employing residents of Morton County is Educational, Health, and Social Services, while the second largest industry is Retail Trade.



**Table 7.2-1
Population and Economic Characteristics**

Location	Population	Per Capita Income (dollars)	Percentage of Persons Below Poverty Level
Oliver County	2,065	16,271	14.9
T141N R86W	889-2,258	15,840-18,893	14-22
T141N R85W	889-2,258	15,840-18,893	14-22
Morton County	25,303	17,202	9.6
T140N R86W	3,580-5,638	10,802-15,839	8-13

7.2.2 Impacts

Short-term impacts to socioeconomic resources will be relatively minor. Up to 41 acres of agricultural land will be removed from production due to conversion to turbine sites and associated access roads. 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 and often declining 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 Morton and Oliver 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 MP 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 Center or New Salem. Operation and maintenance of the facility will require few laborers; sufficient permanent housing is available within the county 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 south-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

The Project would be located in northern Morton County and southern Oliver County, approximately 8 miles northwest of the City of New Salem. MP proposes to install approximately 76 MW of wind power, consisting of 33 2.3-MW wind turbines within the 9,543 acre (14.9 square miles) Project site. Land use within the Project site is rural/agricultural, used primarily for cultivated crops and grazing cattle.

The Project site is not within the New Salem or Center city limits or within an area of military installation. The development of the Bison I Wind Project will not displace any residences or existing or planned industrial facilities. Wind turbines will be sited a minimum of 1,500 feet from occupied residences.

Based on a review of aerial photographs, land use database information, database information, and visits to the Project site, it was determined that the majority of the land area at the site is agricultural. Table 7.3-1 identifies current land use based on the National Land Cover Dataset. Almost 90 percent of the Project site is used for cultivation and grazing purposes. Fifty-one percent of the site is cropland and hay land. Native grasslands form 45 percent of the site and are primarily used for grazing livestock. The native grasslands include remnant native prairie of various quality dependent on grazing pressure and herbicide applications to control weed species. Approximately one percent of the site is wetland, lake, open water, or riparian area.



Table 7.3-1

Major Habitats and Their Relative Abundance in the Project Site

Habitat	Acreage	Percent of Project Site
Barren Land (Rock/Sand/Clay)	14	0.1%
Cultivated Crops	4,200	44.0%
Deciduous Forest	16	0.2%
Developed, Low Intensity	7	0.07%
Developed, Open Space	207	2.0%
Emergent Herbaceous Wetland	32	0.3%
Grassland/Herbaceous	4,321	45.0%
Open Water	31	0.3%
Pasture/Hay	652	7.0%
Shrub/Scrub	11	0.1%
Woody Wetlands	56	0.6%

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 sense and remote characteristics. Wind turbines would be sited a minimum of 1,500 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 easily be crossed by farming equipment. MP will work closely with the landowners in locating access roads to minimize land use disruptions to the extent possible. Consideration 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 area may be temporarily disturbed for contractor staging and underground 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 76 MW facility at the site would result in a conversion of approximately 2 acres of land for the turbines and up to 39 acres for access roads. The Project facilities will also include an O&M facility, Project substation, and transmission line. These areas will be permanently converted from agricultural land use into wind facilities. Approximately 6 acres will be converted for the O&M facility and Project substation. Impacts from the transmission line will be addressed in a future application. Approximately 8 acres of land will be temporarily impacted for contractor staging and lay down areas.

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.

7.3.3 Mitigative Measures

MP 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.

7.4 Public Services

7.4.1 Description of Resources

Local Services

The Project is located in a lightly populated, rural area in south-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 New Salem. The city has recreational facilities such as a golf course, camping facilities, pool, ball fields and parks, an elementary and high school, and museums (New Salem 2009). Additionally, the city's local services include a volunteer ambulance and fire service and a police department (New Salem 2009). There are also several local civic organizations and retail service facilities and institutions.

Electrical Service

One gas and four electric utility corridors run in the vicinity of the Project site (see Figure 1). No utility corridors exist within the Project site.

Roads

County and township (section line) roads characterize the existing roadway infrastructure in and around the Project site. State Highway 31 runs just east of the Project site. Interstate 94 runs approximately 5 miles south of the Project's southern boundary.



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

Comsearch (2008) completed a microwave telecommunication study to assess the presence of microwave beam paths in the Project area. No federal or private microwave beam paths are found within the boundary of the Bison I Wind Project.

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 local provider when the Project is not generating electricity.

Roads

Constructing the Project will require approximately 14 miles of 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 and for access to the O&M facility and Project substation. 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 is expected to generate approximately 20 to 30 additional vehicle trips per day. 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 to 30 vehicle trips 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, State Highway 31 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. The Project will require a single well for the O&M facility.

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. No microwave telecom system impacts are anticipated from the Project since no beam paths are present in the turbine siting area. Land mobile telecom system impacts are not anticipated.

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

With the addition of substation and transmission capacity, no impact to local services is anticipated, and no mitigation is required.

Electrical Service

MP will purchase station service from a local electrical utility. MISO will suggest appropriate configurations for the electrical system, and MP will abide by the recommendations to prevent impacts to the transmission system. Morton County has an established setback of 250 feet from existing transmission lines. No additional mitigation is necessary.



Roads

MP 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, MP 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 seven airports within 25 miles of the Project site. See Table 7.5–1 for a description of their locations, elevations, and runway information (FAA 5010 2009).

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

Airport Name	ND City	ND County	Distance ^a	Runway Information ^b	Runway Elevation (feet) ^c
Beulah	Beulah	Mercer	21.1	Asphalt	1791
Glen Ullin Regional	Glen Ullin	Morton	15.5	Asphalt	2089
Fitterer's Strip	Glen Ullin	Morton	12.9		2180
Sakakawea Medical Center (Heliport)	Hazen	Mercer	20.2		1756
Mercer County Regional	Hazen	Mercer	19.3	Asphalt	1813
Chase Airstrip	Hebron	Morton	20.7		2140
Z.P. Field	Mandan	Morton	22.0		1840

^a Distance in miles from the nearest portion of the Bison I Wind Project boundary.

^b Runway surface type and condition.

^c 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 (MSL).

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 and collector lines will be no closer than 1,500 feet from occupied residences where EMF will be at background levels.

Hazardous Materials/Hazardous Waste

The site is located in a relatively rural area of south-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 was reviewed for a preliminary evaluation of the potential impacts of obstructions on Air Defense and Homeland Security radars (Long Range Radars), Weather Surveillance Radar-1998 Doppler radars (NEXRAD), and military operations. According to the DoD Preliminary Screening Tool, there are likely anticipated impacts related to Long Range or NEXRAD radars associated with the Project. An aeronautical study would be required and National Telecommunications and Information Administration notification is advised by the FAA. A preliminary review of the Project via the DoD Preliminary Screening Tool for military operations indicates the Project does not have any likely impacts to military airspace.

Electromagnetic Fields

While the general consensus is that electric fields pose no risk to humans, the question of whether exposure to magnetic fields can potentially cause biological responses or even health effects continues to be the subject of research and debate. Based on the most current research on electromagnetic fields, and the distance between any turbines or collector lines and houses, the Project will have no impact to public health and safety due to EMF.

Hazardous Materials/Hazardous Waste

The Phase I ESA will be used to minimize risk associated with potential RECs, as defined by the American Society for Testing and Materials (ASTM) standard that may pose a threat to human health and safety. Significant findings are not anticipated due to the known historic uses of the property.

Security

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

7.5.3 Mitigative Measures

Air Traffic

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

Electromagnetic Fields

MP 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 (White Paper 36).

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 Morton County) and 1,500 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 pad-mounted transformer. Access to towers is only through a solid steel door that will be locked when not in use.
- Where necessary or requested by landowners, MP will construct gates or fences such as those around the Project substation.



7.6 Noise

7.6.1 Description of Resources

The Project would be located approximately 8 miles northwest of New Salem, North Dakota, and would span two counties, northern Morton County and southern Oliver County. MP proposes to install approximately 76 MW of wind power, consisting of 33 2.3-MW wind turbines within the 14.9 square mile (9,543 acres) Project site. There are approximately 30 noise-sensitive land uses (residences) within 1 mile of the Project site.

7.6.2 Impacts

When in motion, wind turbines emit a perceptible sound. Sound is generated from 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 meters per second at the turbine hub.

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

Wind turbine noise emissions data were provided by Siemens, the turbine manufacturer. 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 m/s.

There is no single controlling environmental noise regulation or guideline body pertaining to the Project. For informational purposes MP has chosen a benchmark noise level of 50 dBA as the criteria for the noise evaluation.

The minimum single turbine setback distance calculated where an exceedence of the 50 dBA benchmark would no longer occur is 230 meters (755 feet) for the 2.3 MW turbine (Figure 11, Predicted Noise Levels for 2.3 MW Wind Turbine (dBA)). 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 a mixture of open plains and rolling fields broken by large hills and shallow drainages. Elevations range between 641 and 719 feet above sea level. A topographic map of the Project site is shown in Figure 3.

Within the Project site the dominant land use is pasture. The most widely grown crops in the Project area are wheat, corn, and sunflowers. Wetland areas are dominated by cattails, sedges, and reed canary grass. 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 box elder, bur oak, and cottonwood.

The site is located in the Sweet Briar Creek watershed which empties into the Heart River. Most of the site consists of isolated basins associated with wetlands or lakes. Figure 12 illustrates the typical landscape in the site.

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, 80 meters (262 feet) high at hub height, intruding on the natural aesthetic value of the landscape. Figures 13a and 13b illustrate photo simulation of what a view of the Project would look like viewing north/northwest from the intersection of Interstate 94 and State Highway 31, two potentially common vantage points. Given the distance to the turbines from these locations and the site topography, turbines associated with the Bison I Wind 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 State Highway 31, and east and west along County Road 140. 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 only 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 per U.S. Fish and Wildlife Service (USFWS) and Natural Resource Conservation Service (NRCS) recommendations 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

MP contacted the North Dakota State Historic Preservation Office (SHPO) in April 2009 to request a review of potential Project-related impacts on known or suspected cultural resources (Appendix B).

MP has reviewed cultural resources information on file at the SHPO for the Project study area. The Project study area is defined as the Project site, plus a 1 mile surrounding buffer area. MP has prepared a Class I Cultural Resources Inventory (Appendix B) based on the information gathered for the study area. A review of five previous cultural resources studies and eight cultural resource recordation forms at the SHPO identified four previously recorded archaeological resources and four archaeological site leads within the Project study area (Table 7.8).

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

County	Site Number	Site Type	Location			NRHP Status
			T	R	S	
Oliver	32OL373	Lithic scatter	141	85	34	Not evaluated
Morton	32MOX478	Lithic debitage/isolate	140	85	5	Not eligible
Morton	32MOX477	Lithic debitage /isolate	140	85	4	Not eligible
Morton	32MO314	Cultural material scatter/lithic scatter	140	86	8	Not eligible
Morton	32MO315	Stone circles/rock cairn	140	86	6	Not evaluated
Morton	32MO316	Rock cairn	140	86	6	Not evaluated
Morton	32MOX128	Bluegrass Post Office	140	86	18	Not eligible
Morton	32MOX376	Lithic debitage/isolate	140	86	18	Not eligible

MP will continue to consult with the SHPO in anticipation of the Class III inventory. MP plans to conduct archeological field investigations of the proposed impact areas throughout the Project study area. These investigations will be conducted by a professional archeologist permitted by the State of North Dakota per NDCC 55-03-01.

7.8.2 Impacts

The total number of turbines and turbine placement will determine the potential impacts to cultural resources. Regardless of turbine numbers, the placement of turbines in moderate to high potential areas may increase the chance of impacts to cultural resources.

MP does not anticipate adverse impacts to previously identified archaeological resources as a result of the Project. MP will avoid known archaeological resources and any resources identified during the Class III field inventory to the best of their ability.

7.8.3 Mitigative Measures

MP will avoid impacts to identified archaeological resources to the best of their ability. In the event that an impact would occur, MP 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.

MP will develop and put in place an unanticipated discovery plan before construction in the Project site begins. The plan will detail how to deal with previously unknown archaeological resources or human remains should they be encountered during construction. The plan would outline the framework for handling such discoveries in an efficient and legally compliant



manner. The discovery plan may include the following topics: construction contractor training, identification of resources in the field, contact information for MP-designated professionals to address a discovery, procedures for avoidance, and associated tasks in the event of work stoppage in a construction area. With regard to a discovery of human remains, procedures would be followed to ensure that the appropriate authorities would become involved quickly and in accordance with local and state guidelines.

7.9 Recreational Resources

7.9.1 Description of Resources

Recreational opportunities in Morton and Oliver 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 Project site. The Storm Creek WMA is located approximately 3 miles southwest of the Project site (Figure 9). WMAs within 20 miles of the Project include the Sweetbriar Lake WMA, Crown Butte WMA, and Wilbur Boldt WMA.

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., roadways, feeder lines, substations, 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 site is cultivated farmland, pasture, and grasslands as shown in Figure 14. Cultivated land comprises approximately 44 percent of the Project site. Native grasslands comprise approximately 45 percent of the land. Almost 90 percent of the land in the Project site is used for agricultural purposes.

According to the 2007 Census of Agriculture, Oliver County is ranked 46th overall in agricultural products sold in North Dakota, and Morton County is ranked 22nd. Combined, Morton and Oliver counties contain 1,109 farms (273 in Oliver County and 836 in Morton 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 nine percent in Morton County and decreased six percent in Oliver County. The market value of production in Oliver County in 2007 was approximately \$53,389,000. Crop sales account for approximately 46 percent of the total value. The market value of production in Morton County in 2007 was approximately \$117,251,000. Crop sales account for approximately 52 percent of the total value.

Crops are a large percentage of the counties' market value so prime farmland is important in production. 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. Figure 15 illustrates the prime farmland soil distribution in the Project site.



**Table 7.10-1
Prime Farmlands Oliver and Morton Counties**

Soil Unit	All Areas are Prime Farmland	Soil of Statewide/ Local Importance	Prime Farmland Only When Drained
Arnegard loam, 0-6% Slopes	X		
Bowbells loam, 0-3% Slopes	X		
Grail silt loam, 0-6% Slopes	X		
Grail silty clay loam, 0-6% Slopes	X		
Amor-Arnegard loams, 0-3% Slopes		Statewide	
Amor-Shambo loams, 3-6% Slopes		Statewide	
Belfield-Grail silty clay loams, 0-2% Slopes		Statewide	
Belfield-Morton silt loams, 0-9% Slopes		Statewide	
Belfield-Straw loams, 0-2% Slopes		Statewide	
Farland silt loam, 0-6% Slopes		Statewide	
Grail-Belfield silty clay loams, 2-6% Slopes		Statewide	
Lawther silty clay, 0-6% Slopes		Statewide	
Morton-Cabba silt loams, 3-9% Slopes		Statewide	
Morton-Farland silt loams, 3-6% Slopes		Statewide	
Morton silt loam, 0-9% Slopes		Statewide	
Parshall fine sandy loam, 0-6% Slopes		Statewide	
Reeder-Farnuf loams, 3-6% Slopes		Statewide	
Regent-Savage silty clay loams, 3-9% Slopes		Statewide	
Regent silty clay loam, 0-9% Slopes		Statewide	
Savage silty clay loam, 0-6%		Statewide	
Sen and Amor loams, 3-9% Slopes		Statewide	
Sen-Chamba silt loams, 3-6% Slopes		Statewide	
Shambo loam, 2-6% Slopes		Statewide	
Stady loam, 0-2% Slopes		Statewide	
Tally-Parshall fine sandy loams, 0-6% Slopes		Statewide	
Vebar-Parshall fine sandy loams, 0-6% Slopes		Statewide	
Wanagan loam, 0-2% Slopes		Statewide	
Williams loam, 0-9% Slopes		Statewide	
Williams-Reeder loams, 3-6% Slopes		Statewide	
Tonka and Parnell silt loams, 0-1% Slopes			X

There are eight family homes within the Project site. These homes are identified on Figure 2 and Figure 3.

According to the North Dakota State Water Commission Water Permit Retrieval System, there is one property with an irrigation permit within the townships affected by the Project, located in Township 141N, Range 85W (NDSWC 2008). The State Water Commission only identifies permits at the township level. The irrigation permit may or may not be located within the Project site.

Woodlands

Economically important forestry resources are not found in the Project site. Woodlands are primarily associated with homes in the form of woodlots and windbreaks within the Project site. Woodlands within the Project site are depicted in Figure 4 and Figure 14.

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.

Actual impacts to agriculture production will be determined once turbine and road locations are finalized. Each turbine will impact approximately 0.06 acres of land. Approximately 2 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 39 acres, which is based on the worst case scenario that all access roads are 23-foot-wide. Approximately 8 acres of land will be temporarily impacted for contractor staging and lay-down areas. It is possible that some of this land is not currently used for agricultural purposes, thus the actual impacts to agriculture production cannot be determined until turbine and road locations are finalized.

Approximately 33 percent of the site is prime farmland soils, most of it located in the southeast and northern portions of the site (Figure 15). The final layout will site only a limited number of turbines and facilities in prime farmlands.

Even if all the turbines and access roads were placed within prime farmland areas, only approximately 41 acres of prime farmland would be impacted, or approximately one percent of prime farmland in the Project site. Using the scenario with all turbines and access roads located in prime farmland, the one percent impact to the site acreage would be a small percentage of prime farmlands in the counties and would be a negligible impact to agricultural production. When considering the impact on production for the top five crops in Morton and Oliver counties, if all the turbines and access roads impacted prime farmland, the total area would affect less than 0.1 percent of the yearly production for those commodities (based on yields reported in



2007). As noted earlier, wind lease payments will provide farmers with a supplemental source of income, thus helping to support the continuation of farming in Morton and Oliver counties.

No turbines will be placed within 1,500 feet of family homes. Family farms will be impacted due to the loss of land associated with the construction of the turbines and access roads. The extent of the impact will not be known until final turbine locations are determined in conjunction with the landowner.

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.

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. MP 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.

7.11 Soils

7.11.1 Description of Resources

The soils in the Project site are largely composed of two soil associations; Regent-Savage-Cabba (ND129) and Amor-Daglum-Regent (ND130). A small lobe of the Williams-Sen-Cabba (ND078) association is found along the northern edge of the site. All three associations are within the Rolling Soft Shale Plain Major Land Resource Area (MLRA). The soil associations are mapped in Figure 16.

The Regent-Savage-Cabba association makes up approximately 66 percent of the soils in Morton and Oliver counties. These soils were formed from clayey residuum and alluvium derived from sedimentary rock, such as shale. A typical profile includes silty clay and/or silty clay loam. Available water capacity is moderate to high.

The Amor-Daglum-Regent association makes up approximately 33 percent of the soils in Morton and Oliver counties. These soils were formed from loamy residuum weathered from mudstone or clayey alluvium. A typical profile includes loam and/or silt loam, clay, or clay loam. Available water capacity is very low to low.

The Williams-Sen-Cabba association makes up approximately one percent of the soils in Morton and Oliver counties. These soils were formed from fine-loamy till and/or fine-silty residuum weathered from siltstone. A typical profile includes loam and silt loam or clay loam. Available water capacity is moderate to high.

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. In isolated cases, grading may be required for roadway construction. Exact impact acreages will not be known until turbine siting is finalized, but expected impacts will be approximately 1 acre per turbine for access roads and turbine foundations. The total impact for 33 turbines and access roads is expected to be approximately 41 acres. Approximately 8 acres of land will be temporarily impacted for contractor staging and lay-down areas. 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 (SN 19389 9/99) 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

Morton County sits atop sedimentary rocks from the Cambrian period through the Quaternary Period. The surficial deposits of the county are from the Fox Hills, Golden Valley, Hell Creek,



Cannonball, Sentinel Butte, and Ludlow Formations (Morton 2000). Most soils in Morton County formed on these upper Cretaceous and Tertiary formations, consisting of consolidated sand, silt, and clay. Other soils formed atop glacial till and alluvium deposited after the region was glaciated (Morton 2000). Lignite coal beds are present in western Morton County but are no longer considered economically viable (Morton 2000). Gravel for road building is also a mineral resource present in the County.

Oliver County has glacially modified topography with thin layers of glacial drift. Underlying the glacial drift is soft, calcareous shales, siltstones, and sandstones (Critical Issues Analysis 2008).

Groundwater resources in the vicinity of the Project site are generally derived from the Fox Hills Aquifer. The State Water Commission database identified two domestic wells (154 ft and 140 ft), one observation well (440 ft), and eight unknown well types within the Project boundary.

Domestic groundwater supply appears to be fairly accessible in the Project site and is dependent on the relative occurrences of sand and gravel aquifers at any given area.

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 1,500 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, MP 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 site were identified by reviewing U.S. Geological Survey topographic maps, Flood Insurance Rate Maps (FIRM) produced by the Federal Emergency Management Agency (FEMA), and USFWS National Wetlands Inventory (NWI) data. The major surface waters located within the site include wetlands (discussed in detail in Section 7.14), and several intermittent streams. These water resources are shown in Figure 17.

The Project site lies within the Sweet Briar Creek subbasin of the Heart River basin, which is part of the Missouri River watershed. Intermittent streams drain primarily to the west and south. The topography of the site includes a number of isolated palustrine wetlands and floodplains.

Review of FEMA floodplain maps indicates that the site and its surroundings are not within the 100-year or 500-year floodplain. However, many areas in both counties are designated as areas of undetermined, but possible, flood hazards. Some of these areas are located within the Project site.

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.

The Project will not impact floodplain areas.

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 MP 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

Wetlands near 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 emergent basins (see Table 7.14-1). No riverine or floodplain wetlands were found on the site.

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 and lacustrine systems. See the NWI Map in Figure 17 for locations of wetlands.

**Table 7.14-1
NWI Wetland Types and Acreages**

Wetland Acreages (by type)		
Cowardin Classification	Count	Acres¹
Palustrine Aquatic Bed Semipermanently Flooded – Impounded (PABFh)	31	44
Palustrine Emergent Temporarily Flooded (PEMA)	4	16.5
Palustrine Emergent Temporarily Flooded – Impounded (PEMAh)	1	0.4
Palustrine Emergent Seasonally Flooded (PEMC)	10	12.5
Palustrine Emergent Seasonally Flooded – Impounded (PEMCh)	13	3.2
Palustrine Emergent Seasonally Flooded – Excavated (PEMCx)	2	0.2
Palustrine Emergent Semipermanently Flooded – Impounded (PEMFh)	2	1.5
Palustrine Unconsolidated Bottom Semipermanently Flooded – Excavated (PUBFx)	8	2

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 delineation using USACE standard methodology will be completed prior to construction (currently scheduled to be conducted in May-June 2009).

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 and 401 permit application will be submitted to USACE and State of North Dakota, respectively. 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.

MP 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 blocks (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 at the site is agricultural land use. Table 7.3-1 in Section 7.3 identifies current land use in the Project site based on the USFWS database. Fifty-one percent of the land use at this agricultural site is cropland and hay land. The percentage of the Project site enrolled in the Conservation Reserve Program (CRP) is not known at this time. 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.

Native grasslands are 45 percent of the site and are primarily used for grazing livestock. The native grasslands include remnant native prairie of wide-ranging quality, dependent on grazing pressure and herbicide applications to control weed species. Approximately one percent of the site is wetland, lake, open water, or riparian area.

The principal crop in Morton and Oliver counties is wheat. Other crops include corn, oats, barley, sunflowers, 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. 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. Additional information on agriculture and farming can be found in Section 7.10.

The National Land Cover Dataset indicates 72 acres of forested or woody vegetation in 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 bur oak, cottonwood, aspen, green ash, box elder, and American elm.

There are no state or federal grasslands within the Project site.

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 approximately 2 acres of the Project site will be used for the turbines. Up to 39 acres will be used for access roads for the turbines. The footprints of the O&M building and substation will require approximately 6 acres of land. The vegetation will be permanently removed and replaced by wind turbines, access roads, transformers, an O&M facility, substation, and transmission lines. During the construction of the wind power facilities, additional area may be temporarily disturbed for contractor staging areas and underground power lines. Approximately 8 acres of land will be temporarily impacted for contractor staging and lay down areas. Temporarily disturbed areas will be reseeded per NRCS recommendations to blend with existing vegetation. No impacts are anticipated to woodlands, shrubs, or wetland areas.

7.15.3 Mitigative Measures

MP will work closely with the USFWS during micro-siting to minimize impacts to vegetation within the Project site. MP 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. MP 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 and 401 permit application will be submitted to USACE and State of North Dakota, respectively. Permanent impacts to jurisdictional wetlands and waters will be mitigated according to USACE requirements.

MP 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

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 North Dakota Game and Fish Department (GFD), North Dakota Parks and Recreation Department (NDPRD), and USFWS. Western EcoSystems Technology, Inc (WEST) conducted an evaluation of biological and avian resources in the Project wind resource area (Appendix B).

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.

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. MP has conducted, and will conduct, environmental studies of this potential site to aid in detailed placement of turbines, roads, and associated facilities to avoid or minimize impacts to wildlife and habitat. In the course of doing good business, MP implements many of the policies proposed by the American Bird Conservancy and other organizations for siting wind facilities.

WEST identified that 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 will 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.

This site is similar in land use and topography to the Buffalo Ridge area in southwestern Minnesota, where there was one documented raptor fatality (red-tailed hawk) during four years of searching 354 turbines. The Project site has similar general habitat and species composition compared to other wind farms and it is anticipated that bird fatality rates documented at other locations would be similar at the proposed Project site. Studies outside of California have identified an average of 1.83 fatalities/turbine/year for all birds (0.006 are raptors). Studies at Buffalo Ridge in Minnesota estimated 0.98 fatalities/turbine/year. Potential indirect impacts to breeding birds due to displacement are possible in the vicinity of the turbines.

Deciduous trees and buildings in the area provide potential roosting habitat and hibernacula for bats. Research to-date on the impacts of wind-energy facilities on bats has shown that species that conduct long distance migrations usually make up the vast majority of bat fatalities at wind-energy facilities. Additionally, the timing of bat fatalities at wind-energy facilities indicates that most bats are killed by turbines during the migration season. Few bat fatalities have been recorded at wind-energy facilities during spring or summer, although bat use at wind-energy facilities has been recorded during those seasons. Reported estimates of bat mortality at wind farms through 2001 ranged from 0.07 to 10 bats/turbine/year. Bat fatality rates in the Upper Midwest are estimated at 1.7 bats/turbine/year or 2.7 bats/MW/year (NWCC 2004). Migrating bats appear to be at much higher risk of collision than resident bat species that may breed near wind-energy facilities. Maximizing distances from open water and wetlands should decrease the potential impacts to bats.



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:

- MP contracted WEST to characterize the biological resources found in the Project area, including and assessment of threatened and endangered species, birds, and bats. This report is attached in Appendix B.
- MP is coordinating with USFWS regarding avian monitoring. MP is also coordinating with the GFD to minimize impacts.
- MP will conduct preconstruction inventories of wetlands, native prairies, and woodlands in the vicinity of proposed turbines, access roads, and associated facilities to minimize impacts at the site. Detailed inventories will occur once turbine siting is completed to assess the construction zone. These inventory reports will be filed with the PSC prior to Project construction.
- MP will prepare and implement an Avian and Bat Protection Plan during construction and operation of the Project.
- MP will conduct post-construction bird and bat fatality monitoring.
- MP will construct wind turbines using tubular monopole towers and turbines will be lit according to FAA requirements.
- MP proposes to place the electrical collection system from the turbines to the Project substation underground, if site conditions are favorable.
- MP will avoid or minimize disturbance of individual wetlands or drainage systems during construction and operation of the Project.
- MP will protect existing trees and shrubs where practicable. If impacts are unavoidable, MP will replace existing trees and shrubs at a 2:1 ratio at the site and will monitor plantings for three years.
- MP 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.

- MP will revegetate non-cropland and pasture areas with seeding mix as recommended by USFWS and NRCS.
- MP 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.

MP is committed to minimizing wildlife impacts within the Project site. MP will design their facility to minimize avian impacts by avoiding high use wildlife habitat, using tubular towers to minimize perching, placing electrical collection lines underground and minimizing infrastructure. MP 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, GFD, and NDPRD were contacted to review the Project site for threatened and endangered species and unique habitats. These agencies have not yet responded to inquiries sent on April 7, 2009 regarding rare and unique natural resources within the Project site (Appendix C).

No federally-listed endangered, threatened, or candidate plant species are known to occur in the Project site. The USFWS identifies seven federally-listed threatened and endangered wildlife species for Morton and Oliver counties (USFWS 2008) (see Table 7.17-1). Of these seven, the whooping crane and Dakota skipper have the highest potential, however remote, of occurring in the Project site. Habitat for the other species is either completely lacking or is extremely limited in the Project site. Potential use of the Project site by these federal species of concern is more completely reviewed in the attached biological resources Site Characterization Study (Appendix B).



**Table 7.17-1
Federally-Listed Threatened and Endangered Species**

Species	County	Status
Black-footed Ferret (<i>Mustela nigripes</i>)	Morton, Oliver	Endangered
Dakota Skipper (<i>Hesperia dacotae</i>)	Oliver	Candidate
Gray Wolf (<i>Canis lupus</i>)	Morton, Oliver	Endangered
Interior Least Tern (<i>Sternula antillarum</i>)	Morton, Oliver	Endangered
Pallid Sturgeon (<i>Scaphirhynchus albus</i>)	Morton, Oliver	Endangered
Piping Plover (<i>Charadrius melodus</i>)	Morton, Oliver	Threatened
Whooping Crane (<i>Grus americana</i>)	Morton, Oliver	Endangered

Potential direct impacts to the Dakota skipper can be minimized or reduced by avoiding specific types of native grasslands and areas occupied by the species. Potential direct impact to whooping cranes (i.e., mortality) is not likely given the current information provided in the Site Characterization Study.

The State of North Dakota maintains a list of 100 species of conservation concern. Several of these species have been documented near the Project area during Breeding Bird Surveys conducted by the USGS as well as another wind facility study adjacent to the BIWRA. 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. At the time of this filing, the NDPRD has yet to respond to an April 7, 2009 letter regarding rare and unique natural resources within the Project site (Appendix C).

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. MP 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	Approximately 39 acres of land will be permanently impacted for access roads and 2 acres of land for the turbines. An additional 6 acres of land will be required for the O&M facility and substation. Approximately 8 acres of land will be temporarily impacted for contractor staging and lay down areas.	MP will work with landowners and regulatory agencies to minimize impacts of the Project.
Public Services	No impacts are anticipated.	MP 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. MP 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.	MP will locate turbines at least 1,500 feet from occupied residences.
Visual	Visual impacts will occur. The impacts are based on a subjective human response.	MP 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.	MP has completed a Class I Cultural Resources Inventory for the Project. MP will conduct a Class III inventory of construction areas as needed. MP will avoid any resources identified to best of their ability throughout the life of the Project. If avoidance is not possible, MP will work with the North 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 41 acres of land will be impacted for the access roads and 33 turbines. Associated facilities will impact approximately 6 acres of land. Approximately 8 acres of land will be temporarily impacted for contractor staging and lay down areas. Almost 90 percent of the site is agricultural land.	MP will work with landowners to minimize impacts to their land.
Soils	Approximately 41 acres of land will be impacted for the turbines and access roads. Approximately 6 acres of land will be impacted by the 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.



Resource	Impact	Mitigation
	Approximately 8 acres of land will be temporarily impacted for contractor staging and lay-down areas. Impacts will be limited to land needed for the turbine foundations, access roads, and associated facilities.	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. MP will implement BMPs to minimize erosion and sedimentation at the site.
Wetlands	No impacts are anticipated.	If impacts cannot be avoided once micro-siting is complete, MP will work with the USFWS, USACE, and the State of North Dakota to obtain permits and create required mitigation.
Vegetation	Approximately 41 acres of land will be permanently impacted for the turbines and access roads. Six acres of vegetation will be permanently impacted by the O&M facility and substation. Approximately 8 acres of land will be temporarily impacted for contractor staging and lay-down areas.	MP will work with the USFWS to minimize impacts. MP will avoid existing trees and shrubs as practicable. MP will use BMPs during construction and operation to minimize impacts. If impacts to trees or shrubs cannot be avoided, the individual trees or shrubs 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.
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 MP to provide wind rights for the Project. MP has provided Project updates to the landowners and will continue to do so as the Project moves forward. In addition, MP hosted a landowner meeting to provide an update and to answer questions on the Project on April 14, 2009.

MP has also met with Morton and Oliver counties' commissioners representing the Project site and staff to inform them of the Project, discuss local permits, and answer questions. MP representatives have discussed this Project with county planning officials in anticipation of submitting special use permit applications for the Project.

MP has met with Morton and Oliver counties' area state legislators to inform them of the Project. In addition, MP has been working with key state and federal agencies including the North Dakota Game and Fish Department and the U.S. Fish and Wildlife Service 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 April 7, 2009 to the following agencies and Project stakeholders:

- North Dakota Attorney General
- Governor of North Dakota
- North Dakota Aeronautics Commission
- North Dakota Association of Telecommunication Cooperatives
- North Dakota Department of Transportation
- North Dakota Game and Fish Department
- 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
- North Dakota Geological Survey
- North Dakota Indian Affairs Commission
- North Dakota Job Service
- North Dakota Office of Management and Budget
- North Dakota Parks and Recreation Department
- North Dakota State Land Department
- North Dakota State Soil Conservation Commission



- North Dakota State Water Commission
- State Historical Society of North Dakota
- U.S. Fish and Wildlife Service
- US Army Corps of Engineers
- Morton County Highway Department
- Morton County Soil and water Conservation District
- Morton County Planning & Development Department
- Oliver County Highway Department
- Oliver County Soil and Water Conservation District
- Oliver County Planning & Development Department

MP is committed to keeping key stakeholders engaged in the Project as it moves forward. MP expects to participate in several additional landowner, agency, or other stakeholder meetings 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. A Waiver of Procedures and Time Schedules, Certificate of Corridor Compatibility, and Route Permit will be obtained prior to construction of the proposed 230 kV transmission line.

**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 required for filling 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 minor 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 Services Commission	Certificate of Site Compatibility	Subject of this Application	Required for construction of generation facility over 100 MW in size. MP is voluntarily waiving the over 100 MW requirement for the 76-MW Bison I Wind Project due to anticipated future wind projects in North Dakota.
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.
North Dakota Department of Health – Lake Region District Health Unit	Septic Tank and Drainfield Permit	Will apply once Certificate is received	Required for installation of septic system at O&M facility.
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			
Oliver County	Conditional Use Permit	Will apply once Certificate is received	Permit required for Project construction.
Morton County	Special Use Permit and Unified Development Application	Will apply once Certificate is received	Permit required for Project construction.
	Building Permit	Will apply once Certificate is received	Permit required for Project construction.
	Transportation Permit	Will apply once Certificate is received	Permit required for Project construction.
	Utility Occupancy Form	Will apply once Certificate is received	Permit required for Project construction in highway ROW.

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

MP 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. The preliminary turbine and access road layout is expected to permanently impact approximately 41 acres of land. The O&M facility and Project substation will impact approximately 6 acres. An additional 8 acres will be temporarily impacted during construction.

10.5 Alternatives to the Proposed Site

MP believes that the proposed site is the most viable alternative. MP 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 up to 41 acres of agricultural land being removed from production due to conversion to turbine sites, associated access roads, and associated facilities. 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 Morton and Oliver 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 the MP 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

MP has reviewed cultural resources information on file at the SHPO for the study area and prepared a Class I Cultural Resources Inventory (Appendix B). A review of five previous cultural resources studies and eight cultural resource recordation forms at the SHPO identified four previously recorded archaeological resources and four archaeological site leads within, or within 1 mile of, the Project study area. Currently, no impacts are anticipated to known cultural resources on the site. MP 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, MP will work with the North Dakota SHPO to appropriately mitigate potential impacts.

There may be impacts to paleontological resources because the Project study area is located in the Sentinel Butte, Bullion Creek, Cannonball, Ludlow, and Slope Formations.

10.10 Effect of Site on Biological Resources

MP 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. These comments apply to the proposed Bison I Wind Project. Other comments will be received in regard to the transmission line corridor, and those comments will be summarized in the Transmission Line Application, which will be filed with the PSC following this application.

10.11.1 North Dakota Game and Fish Department

MP has not yet received a letter regarding this Project from the GFD. However, MP, HDR, and WEST met with the GFD and USFWS to discuss wildlife issues on March 17, 2009. The GFD's primary concern is the disturbance of native prairie. They also recommended that potential impacts to sharp-tailed grouse be evaluated. The GFD noted the no wildlife management areas will be impacted by construction or operation of the Bison I Wind Project. WEST prepared a report characterizing biological resources found within the Project area (see Appendix B). Additionally, WEST conducted surveys for sharp-tailed grouse leks during April 2009. MP will continue to consult with the GFD to address concerns related to Project impacts on wildlife resources.

10.11.2 U.S. Fish and Wildlife Service

MP has not yet received a letter regarding this Project from the USFWS. However, MP, HDR, and WEST met with the USFWS and GFD to discuss wildlife issues on March 17, 2009.



Concerns of the USFWS focused on migratory birds and threatened and endangered species. The USFWS indicated that wildlife impacts should first be avoided. The USFWS also recommended a series of mitigative measures to minimize and/or compensate for impacts to wildlife and existing habitats. MP continues to consult with the USFWS regarding appropriate mitigation measures to include as part of this Project. WEST prepared a report characterizing biological resources found within the Project area to help assess concerns raised by the USFWS (see Appendix B).

In general, native land cover in most of the Project site, including native grasslands and wetlands, are not unique in the region, but are of concern on a broader scale (i.e., concern regarding loss of native prairie). WEST identified that 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. Project developments in the areas with less wetlands and native grasslands would likely have lower impacts (i.e., displacement) to wildlife, particularly grassland and bird species and bats.

10.11.3 North Dakota SHPO

In a letter dated April 9, 2009, the SHPO recommended a Class I cultural resources inventory be completed for areas that may be impacted by the Project. They also stated that a Class III cultural resources inventory will also be necessary. MP has completed the Class I cultural resources inventory. Five cultural resources reports were identified within or within 1 mile of the Project boundaries. A review of these reports and cultural resource record forms at the SHPO identified four previously recorded archaeological resources and four archaeological site leads (Table 7.8-1).

MP 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.

MP will develop an unanticipated discovery plan to be in place before construction in the Project site begins. The plan will detail how to deal with previously unknown archaeological resources or human remains if they are encountered during construction. The plan would outline the framework for handling such discoveries in an efficient and legally compliant manner. The discovery plan may include the following topics: construction contractor training, identification of resources in the field, contact information for MP-designated professionals to address a discovery, procedures for avoidance, and associated tasks in the event of work stoppage in a construction area. With regard to a discovery of human remains, procedures would be followed to ensure that the appropriate authorities would become involved quickly and in accordance with local and state guidelines.

10.11.4 North Dakota Geological Survey

MP sent a letter to the North Dakota Geological Survey, April 7, 2009 (Appendix C). No response has been received.

10.11.5 North Dakota Parks and Recreation Department

MP sent a letter to the North Dakota Parks and Recreation Department, April 7, 2009 (Appendix C). No response has been received.

10.11.6 North Dakota Office of Attorney General

The North Dakota Attorney General's Office was asked to comment on the Project. The Office of Attorney General is prohibited by law from providing legal advice, opinions, or assistance to private businesses (Appendix C).

10.11.7 North Dakota Department of Commerce

MP sent a letter to the North Dakota Department of Commerce, April 7, 2009 (Appendix C). No response has been received.

10.11.8 North Dakota Department of Health

MP sent a letter to the North Dakota Department of Health, April 7, 2009 (Appendix C). No response has been received.

10.11.9 North Dakota Department of Transportation

MP sent a letter to the North Dakota Department of Transportation, April 7, 2009 (Appendix C). No response has been received.

10.11.10 North Dakota State Water Commission

MP sent a letter to the North Dakota State Water Commission, April 7, 2009 (Appendix C). No response has been received.

10.11.11 Natural Resources Conservation Service

The NRCS did not identify any problems with the Project. Since there are no federal funds, the Farmland Protection Policy Act (FPPA) does not apply. The NRCS recommended impacts to wetlands be avoided (Appendix C). A discussion of wetlands and potential wetland impacts are included in section 7.14.

10.11.12 North Dakota State Land Department

MP sent a letter to the North Dakota State Land Department, April 7, 2009 (Appendix C). No response has been received.



10.11.13 U.S. Army Corps of Engineers

MP sent a letter to the U.S. Army Corps of Engineers, April 7, 2009 (Appendix C). No response has been received.

10.11.14 Aeronautics Commission

MP sent a letter to the Aeronautics Commission, April 7, 2009 (Appendix C). No response has been received.

10.11.15 North Dakota Department of Agriculture

MP sent a letter to the North Dakota Department of Agriculture, April 7, 2009 (Appendix C). No response has been received.

10.11.16 North Dakota Department of Human Services

MP sent a letter to the North Dakota Department of Human Services, April 7, 2009 (Appendix C). No response has been received.

10.11.17 North Dakota Department of Labor

MP sent a letter to the North Dakota Department of Labor, April 7, 2009 (Appendix C). No response has been received.

10.11.18 North Dakota Department of Career and Technical Education

MP sent a letter to the North Dakota Department of Career and Technical Education, April 7, 2009 (Appendix C). No response has been received.

10.11.19 North Dakota Governor

MP sent a letter to the North Dakota Governor John Hoeven, April 7, 2009 (Appendix C). No response has been received.

10.11.20 North Dakota Indian Affairs

MP sent a letter to North Dakota Indian Affairs, April 7, 2009 (Appendix C). No response has been received.

10.11.21 North Dakota Office of Management and Budget

MP sent a letter to the North Dakota Office of Management and Budget, April 7, 2009 (Appendix C). No response has been received.

10.11.22 North Dakota Soil Conservation Committee

MP sent a letter to the North Dakota Soil Conservation Committee, April 7, 2009 (Appendix C). No response has been received.

10.11.23 County Soil Conservation Districts

MP sent a letter to the Oliver County Soil Conservation District and Morton County Soil Conservation District, April 7, 2009 (Appendix C). No response has been received.

11.0 Qualifications of Contributors to Siting Study

Table 11-1
Contributor Qualifications

Name Project Role	Education And Professional Experience
TODD MATTSON Senior Environmental Project Manager HDR Engineering	<p>Mr. Mattson has over 14 years of experience as an environmental consultant specializing in managing regulatory compliance issues for major energy development projects. His responsibilities include directing project feasibility studies and constraints analyses, state and federal permitting, and Endangered Species Act compliance. Additionally, Mr. Mattson is HDR's National Environmental Lead for its wind energy projects.</p> <p>Master of Science, Zoology and Physiology (Wildlife Ecology), University of Wyoming, 1994 Bachelor of Arts, Biology, Minnesota State University Moorhead, 1992</p>
BRUCE MOREIRA Environmental Scientist HDR Engineering	<p>Mr. Moreira has seven years of experience in wetland delineation, GIS systems, regulatory documentation, and project management. He specializes in wetland delineation, GIS mapping and data collection, plant ecology, database construction/support, and natural resource management. He has a basic knowledge of AutoCAD systems and file transfer between GIS and CAD programs. He has field experience with Trimble, Leica, CMT and Garmin GPS units and their maintenance.</p> <p>M.S., Forestry, Department of Forest Resources, University of Minnesota, 2001 B.A., Biology, Reed College, Portland, Oregon, 1997</p>
TIM CASEY, QEP Environmental Specialist HDR Engineering	<p>Mr. Casey is HDR's Environmental Acoustics Program Manager and has more than ten years of experience leading HDR's Environmental Acoustics efforts. He specializes in noise and vibration monitoring and modeling for stationary and mobile sources including railroads, highways, combustion turbines, diesel generators, pumps, industrial and municipal installations, etc. Extensive use of the FHWA Stamina 2.0/Optima model, FTA transit noise and vibration analysis methodologies, and PC-based GIS technology. Additional training and experience on FHWA Traffic Noise Model (TNM) 1.0. Mr. Casey's experience includes presentations at public meetings, before city councils, and expert witness testimony for projects in locations throughout the United States and Puerto Rico. Mr. Casey holds the professional certification of Qualified Environmental Professional (QEP).</p> <p>Bachelor of Science, Biological/Life Sciences, Saint Xavier University, 1988 Associate of Science, Science, Valley Community College, 1986</p>
Gina Ramirez Acoustics Engineer HDR Engineering	<p>Ms. Ramirez is an Acoustic Engineer with experience in environmental noise and architectural acoustics. She has experience performing noise and vibration analyses for projects such as wind farms, construction projects, surface transportation systems, and industrial noise. Her primary responsibilities include the monitoring, analysis and modeling of noise producing elements, in for both environmental and architectural projects.</p> <p>B.A., Acoustics, Columbia College, Chicago, IL, 2008</p>

Name Project Role	Education And Professional Experience
INGRID SCHWINGLER Environmental Scientist HDR Engineering	<p>Ms. Schwinger has more than a year of experience in the wind industry including public involvement, fieldwork, data collection, and data analysis. She has worked as part of multi-disciplinary teams in the preparation of Environmental Impact Statements, Environmental Assessments and other NEPA-related and environmental permitting documents for energy projects across the United States.</p> <p>B.A., Environmental Studies, Political Science, Gustavus Adolphus College, St. Peter, MN, 2007</p>
STEPHEN SABATKE Archaeologist HDR Engineering	<p>Mr. Sabatke has seven years of experience working in the Cultural Resource Field. He has worked on a variety of cultural resource projects including: wind power transmission, transmission lines, rail roads, pipeline, recreation use development, prehistoric site preservation, historic building preservation, and historic building rehabilitation. Additionally, he has prepared cultural resource studies for federal and state review. He has reviewed and developed cultural resource plans, cultural resource proposals, conducted meetings with SHPO, led field survey investigations, managed cultural resource contractors, subcontractors, and staff, and has managed cultural resource budgets for projects.</p> <p>Master of Arts, Anthropology, University of Minnesota Twin Cities, 2006 Bachelor of Arts, Anthropology, University of Minnesota Duluth, 2002</p>
MEG DESMOND Senior Technical Editor HDR Engineering	<p>Ms. Desmond brings more than 30 years of writing and editing experience to HDR. She is responsible for managing document production and the document production staff for the Environmental Sciences Section of HDR Minneapolis. She provides day-to-day supervision in terms of adjusting priorities and deadlines, determines consistency and style within technical reports, and edits technical reports and documents. She interacts with professional staff members to clarify the meaning, format, and style of their work. She also assists HDR's Minneapolis marketing department with quality control review of proposals and presentations.</p> <p>Bachelor of Arts, English Language & Literature, University of New Hampshire, 1976</p>
ANJALI MALHOTRA GIS Specialist HDR Engineering	<p>Ms. Malhotra has almost five years of professional experience in the field of Geographic Information Systems (GIS). Ms. Malhotra has provided spatial and data analysis, modeling, and GIS technical support on a variety of wind energy and environmental projects across the United States. Ms. Malhotra is proficient in generating cartographic products, mapping, and graphic presentations using GIS and advanced graphic software. She also has an over two years experience in Urban Planning & Design.</p> <p>Master of Urban and Regional Planning (Specialization: Information Technology and GIS); State University of New York at Buffalo, 2005 Bachelor of Architecture, Pune University, India, 2001</p>



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13.0 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
CPR	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
Gearbox	An assembly of parts including the speed-changing gears and the propeller shaft by which the power is transmitted from an automobile engine to a live axle; the speed-changing gears in such an assembly.
Generator	A machine by which mechanical energy is changed into electrical energy.
Geotechnical	A science that deals with the application of geology to engineering.
GFD	North Dakota Game and Fish Department
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
m/s	meter per second
Micrositing	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
MP	Minnesota Power
mph	miles per hour
Mps	meters per second
MSL	Mean Sea Level
MW	Megawatt
MWh	Megawatts per hour

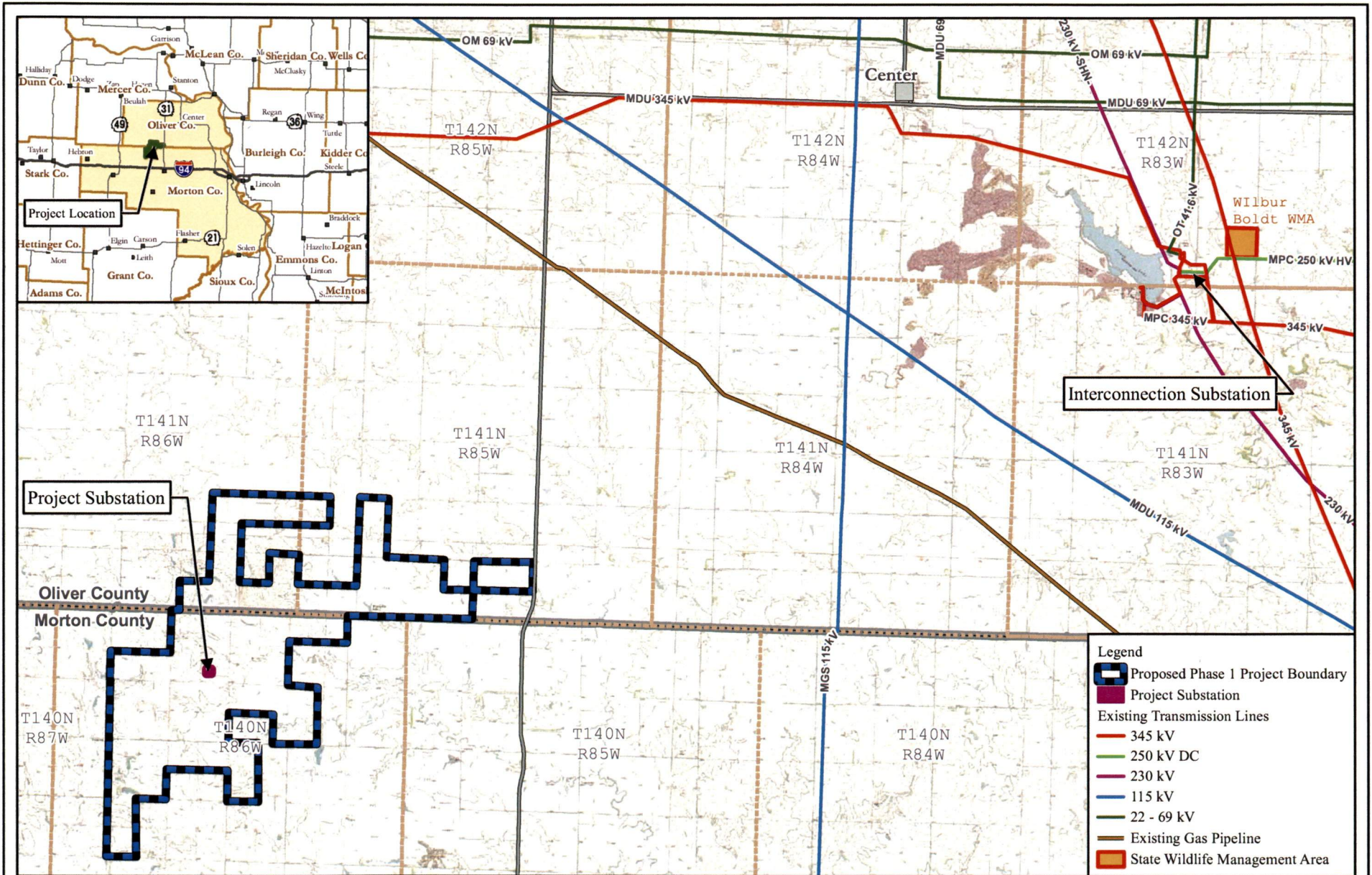


Nacelle	A streamlined enclosure (as for an engine), which houses the gearbox, generator, brake, cooling system and other electrical and mechanical systems.
NASS	National Agricultural Statistics service
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NDDOT	North Dakota Department of Transportation
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	Bison I 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.
Transmission	An assembly of parts including the speed-changing gears and the propeller shaft by which the power is transmitted from an automobile engine to a live axle; the speed-changing gears in such an assembly.
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.

FIGURES



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0 0.5 1 2 Miles

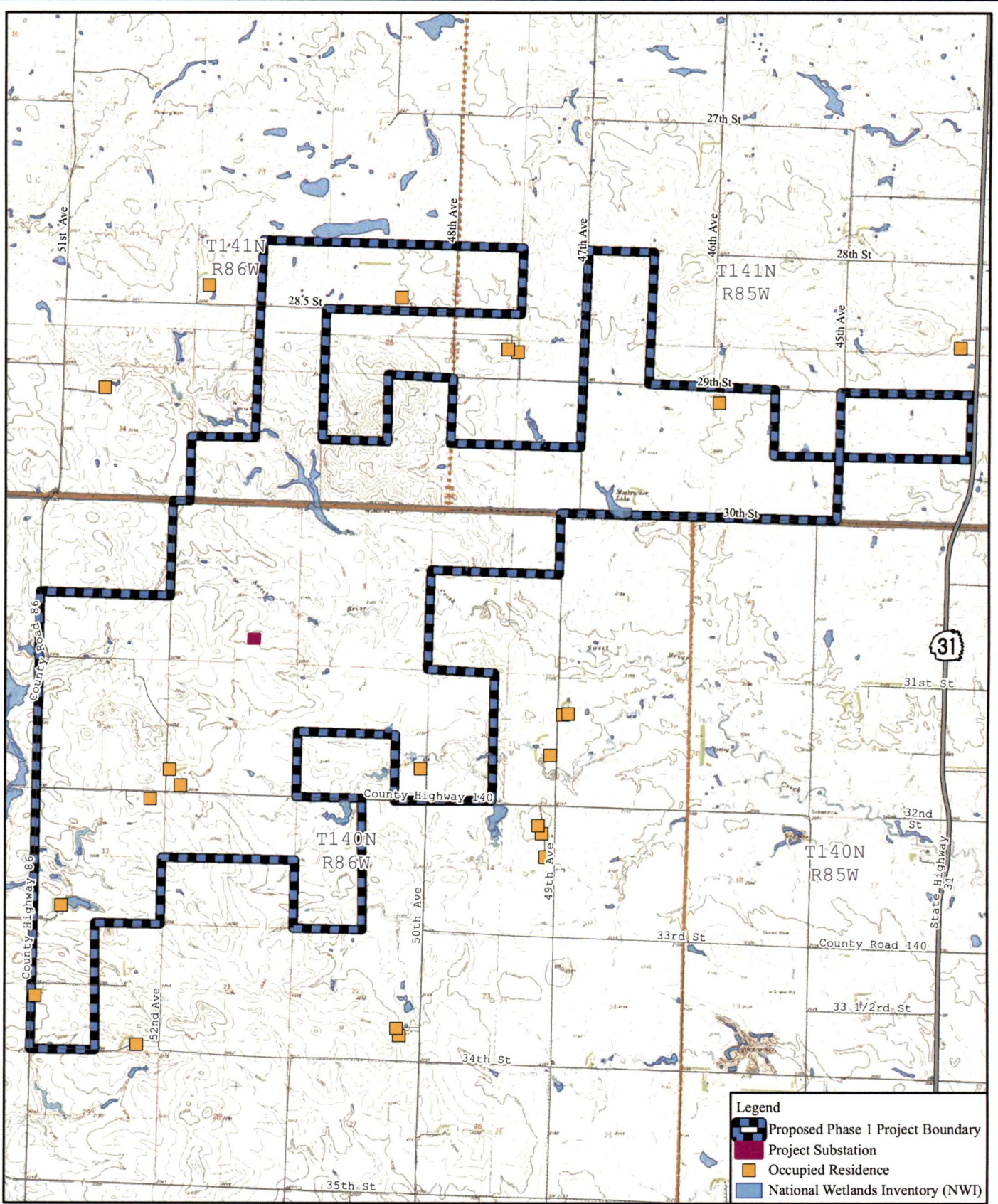
Figure 1: Study Area Selection Map
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND



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Figure 2: Project Location Map and Preliminary Layout
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND



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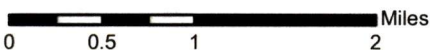
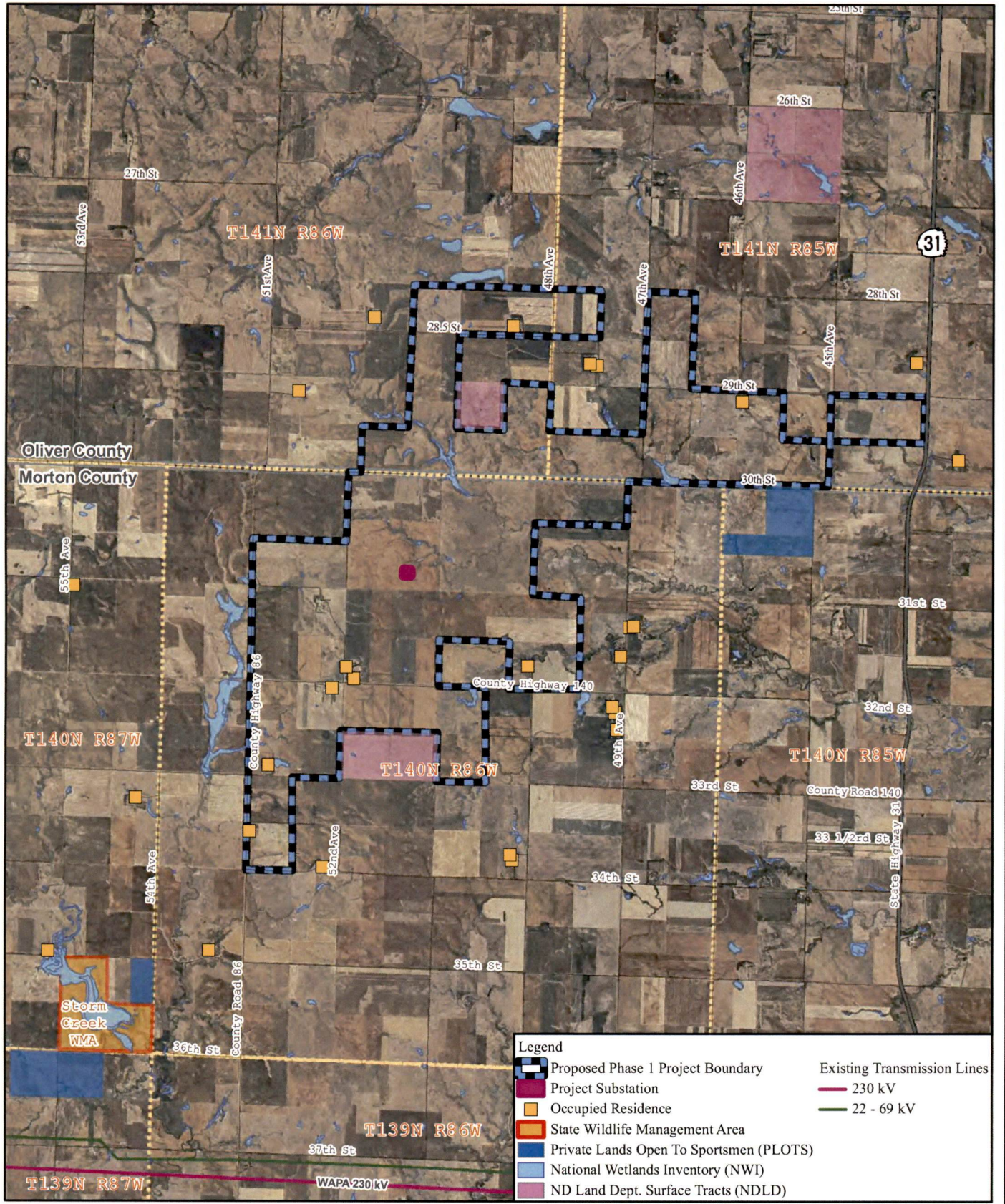


Figure 3: Project Location Map and Preliminary Layout
USGS Topographic Map
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

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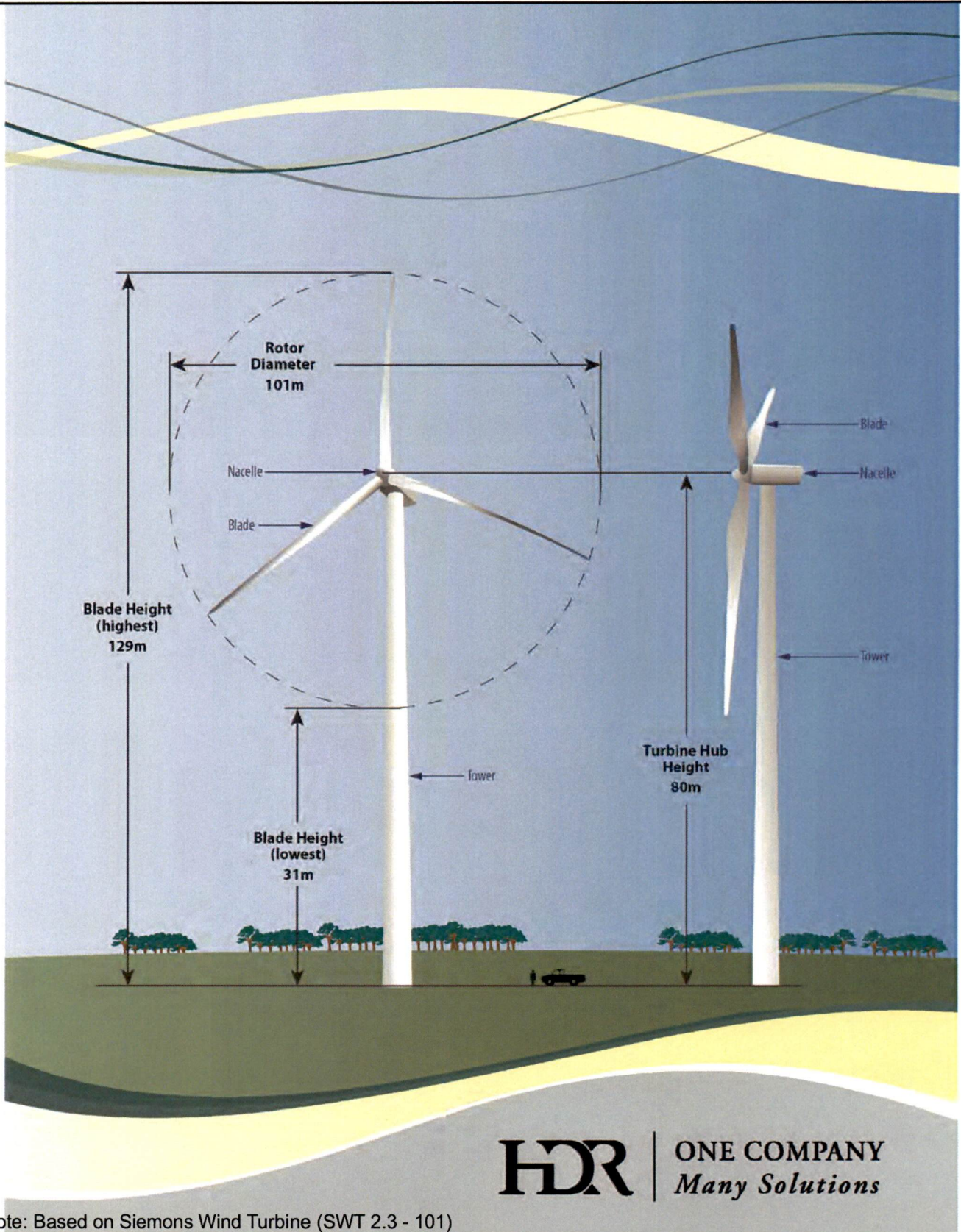
Legend

Proposed Phase 1 Project Boundary	Existing Transmission Lines
Project Substation	230 kV
Occupied Residence	22 - 69 kV
State Wildlife Management Area	
Private Lands Open To Sportsmen (PLOTS)	
National Wetlands Inventory (NWI)	
ND Land Dept. Surface Tracts (NDLD)	

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Miles
 0 0.5 1 2

Figure 4: Exclusion and Avoidance Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND



Note: Based on Siemens Wind Turbine (SWT 2.3 - 101)

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Figure 5: Wind Turbine Design Features
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

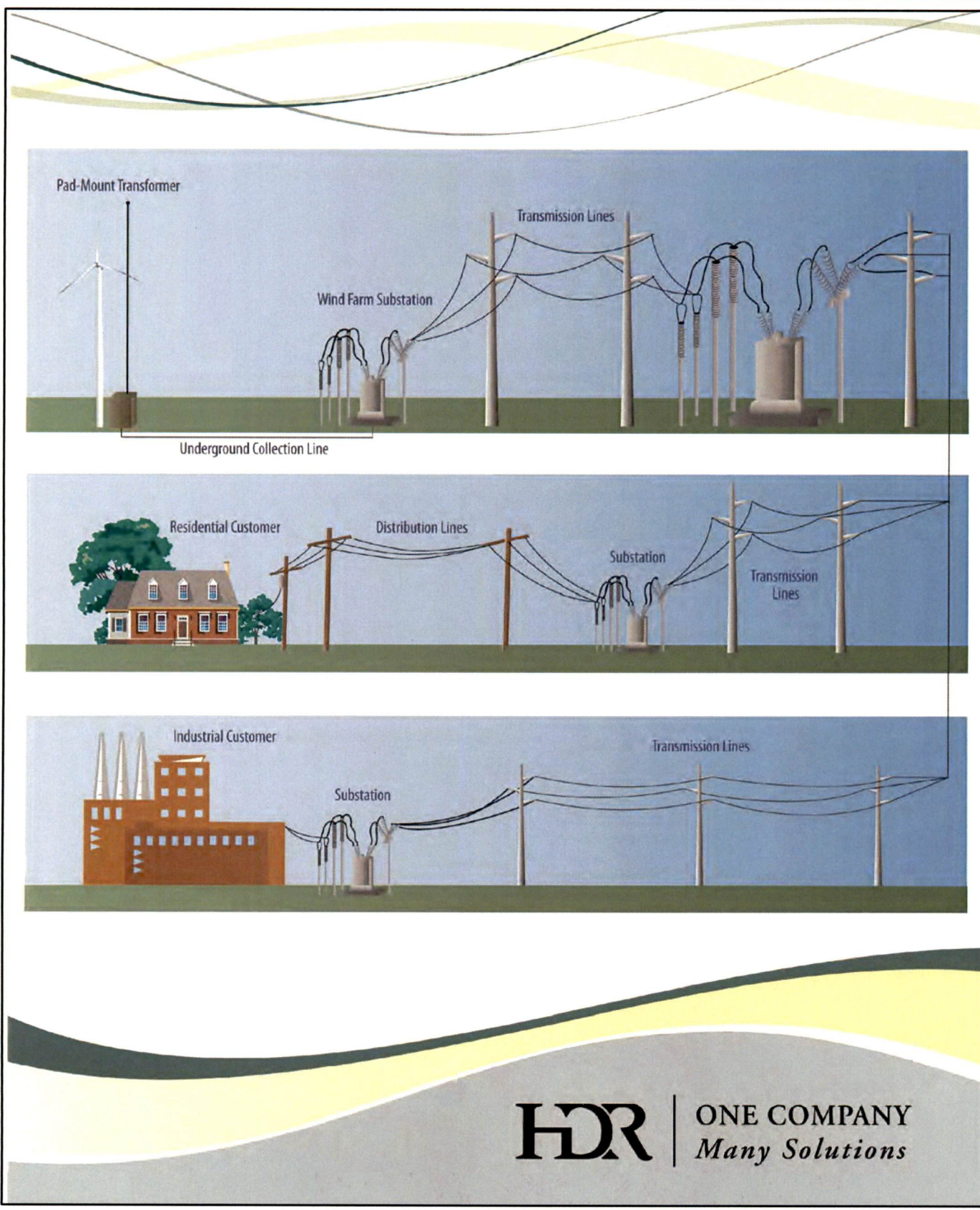
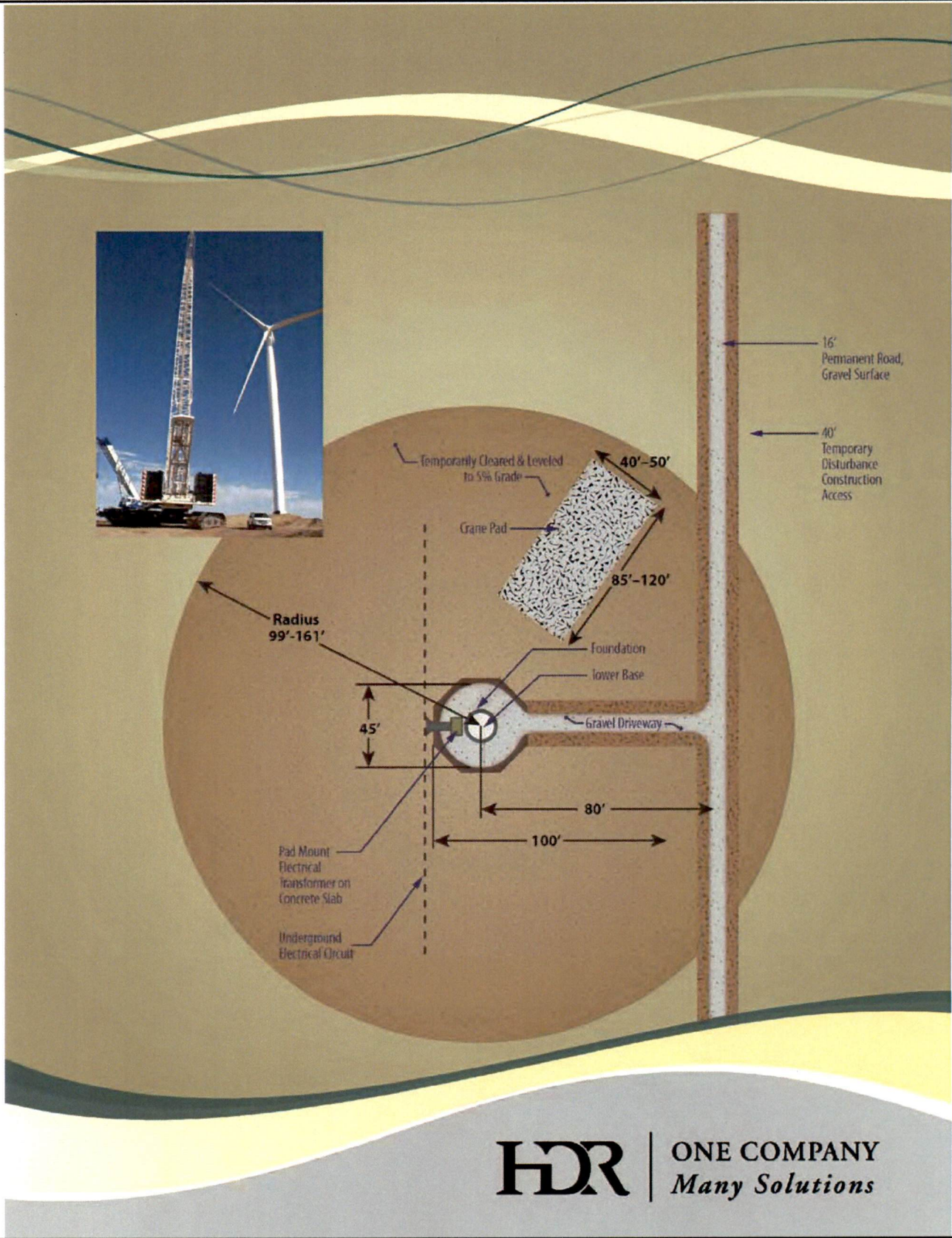


Figure 6: Path of Energy Diagram
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

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Figure 7: Wind Turbine Foundation
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

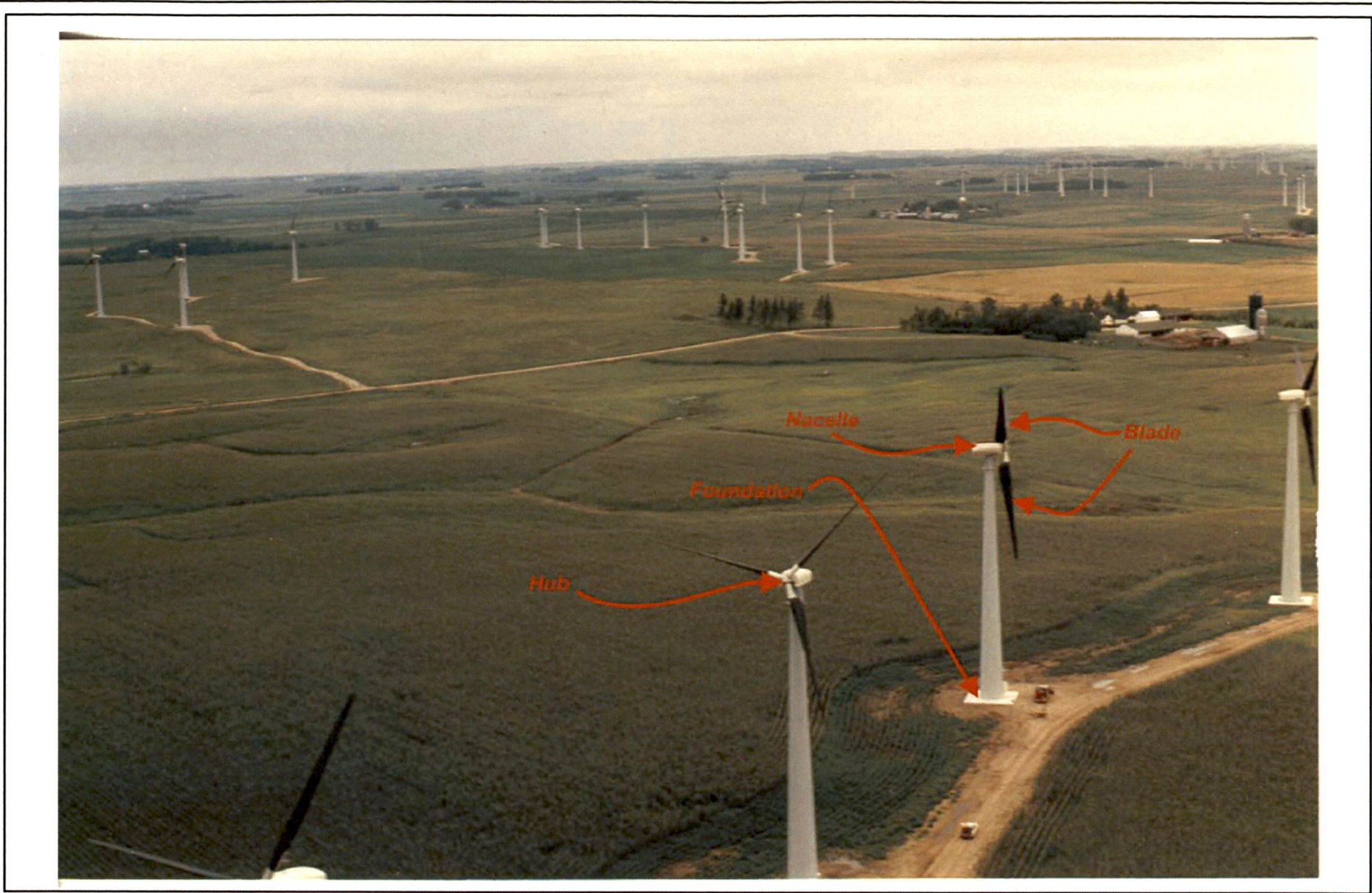
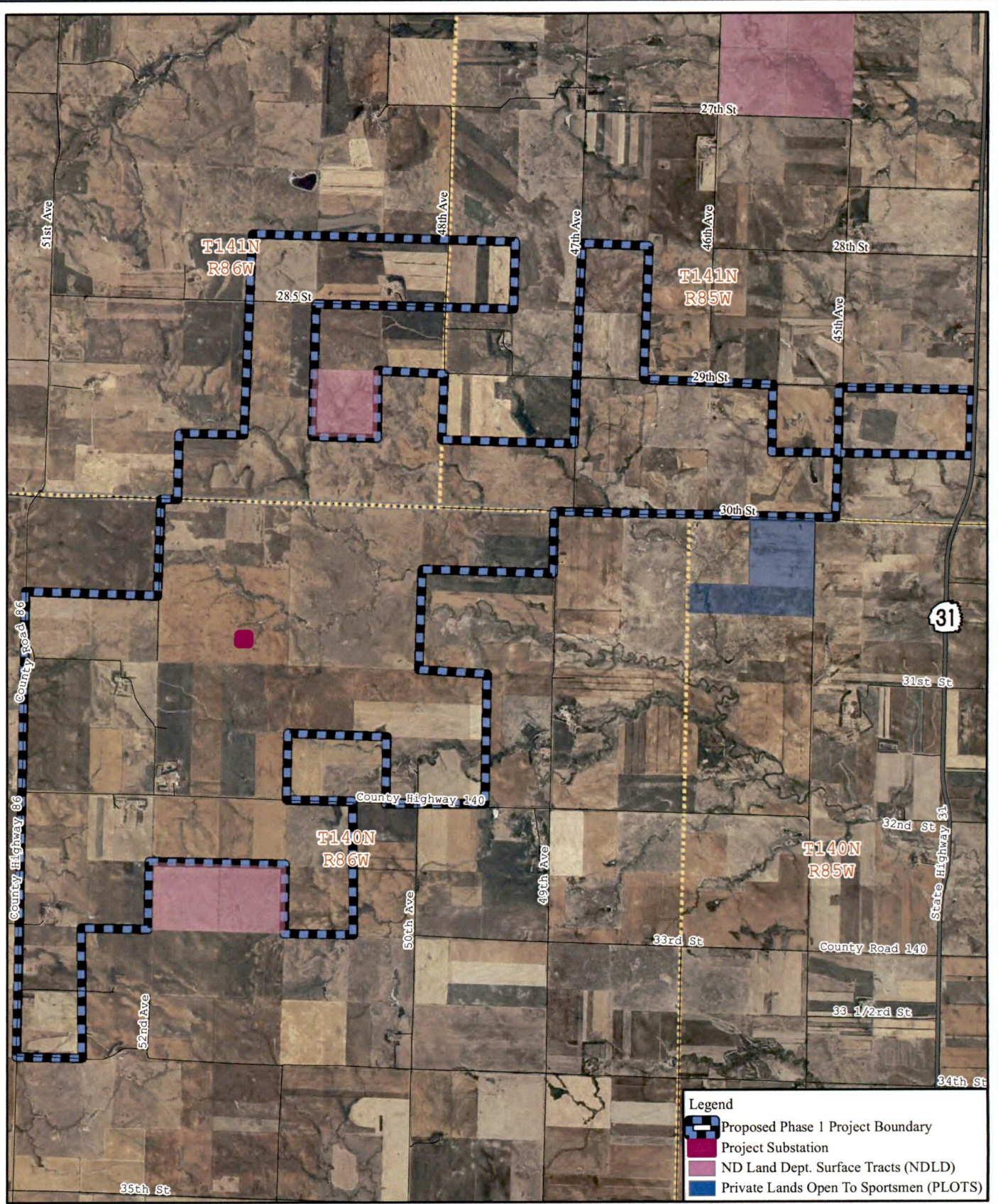


Figure 8: Typical Wind Farm Facility Layout
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

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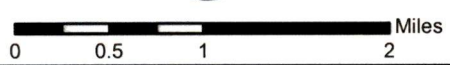


Figure 9: Public Lands and Easements
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

North Dakota - Wind Resource Map

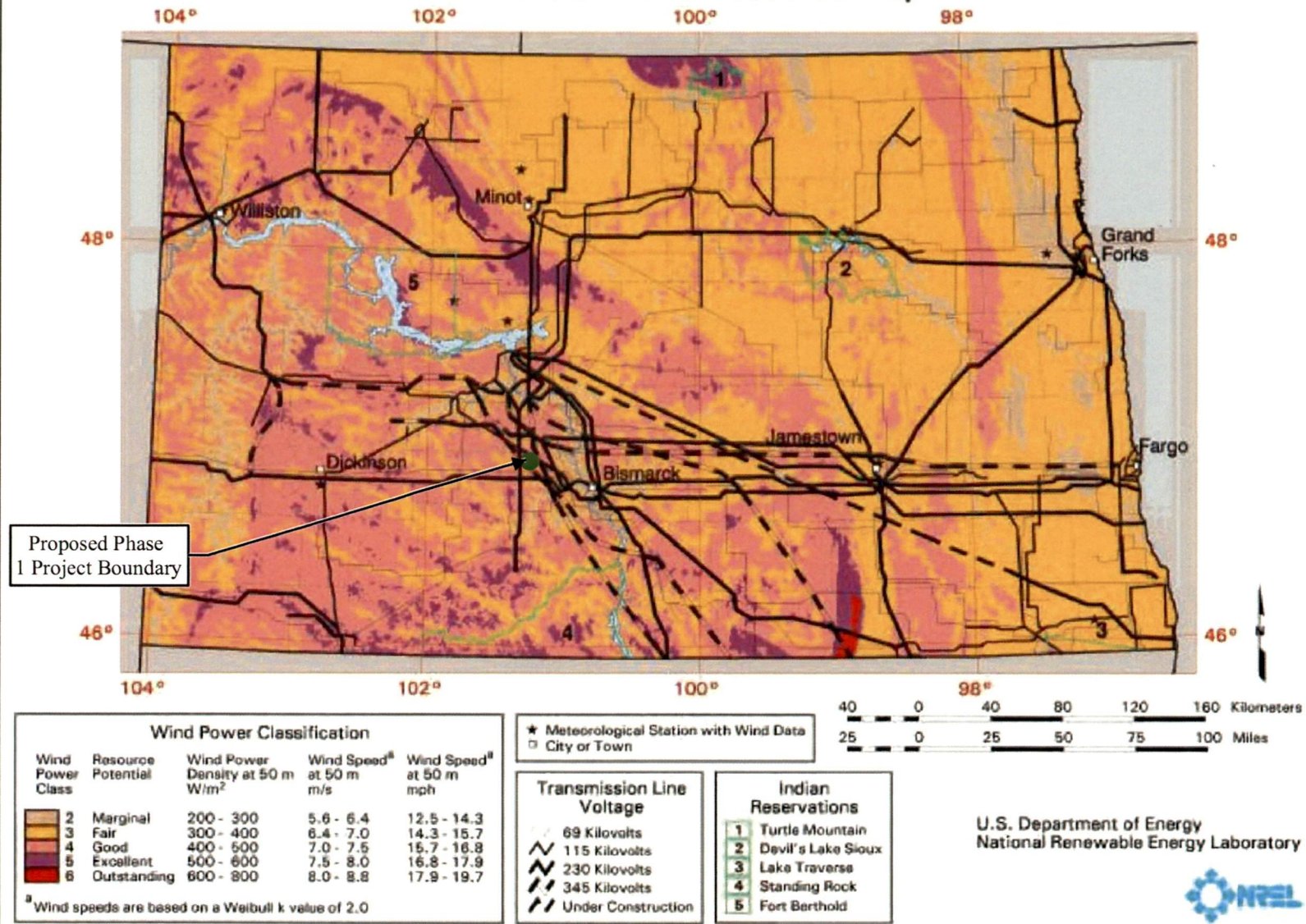


Figure 10: North Dakota Wind Resource Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Predicted Noise Levels for 2.3 MW Wind Turbine (dBA)

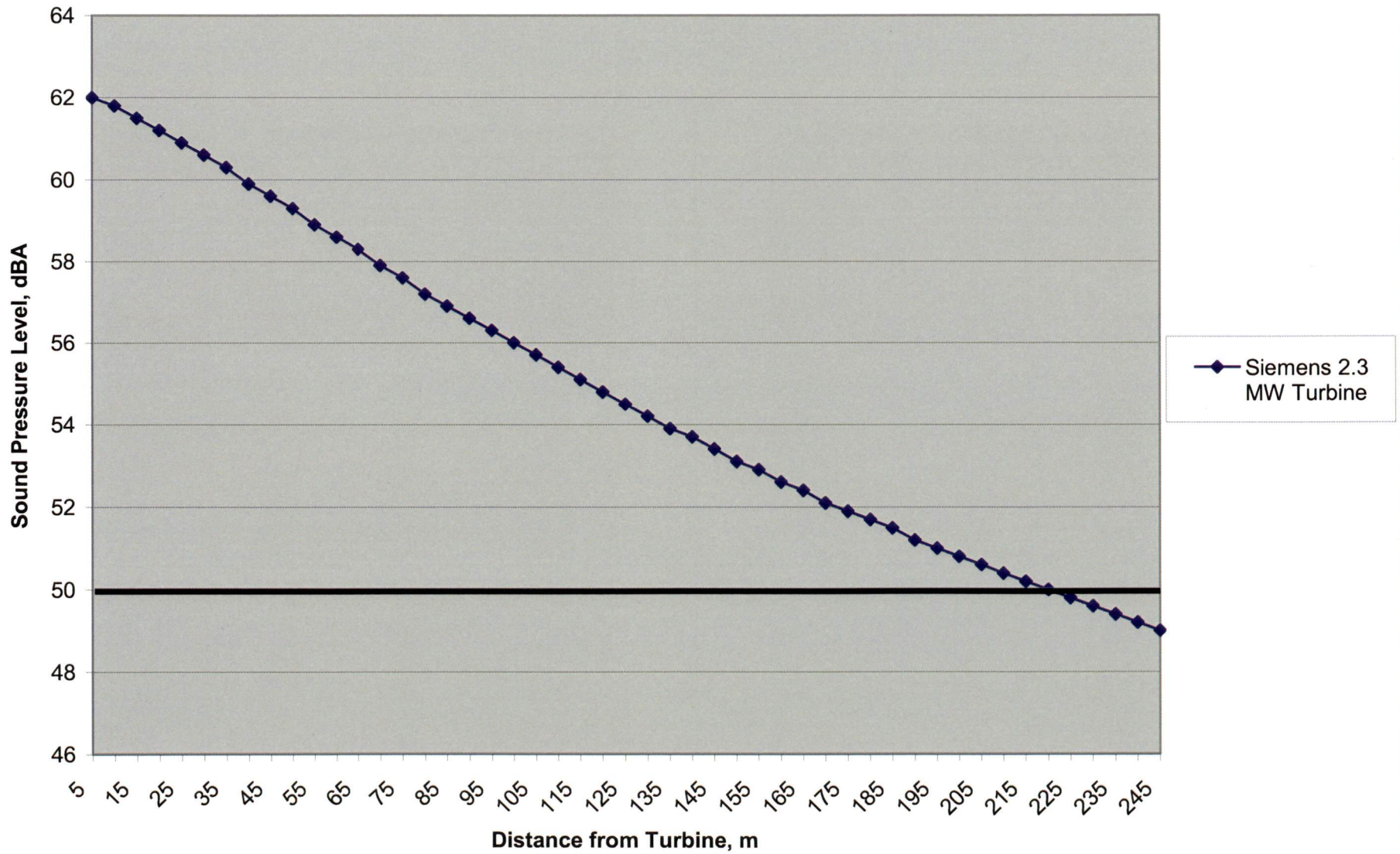


Figure 11: Predicted Noise Levels
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND





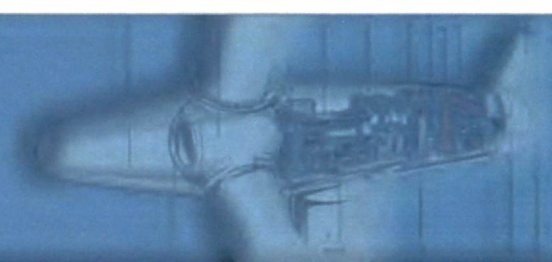
Figure 12: Typical Photographs of Project Area
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

HDR





Bison Wind Project



Existing Condition - Site 1



Proposed Condition - Site 1



Viewing North, NorthWest
from intersection of Interstate
94 and SH 31

Figure 13a: Photo Simulation Map
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND



Bison Wind Project



Existing Condition - Site 2

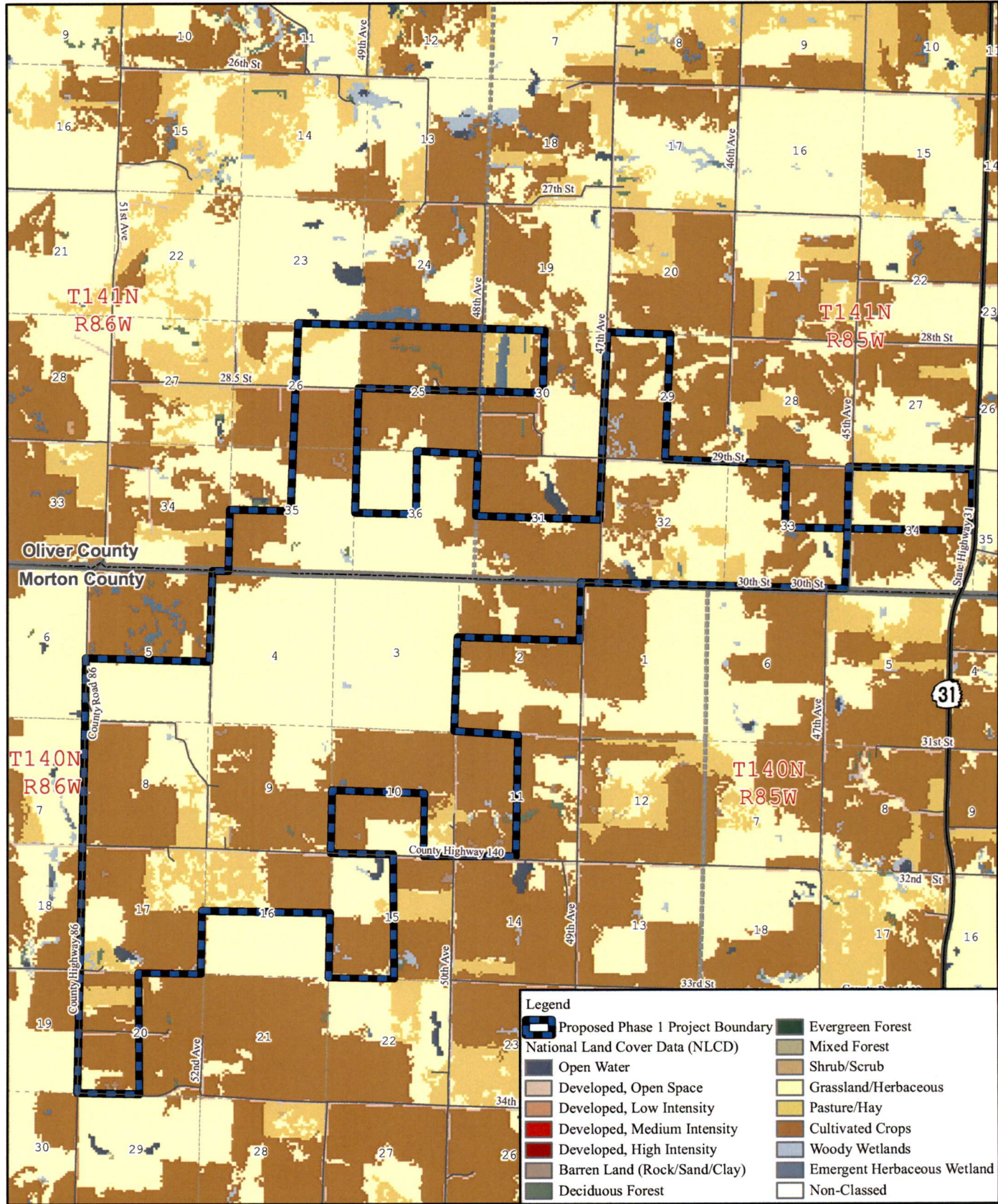


Proposed Condition - Site 2

Viewing North, North West
from intersection of Interstate
94 and SH 31

Figure 13b: Photo Simulation Map
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

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Legend	
	Proposed Phase 1 Project Boundary
	Evergreen Forest
	Mixed Forest
	Shrub/Scrub
	Grassland/Herbaceous
	Pasture/Hay
	Cultivated Crops
	Woody Wetlands
	Emergent Herbaceous Wetland
	Non-Classified
	Open Water
	Developed, Open Space
	Developed, Low Intensity
	Developed, Medium Intensity
	Developed, High Intensity
	Barren Land (Rock/Sand/Clay)
	Deciduous Forest

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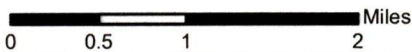
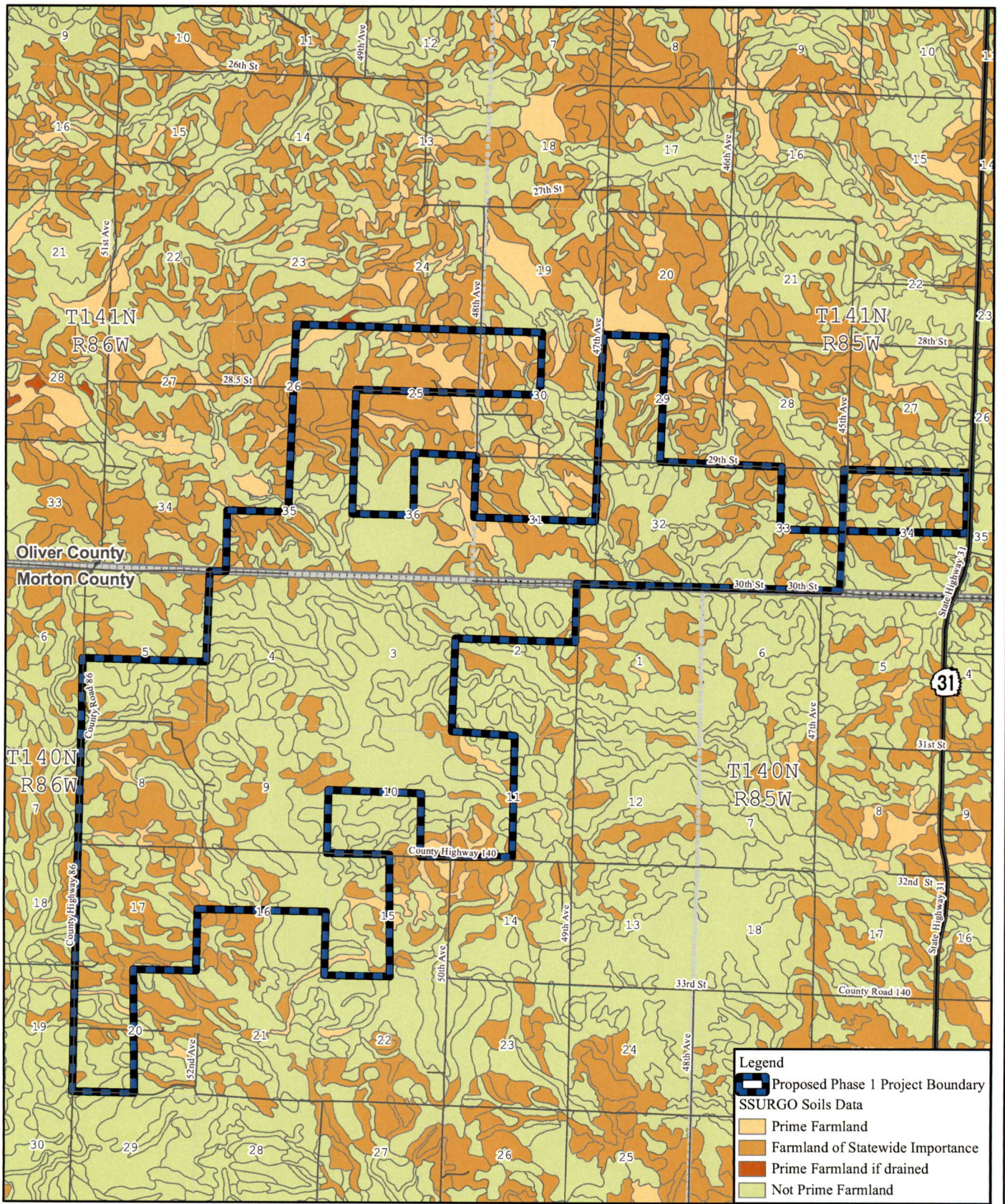


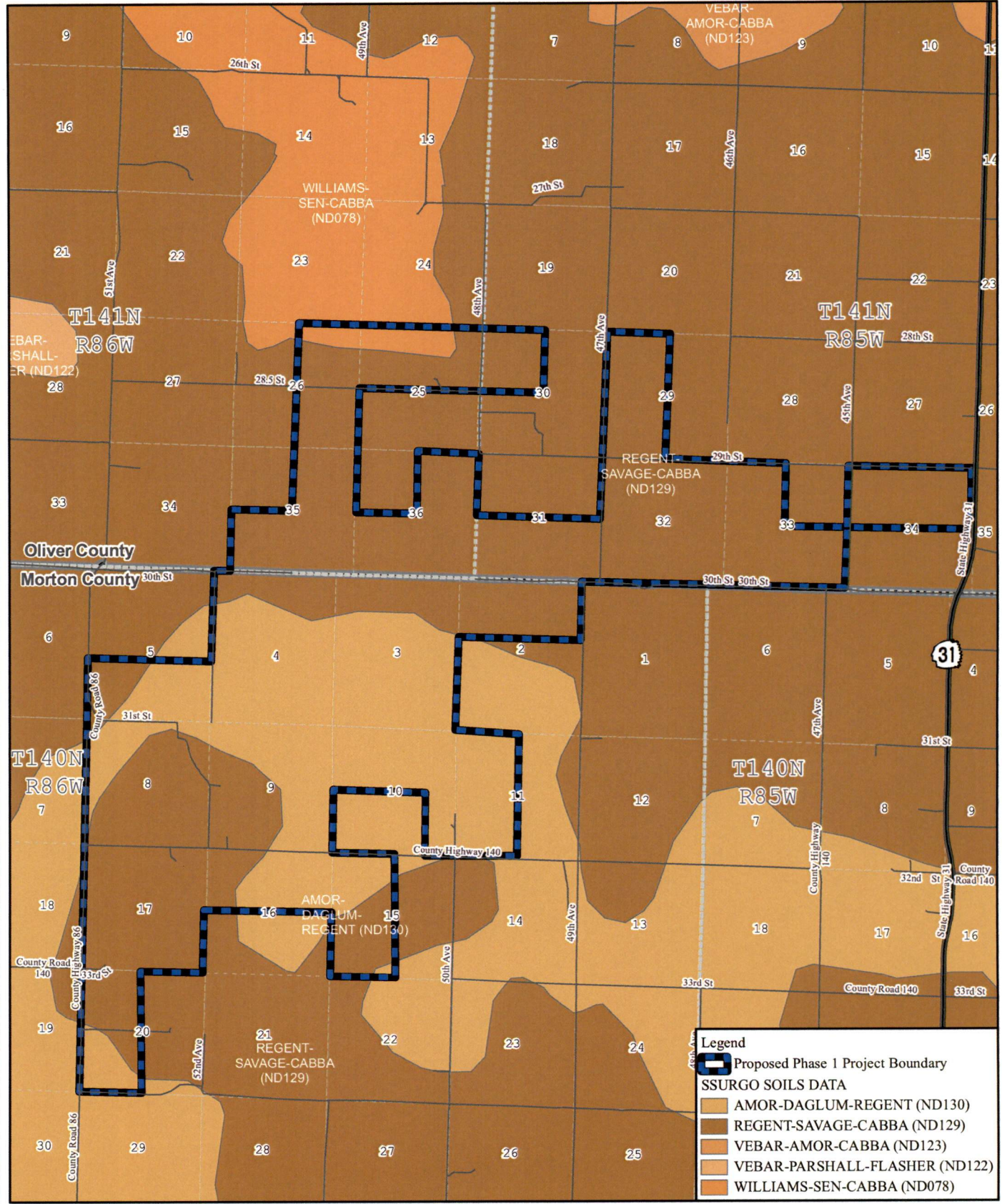
Figure 14: Land Cover Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND



0 0.5 1 2 Miles

Figure 15: Prime Farmland Soil Distribution Map
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

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Legend

- Proposed Phase 1 Project Boundary
- SSURGO SOILS DATA**
- AMOR-DAGLUM-REGENT (ND130)
- REGENT-SAVAGE-CABBA (ND129)
- VEBAR-AMOR-CABBA (ND123)
- VEBAR-PARSHALL-FLASHER (ND122)
- WILLIAMS-SEN-CABBA (ND078)

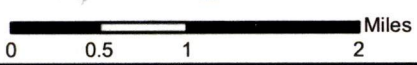


Figure 16: State Soils Association Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Map Document: (\\mspe-gis-file\proj\MinPower\106316\map_docs\mxd\WindApplication\Figures\Figure17_NWI.mxd) 5/8/2009 3:33:21 PM



Legend

- Proposed Phase 1 Project Boundary
- National Wetlands Inventory (NWI)
- Lakes or Ponds
- Streams (100k)
 - Intermittent
 - Perennial

HDR

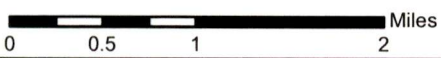


Figure 17: National Wetlands Inventory and Surface Waters
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

APPENDIX A

Design Data Report

Type	Asynchronous
Nominal power	2,300 kW
Synchronous speed	1,500 rpm
Voltage	690 V
Frequency	50 Hz
Protection	IP54
Cooling	Integrated heat exchanger
Insulation class	F
Generator designation	AMA 500L4 BAYH
Canopy	
Type	Totally enclosed
Material	Steel
Yaw System	
Type	Active
Yaw Bearing	Externally geared slew ring
Yaw Drive	Eight electrical gear motors with frequency convertor
Yaw Break	Passive friction brake
Controller	
Type	Microprocessor
SCADA System	WPS via modem
Controller Designation	KK WTC 3.0
Tower	
Type	Cylindrical or tapered tubular steel tower
Hub Heights	80 m or site-specific
Corrosion Protection	Painted
Surface Gloss	Semi-gloss 30-50 ISO 2813
Surface Color	Light grey, RAL 7035
Operational Data	
Cut-in Wind Speed	4 m/s
Nominal Power at Approx.	12-13 m/s
Cut-out Wind Speed	25 m/s
Maximum 2 S Gust	55 m/s (standard version) 59.5 m/s (IEC version)
Masses (Approximate)	
Rotor	62 t
Nacelle Excl. Rotor	82 t
Tower (80 m)	162 t

Associated Facilities

General Specifications

Electrical	
Power Collection Line Voltage	34,500 Volts (34.5 Kilovolts)
Structure Type	Underground, possibility of overhead 3-phase distribution
Construction Method	Trenching
Design Standards	NESC
Other	34.5 kV pad mount transformer for each turbine
Substation	
Substation Voltage	230 kV/34.5 kV substation
Approximate Substation Footprint	3 acres
Equipment	One 230/34.5 kV transformer, switchgear and control house, circuit breakers, surge arrestors, ring bus
Operations and Maintenance	
Approximate Building Footprint	5,000 ft ²
Typical Building Layout	SCADA system, office space, restroom, parts room, bay shop

BISON I WIND PROJECT
MORTON AND OLIVER COUNTIES, NORTH DAKOTA

DESIGN DATA REPORT

Project

- 76 MW wind farm
- Up to 33 turbines
- Final layout to be completed after micrositing and prior to construction

Turbine

Technical Specification Siemens SWT-2.3-101 Wind Turbines¹

Rotor	
Type	3-bladed, horizontal axis
Position	Upwind
Diameter	101 m
Swept area	8,000 m ²
Rotor speed	6-16 rpm
Power regulation	Pitch regulation
Rotor tilt	6 degrees
Blades	
Type	Self-supporting
Blade length	49 m
Root chord	3.40 m
Aerodynamic profile	NACA 63.xxx, FFAxxx, SWPxxx
Material	GRE
Surface gloss	Semi-matt, <30/ISO2813
Surface color	Light grey, RAL7035
Aerodynamic Brake	
Type	Full span pitching
Activation	Active, hydraulic
Load Supporting Parts	
Hub	Nodular cast iron
Main bearings	Spherical roller bearing
Transmission shaft	Alloy steel
Nacelle bedplate	Steel
Transmission System	
Coupling hub – shaft	Flange
Coupling shaft – gearbox	Shrink disc
Gearbox type	3-stage planetary-helical
Gearbox ration	1:91
Gearbox lubrication	Splash/forced lubrication
Oil volume	Approx. 400l
Gearbox cooling	Separate oil cooler
Gearbox designation	PEAB 4456 or EH851
Gearbox manufacturer	Winergy AG or Hansen Transmissions
Coupling gear- generator	Double flexible coupling
Mechanical Brake	
Type	Hydraulic disc brake
Position	High-speed shaft
Number of calipers	2
Generator	

¹ <http://www.powergeneration.siemens.com/products-solutions-services/products-packages/wind-turbines/products/swt-2-3-101/techspecification/techspecification.htm>

APPENDIX B

Studies and Assessments

**Site Characterization Study
of the Bison Wind Resource Area**

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May 1, 2009



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EXECUTIVE SUMMARY

The proposed Bison I Wind Resource Area (BIWRA), currently about 16,263 acres is located in Oliver and Morton Counties, North Dakota. Biological resources within the BIWRA were evaluated through a search of existing data and site visits on April 17, 18, and 20, 2009. The purpose of this report is to characterize biological resources in the proposed project area and determine if additional biological resource surveys are warranted.

The landscape within the project area has a limited number of wetlands but they are fairly evenly distributed throughout the WRA, with the exception of one larger wetland area near the center of the project. Topography is flat to rolling, with elevations ranging from 2,103-2,359 feet (ft; 641 to 719 meters [m]) above sea level. Ownership within the BIWRA is all private but there state owned lands adjacent to the project boundary. About 49% of the BIWRA is tilled agriculture. The next most common habitats are native grassland, which comprises about 25%, and planted grasslands which comprises 19%, of the BIWRA. Shrubland (2.8%), water/wetland (2.4%), and barren areas (1.0%) were the next most common land use (Table 1).

One of the greatest concerns by state and federal wildlife agencies in regards to wind energy facilities is with displacement impacts from facilities that are placed in native grasslands and other native habitats. The BIWRA does include some native grassland, so it is probable that some grassland-dependent species will be displaced.

Based on National Wetland Inventory (NWI) polygon data (USGS NWI 2007), there are approximately 227 acres (92 ha) of wetlands, not including streams and rivers, found throughout the BIWRA. About 1.4% of the total BIWRA is wetlands, excluding rivers and streams. The highest percentage (70.72%) of wetlands are freshwater emergent wetlands, with the remaining 29.28% being comprised of freshwater ponds.

No federally-listed endangered, threatened, or candidate plant species are known to occur in the BIWRA. There are seven wildlife species listed as endangered, threatened, or candidate by the USFWS known or potentially could occur in Morton and Oliver Counties: Dakota skipper, pallid sturgeon, gray wolf, black-footed ferret, least tern, piping plover, and whooping crane. Of these seven, the whooping crane and Dakota skipper have the highest potential, however remote, of occurring in the BIWRA. No direct fatalities to whooping cranes are expected given their migratory flight heights and potential to avoid wind facilities. Analysis indicates that there is some potential whooping crane roosting habitat in the BIWRA, but that there is also suitable habitat outside of the WRA if cranes do avoid the project area after construction. Habitat for the other federally-listed species is either completely lacking or extremely limited in the region.

The State of North Dakota maintains a list of 100 species of conservation concern. Several of these species have been documented near the project area. Impacts to many of these species can be avoided or minimized by focusing construction activities on cultivated landscapes. Studies have been initiated to investigate impacts of the project on sharp-tailed grouse.

Numerous raptor species and species often grouped with raptors (e.g. owls and vultures) are likely to occur in the BIWRA during one period of the year or another – breeding, migration, or

winter. Use rates within the BIWRA are not expected to be heavily influenced by topography or prey densities compared to areas outside of the WRA. The project area does not appear to have any factors that would concentrate raptor use in one area compared to another as raptors will hunt in native areas as well as cultivated agricultural areas. Information from an adjacent survey effort document overall use rates that were low to moderate when compared to other projects across the country. It is likely that the use rates in the BIWRA would be similar as the adjacent areas. No raptor nests were observed during the site visits but potential nest structures for above ground nesting species were present in the form of living and dead trees. Grassland areas could provide nesting habitats for ground-nesting raptors, such as the northern harrier.

Birds undoubtedly migrate through the proposed BIWRA, including passerines, raptors, and waterfowl. Wetlands and grasslands scattered throughout the BIWRA may provide stopover habitat for migrants or individuals during post-breeding dispersal. Harvested grain crops, such as wheat fields that were observed during the site visits, could serve as a feeding area that could attract migrating waterfowl. These types of habitats are found throughout the region and therefore their presence in the BIWRA should not concentrate bird use as compared to adjacent areas.

There are several species of bats that could be found in the BIWRA, including the big brown bat, hoary bat, eastern red bat, little brown myotis, northern myotis, and the silver-haired bat. Potential roosting habitat within the BIWRA is found in the form of trees and buildings; no caves were observed during the site visits. Bats generally forage over water and open spaces such as agricultural fields, grasslands, streams, and wetlands/ponds. Bats may forage over the entire BIWRA, although the extent of use is not known. Bats may prey on insects that are likely to concentrate over water in wetlands and streams, and these types of areas found in the BIWRA are most likely to attract foraging bats.

Table E-1. Site Characterization Summary.

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 wetland 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	Summer
Native Grasslands	Native grassland remnants may be in the project area. Site away from native grassland areas to minimize impacts.	Updated vegetation map of selected regions to help micro-site facility to minimize impacts to native grasslands.	Update current mapping during snow free period if needed.
Wildlife			
State and Federal Species of Concern.	Several federal and state species of concern could occur in the project area.	Habitat mapping of any selected site would be required before further surveys, if any, would be completed for the Dakota skipper. Considered surveys for sandhill cranes as surrogate for whooping cranes but did not implement due to low likelihood of high sandhill crane use. Grouse lek surveys ongoing.	Other work to be performed as necessary during appropriate survey windows.
Nesting Raptors	Tree rows, woodlands, and riparian zones in the area provide nesting habitat for raptors.	Survey suitable habitat for nests.	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	The 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 occur.	Acoustic bat surveys.	Summer and Fall

INTRODUCTION

Knowledge of biological resource issues early in the development phase of wind energy facilities helps the industry identify, avoid, and minimize future problems. This report describes biological resources present within a potential wind resource area and evaluates these general characteristics as related to potential or known impacts on the resources from wind energy facilities. Particular focus for this project area was made in regards to whooping cranes and potential whooping crane habitat.

The proposed Bison I wind resource area (BIWRA) is located in Oliver and Morton Counties, North Dakota (Figure 1), northwest of New Salem. Minnesota Power is proposing to initially construct approximately 33 turbines within 16 sections along the eastern portion of the project area with a nameplate generating capacity of 78 megawatts (MW). The purpose of this report is to characterize biological resources in the proposed overall project area.

STUDY AREA

The BIWRA, currently about 16,263 acres (6,581 hectares; ha), is located in northern Morton County and southern Oliver County in central North Dakota (Figure 1). The project lies approximately seven miles north of Interstate 94 and 25 miles west of the Missouri River.

The proposed BIWRA is located entirely within the Missouri Plateau ecoregion (Bryce et al. 1996; Figure 2). The Missouri Plateau is a glaciated region characterized by rolling plains and drainages. Sandstone buttes or outcrops are also common in this region. The area was historically short to mixed grass prairie. Some of the area remains in native grasslands as pastureland for grazing and other areas have been converted to cultivated agriculture.

The BIWRA soils are mostly Mollisols and Entisols. Mollisol soils are common soil types found in grassland areas and are typified as having a deep, high organic matter, nutrient-enriched surface layer or A horizon. Mollisols are considered "young" soils that have developed through weathering processes breaking down the parent materials along with the addition of organic matter. Unlike Mollisols, Entisols are very old soils and are comprised of the parent sands and sandstone. Entisols have very little organic matter.

The landscape within the project area has a limited number of wetlands but they are fairly evenly distributed throughout the WRA, with the exception of a larger, linear wetland/drainage feature near the center of the area (Figure 3). Topography is flat to rolling, with elevations ranging from 2,103-2,359 feet (ft; 641 to 719 meters [m]) above sea level (Figures 4 and 5). Ownership within the BIWRA is private but there is one state owned wildlife area, Storm Creek Wildlife Management Area, located 0.5 mile south of the project boundary and two state owned school sections adjacent to the project boundary (Figure 6).

METHODS

Biological resources within the BIWRA were evaluated through a search of existing data and a site visit. The site visit entailed an examination of the BIWRA from public roads on April 18,

2009, and as part of grouse lek surveys from the air on April 17 and 20, 2009. During the site visits, biological features and potential wildlife habitat, including plant communities, topography features, and potential raptor nesting habitat and prey populations, were identified. All wildlife species observed during the site visits were recorded and photographs were taken of the BIWRA (Appendix A).

Several sources of available data were used to identify biological resources within the BIWRA including published literature, field guides, and public data sets. Information about sensitive species presence and locations was requested from the North Dakota Game and Fish Department (NDGFD) and US Fish and Wildlife Service (USFWS) by HDR Engineering. Letters requesting information for the additional area were sent April 7, 2009. Responses from the NDGFD and USFWS are pending and will be included in Appendix B when available.

LAND COVER

About 49% of the BIWRA is cultivated agriculture and another 19% is planted grasslands, similar to or enrolled in CRP type programs (Table 1; Figures 7 and 8). Native grassland or prairie comprises approximately 25% of the area and is mostly found in the north-central portion of the BIWRA, but can also be found scattered throughout. Shrubland (2.8%), water/wetland (2.4%), and barren areas (1.0%) were the next most common land use (Table 1). All other types comprised less than 1% of the area.

Table 1. Land use types present within the BIWRA.

Land Use	Acres	Hectares	Percent
Cropland	7,984.35	3,231.15	49.09
Prairie	4,137.75	1,674.49	25.44
Planted Grassland	3,104.99	1,256.55	19.09
Shrubland	458.96	185.73	2.82
Water/Wetland	393.50	159.24	2.42
Barren	173.22	70.10	1.07
Deciduous Woodland	8.86	3.58	0.05
Developed	1.16	0.47	0.01
Floodplain Woodland	0.93	0.38	0.01
Total	16,263.71	6,581.69	100.00

Sensitive and Special Status Plant Species

No federally-listed endangered, threatened, or candidate plant species are known to occur in the BIWRA (NDFO 2008) and the state of North Dakota does not maintain a list of state plant species of concern.

Sensitive Habitats

The presence of wind turbines may alter the landscape so that wildlife habitat use patterns are altered, possibly displacing wildlife from the BIWRA. The greatest concern with displacement

impacts are for wind-energy facilities that are placed in native grasslands and other native habitats. The BIWRA includes native grasslands, so it is probable that some grassland-dependent species will be displaced (see the Breeding Bird section for more discussion on displacement).

Wetlands and Riparian Areas

Based on National Wetland Inventory (NWI) polygon data (USFWS NWI 2007), there are approximately 227 acres (92 ha) of wetlands, not including streams and rivers, found throughout the BIWRA (Table 2). About 1.4% of the total BIWRA is wetlands, excluding rivers and streams. The highest percentage (70.72%) of wetlands are freshwater emergent wetlands, with the remaining 29.28% being comprised of freshwater ponds (Table 2). Formal wetland delineations should be completed prior to construction. Both wetland types could be utilized by whooping cranes as roosting habitat depending on site specific conditions. More information on whooping cranes and wetlands is found in the whooping crane section below.

Table 2. Wetland types present within the BIWRA (NWI wetland polygons; USFWS NWI 2007).

Wetland Type	Acres	Hectares	Percent
Freshwater Emergent Wetland	160.85	65.09	70.72
Freshwater Pond	66.61	26.96	29.28
Total	227.46	92.05	100.00

Sweetbriar Creek drains the eastern portion of the BIWRA while Muskrat Creek and Hailstone Creek drain the central and western portions of the project area, respectively (Figures 5 and 6).

There are no known USFWS wetland easements in the project area, but this should be confirmed through a county file search or coordination with the USFWS. The NDGFD owns the Storm Creek Wildlife Management Area approximately 0.5 mile south of the project (Figure 6).

WILDLIFE

Wildlife species associated with native grasslands, cultivated agricultural landscapes, and deciduous treed areas are expected to be the most common species at the BIWRA. A list of species observed during the site visits is provided in Table 3.

Table 3. Wildlife species observed at the BIWRA during the April 17, 18, and 20, 2009 site visits.

Species	Scientific Name
Canada goose	<i>Branta canadensis</i>
mallard	<i>Anas platyrhynchos</i>
Northern pintail	<i>Anas acuta</i>
lesser scaup	<i>Aythya affinis</i>
gadwall	<i>Anas strepera</i>
green-winged teal	<i>Anas crecca</i>
sandhill crane	<i>Grus canadensis</i>
great blue heron	<i>Ardea herodias</i>
marbled godwit	<i>Limosa fedoa</i>
common snipe	<i>Gallinago gallinago</i>
double-crested cormorant	<i>Phalacrocorax auritus</i>
unidentified gull	
red-tailed hawk	<i>Buteo jamaicensis</i>
golden eagle	<i>Aquila chrysaetos</i>
northern harrier	<i>Circus cyaneus</i>
horned lark	<i>Eremophila alpestris</i>
killdeer	<i>Charadrius vociferus</i>
red-winged blackbird	<i>Agelaius phoeniceus</i>
common grackle	<i>Quiscalus quiscula</i>
sharp-tailed grouse	<i>Tympanuchus phasianellus</i>
ring-necked pheasant	<i>Phasianus colchicus</i>
American robin	<i>Turdus migratorius</i>
mourning dove	<i>Zenaida macroura</i>
western meadowlark	<i>Sturnella neglecta</i>
white-tailed deer	<i>Odocoileus virginianus</i>
pronghorn	<i>Antilocapra americana</i>
coyote	<i>Canis latrans</i>
American porcupine	<i>Erethizon dorsatum</i>
white-tailed jackrabbit	<i>Lepus townsendii</i>

Federal Listed Species

There are seven wildlife species listed as endangered or threatened by the USFWS under the Endangered Species Act (ESA 1973) or considered a candidate species for listing known to or could potentially occur in Oliver County: interior least tern, piping plover, whooping crane, black-footed ferret, pallid sturgeon, gray wolf, and Dakota skipper. (NDFO 2008). All of these same species, minus the Dakota skipper, are also known to or could potentially occur in Morton County as well.

Dakota Skipper

The Dakota Skipper butterfly (*Hesperia dacotae*) is a candidate species under the ESA. This small butterfly (1-1.5 inch wingspan) is found or potentially found in several North Dakota counties, including Oliver County. According to the USFWS, the Dakota skipper uses two habitat types: 1) low (wet) prairie dominated by bluestem grasses, wood lily, harebell, and smooth camas; 2) upland (dry) prairie on ridges and hillsides dominated by bluestem grasses, needlegrass, pale purple and upright coneflowers, and blanketflower. Conservation efforts include protection of remaining tracts of undisturbed native prairie. As the project contains significant amounts of native grasslands, there is the possibility for this species to occur in the project area if the correct combination of vegetation types (see above) around found. If potential habitat exists in the project area, species surveys should be conducted prior to construction so that impacts to Dakota skipper can be minimized or avoided.

Pallid Sturgeon

The pallid sturgeon is a large bottom dwelling fish species that historically ranged the entire length of the Missouri River. Today, their distribution in the Missouri River is restricted by dams and habitat loss has occurred due to river channelization, impoundment construction, and changes in water flow (NSU 1998). The pallid sturgeon is known to occur in the Missouri River, which borders both Morton and Oliver Counties (NDFO 2008). No habitat for the species occurs within or near the project area. Erosion control and spill prevention best management practices will eliminate any potential impacts from runoff at the site reaching the Missouri River. No impacts to pallid sturgeon are expected.

Gray Wolf

The gray wolf is typically gray, but ranges in color from white to black (USFWS 2007). Mature male wolves weigh 70 – 115 pounds and stand approximately 30 inches high at the shoulder. A gray wolf may have a territory of 50 square miles to more than a thousand that it defends. Gray wolves typically eat large animals such as deer, but supplement their diet with smaller animals such as beaver and smaller rodents. The gray wolf became listed on the Endangered Species list in 1978. Historically, the gray wolf range extended from the east coast to the west coast and from Alaska to Mexico except for the mid-Atlantic states and the Southeast. Gray wolves use a variety of habitats including prairie, forest, mountains and wetlands, preferring areas with a low density of people and roads. Currently, the gray wolf is listed as Endangered west of the Missouri River in North Dakota. There are no known populations of gray wolves near the BIWRA but wolves may be found incidentally throughout North Dakota. No impacts to the species are expected.

Black-footed Ferret

The black-footed ferret (*Mustela nigripes*) is listed as an endangered species under the ESA. Ferrets were once found throughout the Great Plains, from southern Canada through Texas, including portions of North Dakota (USFWS 2000). Black-footed ferrets rely almost exclusively on prairie dog towns for food and shelter. There are no known populations, wild or introduced, in North Dakota. No prairie dog towns were observed during the site visit or during an aerial survey of the entire project area. No impacts to the species are expected.

Interior Least Tern

The least tern is the smallest of the North American terns and, in North Dakota, the population may breed along exposed sandbars of the Missouri River. It is believed that they are endangered due in part to unnatural water fluctuations caused by water management. Least terns and piping plovers can be found nesting together along the Missouri River on the eastern side of Morton and Oliver Counties. Conservation measures include creation of appropriate unvegetated habitat, protection of nesting areas from disturbance, and control of water fluctuations.

While no potential nesting habitat for the least terns exists within the BIWRA, the potential exists for the species to fly through the WRA during migration. Little is known concerning the migration habits of the least terns, and it is not known if the species migrates along major river systems, if this species flies in a direct north-south pattern, or at what altitude this species flies during migration. The BIWRA is unlikely to have any effects on the species.

Piping Plover

The piping plover is a small bird that breeds on exposed sandbars in the Missouri River and along beaches of alkaline wetlands in North Dakota. They are threatened by habitat loss due to vegetation encroachment, shoreline development, and potentially water management, and disturbance by humans and other animals. The piping plover possibly occurs in Morton or Oliver Counties, with the Missouri River along the eastern border of the counties being designated Critical Habitat (USFWS 2009). Piping plover critical habitat has also been designated for numerous alkaline basins in several counties throughout North Dakota, but not within Oliver or Morton Counties. During certain water years it is possible that some of the manmade impoundments within the project area could provide bare shorelines for nest area, but they did not appear to have the alkaline qualities most often associated with preferred habitat.

While no or very limited potential nesting habitat for the piping plovers was observed within the BIWRA, the potential exists for the species to fly through the WRA during migration. Little is known concerning the migration habits of the piping plover, and it is not known if the species migrates along major river systems, if this species flies in a direct north-south pattern, or at what altitude this species flies during migration. The BIWRA is unlikely to have any effects on the species.

Whooping Crane

Whooping cranes are currently listed as endangered (32 FR 4001, 1967 Mach 11) except where nonessential experimental populations exist (66 FR 33903-33917, 2001 June 26; 62 FR 38932-38939, 1997 July 21; and 58 FR 5647-5658, 1993 January 22). In the US, the whooping crane was listed as threatened with extinction in 1967 and endangered in 1970 – both listings were “grandfathered” into the Endangered Species Act of 1973 (ESA 1973). The peak 2007-08 winter population was 266 birds. After the 2008 breeding season it was believe that approximately 300 whooping cranes migrated south, however, this number was reduced to 247 birds after mortalities during migration and especially on the winter grounds in 2008-09 (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.

Stehn (2007) documented a 200-mile wide migration corridor for whooping cranes based on the historical sightings of whooping cranes from the early 1960's through 2006. This 200-mile wide corridor (100 miles either side of the centerline) encompasses approximately 94% of the observations and a 100-mile wide corridor subset of this encompasses approximately 82% of the observations. The BIWRA is approximately 32-42 miles from the migration centerline (Figure 9). The USFWS has expressed concern with wind and other above ground developments (e.g., transmission lines) that are built anywhere within the 200-mile wide corridor, but with more emphasis placed on those projects within the region that encompasses 75% of the observations. This region extends approximately 40-miles either side of the centerline. This 75% region would approximately bisect the BIWRA. The project area is west of the majority of sightings in North Dakota (Austin and Richert 2001). The closest whooping crane observation to the BIWRA is 3.8 miles south (Figure 9).

The potential exists for whooping cranes to fly through the area during migration. Whooping cranes generally migrate at 1,000-6,000 ft altitudes, well above turbine height (Stehn 2007), 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 at altitudes corresponding to the rotor-swept areas. No whooping cranes or sandhill cranes have been reported as being killed or injured by wind turbines (NWCC 2004).

Besides direct mortality, concern has also been raised regarding potential displacement impacts that wind facilities may have on whooping cranes. For example, if whooping cranes avoid wind facilities, the likelihood of impacts with turbines is further decreased but the availability of habitat in the project area may be diminished, causing cranes to have to fly further to find suitable habitat to roost and forage. To date, no or very little quantitative data is available to help address displacement impacts on whooping cranes or sandhill cranes. A before-after control-impact (BACI) study looking at crane use (would be mostly sandhill crane use) of a WRA before and after construction would help identify if and to what degree wind facilities displace cranes from the area. A study such as this was considered for the BIWRA, but it was decided that the area is too far west of the main sandhill crane migration corridor to collect enough useful information for a meaningful study.

In Stehn (2008), the point was made that suitable wetlands for overnight roost sites are available throughout the migration corridor in the Dakotas and Nebraska (Stahlecker 1997a, 1997b in Stehn 2008). However, in analyzing the potential for significant impacts from wind development on whooping crane stopover habitat, Stehn also suggests assessing whether there is "lots of suitable stopover habitat in the general area ... or is the proposed wind farm site the only suitable whooping crane stopover habitat for miles around". This issue was investigated by comparing the potential whooping crane stopover habitat (using wetlands as this indicator) in the project area compared to surrounding areas. To complete this analysis, the exact project boundary was moved 10 miles in each of the four cardinal directions based on the project boundary centroid. After realigning the boundary, GIS was used to calculate the number of individual basins and total acreage of wetlands in each of the areas compared to the proposed BIWRA (Table 4).

Based on the NWI wetland information, there are approximately 227 acres of wetlands in 84 basins within the project area (Table 4). For this analysis it is assumed that all wetlands are

potential whooping crane roosting areas under one water regime or another (e.g., drought, normal, or flood). The BIWRA had the second lowest number of total basins, south was lowest with only 63, but had the highest acreage. The slightly higher acreage amount compared to the other four locations is the result of the one larger wetland/drainage area near the center of the project (Figure 3). All areas have cultivated agriculture for feeding. This analysis shows that overall, the BIWRA has some potential whooping crane roosting habitat, but is similar in total number of basins and acreages as areas to the north, south, east, and west. In other words, to answer the question posed by Stehn (2008) it is not “the only suitable whooping crane stopover habitat for miles around”.

Table 4. Comparison of wetland acres and basins and agricultural areas in the BIWRA and four other locations.

Area	Number of Basins	Wetland Acres	Ag. Acres
BIWRA	84	227.46	7,984
North	195	155.62	5,265
South	63	42.41	4,331
East	102	91.65	8,508
West	101	110.04	5,182

North Dakota Species of Concern

The North Dakota Game and Fish Department (NDGFD) was contacted by HDR Engineering to request a list of species and issues of concern to the state for this project. A reply has not been received at the time of this draft. Issues raised by the NDGFD on past projects have generally centered on avoiding impacts to native grasslands. When a reply is received, this section may need to be updated.

North Dakota does not have a state list of threatened and endangered species. North Dakota developed The Wildlife Action Plan, which is also known as the Comprehensive Wildlife Conservation Strategy (CWCS). The CWCS lists focuses on the top 100 species that are considered species of conservation priority by the NDGFD (<http://gf.nd.gov/conservation/levels-list.html>). The list is broken into three levels according to conservation need:

- Level I: Species in greatest need of conservation
- Level II: Species in need of conservation, but that have had support from other wildlife Programs
- Level III: Species in moderate need of conservation, but that are on the edge of their range in North Dakota.

The full list of CWCS species is found in Appendix C. Consistent with NDGFD direction, minimizing impacts to native grasslands would lessen the potential impact to many of these species as most occur in native grassland communities.

During a fall 2008 avian use study of a project site immediately north of the BIWRA, Tetra Tech EC, Inc., (Tetra Tech) documented 13 species that are on the CWCS list (Tetra Tech 2008). Level I species observed included chestnut-collared longspur, grasshopper sparrow, Franklin’s

gull, Sprague's pipit, Swainson's hawk, ferruginous hawk, and upland sandpiper. Level II species observed during the survey included bobolink, loggerhead shrike, northern harrier, prairie falcon, short-eared owl, and sharp-tailed grouse. No Level III species were reported. Based on the similar vegetation community and close proximity to the BIWRA, it would be expected that many of these same species could be found in the BIWRA as well. It is also possible that limited individual of other species on the list could be found in the BIWRA as the adjacent survey was only conducted for one season, fall 2008, and some species may have already migrated. Use rates documented in the adjacent project area for all species on the CWCS list were low, with the highest being sharp-tailed grouse.

Sharp-tailed grouse are known to occur in the BIWRA. Concern has been expressed nationally regarding the potential impact of wind facilities on prairie grouse (Pruett et al. in press), however, very little if any quantitative data exist on impacts to sharp-tailed grouse from wind development. To help fill in this lack of information a study is being initiated in the BIWRA to document sharp-tailed grouse lek locations and attendance during pre-construction conditions and for an extended period post-construction.

Raptors

Species Likely To Occur In the Area

The following raptor species could occur in or near the project area during some portion of the year: bald eagle, northern harrier, sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*A. cooperii*), northern goshawk (*A. gentilis*), broad-winged hawk (*Buteo platypterus*), Swainson's hawk (*B. swainsoni*), ferruginous hawk (*Buteo regalis*), red-tailed hawk, rough-legged hawk (*B. lagopus*), American kestrel (*Falco sparverius*), and merlin (*F. columbarius*). Other species often grouped with raptors that could be found in the project area include the great-horned owl (*Bubo virginianus*), eastern screech owl (*Otus asio*), burrowing owl (*Athene cunicularia*), and turkey vulture (*Cathartes aura*). Of these, the red-tailed hawk, American kestrel, ferruginous hawk, northern harrier, Swainson's hawk, great-horned owl, and burrowing are most likely to be nest in the project area. Seven of these species are confirmed or suspected breeders in the project area based on county records and habitats: northern harrier, Swainson's hawk, red-tailed hawk, American kestrel, great-horned owl, burrowing owl, and short-eared owl (Stewart 1975). During the site visits, red-tailed hawk, northern harrier, and golden eagle were observed in the project area (Table 3).

Tetra Tech (2008) documented red-tailed hawk, Swainson's hawk, northern harrier, American kestrel, prairie falcon, rough-legged hawk, great horned owl, ferruginous hawk, Cooper's hawk, and short-eared owl use during fall 2008 surveys in areas adjacent to BIWRA. These species would be consistent with species expected during fall migration. Use rates were low to moderate compared to other projects from around the country.

Potential Raptor Nesting Habitat

No raptor nests were observed during the site visit. Potential nest structures for above ground nesting species were present in the form of living and dead trees scattered throughout the project area. Farmsteads observed during the site visits usually had tree rows or woodlots associated

with them. Grassland areas could provide nesting habitats for ground-nesting raptors, such as the northern harrier and burrowing owl.

Potential for Prey Densities

No signs of colonial rodents, such as prairie dogs (*Cynomys* spp.) were observed during the site visits; these types of areas are known to attract feeding raptors. However, it is possible that small mammal colonies are present within the BIWRA, but were not visible from public roads or the air. Potential raptor prey sources include rodents, rabbits, and waterfowl; all consistent with a cultivated agriculture and native prairie region.

Overall, it is very difficult to assess potential prey densities during individual site visits from public access roads and prey densities can fluctuate rapidly based on habitat and climatic factors. However, overall prey densities are not expected to be significantly different than areas outside of the proposed BIWRA. 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 BIWRA is flat to rolling. There are no big hills, steep ridges, or other topographical features that might cause bottlenecks or significant updrafts where raptors might concentrate (Figures 4 and 5). 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). In Wyoming, raptors most often used areas within 164 ft (50 m) of the rim edge (Johnson et al. 2000b). It is not anticipated that topography will increase the potential for raptor use in the BIWRA.

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 (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 500 ft (152 m) in height (Erickson et al. 2001), likely because most small birds migrate at elevations of 500 to 1,000 ft (152 to 305 m) 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.

It is likely that birds migrate through the proposed BIWRA, including passerines, raptors, and waterfowl. Woodlots, wetlands, and grasslands areas scattered throughout the BIWRA may provide stopover habitat for migrants or individuals during post-breeding dispersal. Harvested

grain crops, such as wheat fields that were observed during the site visits, could serve as feeding areas that could attract migrating and wintering waterfowl. These types of habitats are found throughout the region and therefore their presence in the BIWRA should not concentrate bird use as compared to adjacent areas. The main potential migratory “funnel” in the area could be the Missouri River, approximately 25 miles east of the project area.

Tetra Tech (2008) documented 59 bird species during the fall 2008 migration surveys near the BIWRA. Of these, the most frequently observed species were the European starling, Brewer’s blackbird, horned lark, red-winged blackbird, Lapland longspur, and western meadowlark. All are common birds in the region during fall migration. Overall use rates were relatively low with a peak count of 17.75 birds/20 min average in mid-September. All of these species are common residents and migrants through the region. Based on similar location, vegetation, and topography it is assumed that the BIWRA would have received approximately the same level of use during the fall 2008.

Breeding Birds

The nearest US Geological Survey (USGS) Breeding Bird Survey (BBS) routes are the Zap, Regan, and Glen Ullin routes (Figure 10). Each BBS route is 24.5 mi (39.4 km) long, and all birds seen or heard are tallied for a three-minute period every half mile (0.8 km) along the route. In 2003, the most recent year that the Zap BBS route was surveyed, 1,393 individuals comprising 48 species were observed (Sauer et al. 2008). The most abundant birds observed were the western meadowlark, horned lark, and brown-headed cowbird. A total of nine species from the CWCS 100 species Level I list (Appendix C) have been documented at one time or another on the Zap route: Swainson’s hawk, willet, upland sandpiper, marbled godwit, Sprague’s pipit, lark bunting, grasshopper sparrow, and Baird’s sparrow. On the Glen Ullin route, 49 species and 978 individuals were observed during the 2008 survey (Sauer et al. 2008). The western meadowlark, horned lark, and brown-headed cowbird were the most abundant birds. Ten species from the CWCS 100 species Level I list have been documented on the Glen Ullin route: Swainson’s hawk, ferruginous hawk, willet, upland sandpiper, marbled godwit, Wilson’s phalarope, lark bunting, grasshopper sparrow, Baird’s sparrow, and chestnut-collared longspur. On the Regan BBS route, 1,082 individuals comprising 55 species were observed during the 2008 survey. The most common species in 2008 were red-winged blackbird, ring-necked pheasant, and cliff swallow. Eleven species from the CWCS 100 species Level I list have been observed on the Regan route: American white pelican, Swainson’s hawk, yellow rail, willet, upland sandpiper, marbled godwit, Wilson’s phalarope, lark bunting, grasshopper sparrow, Nelson’s sharp-tailed sparrow, and chestnut-collared longspur.

Displacement of grassland nesting birds is often one of the primary concern wildlife agencies express regarding the placement of wind facilities in and near grassland areas. 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 (CRP) 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 492 ft (150 m) at a wind-energy facility in northern South Dakota. The proposed BIWRA contains grasslands, some of which are native grasslands, and some species of sensitive grassland passerines are likely to be present in the BIWRA and displaced in the area around turbines. As more research is published, the potential impacts of wind turbines on breeding passerines can be better defined. If the project does not affect the grasslands in the BIWRA, displacement impacts should be negligible.

Bats

There are several species of bats that could be found in the BIWRA, 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 the silver-haired bat (*Lasionycteris noctivagans*) (BCI website). The USFWS had formerly listed the long-eared bat (*Myotis evotis*), Townsend's big-eared bat (*Corynorhinus townsendii*), long-legged bat (*Myotis volans*), and small-footed myotis (*Myotis leibii*) as candidate species. Based on information from Bat Conservation International (BCI), none of the former candidate species occur in the BIWRA (BCI website).

Potential roosting habitat within the BIWRA is found in the form of trees and buildings; no caves were observed during the site visits. Bats generally forage over water and open spaces such as agricultural fields, grasslands, streams, and wetlands/ponds. Bats may forage over the entire BIWRA, although the extent of use is not known. Bats may prey on insects that are likely to concentrate over water in wetlands and streams, and these types of areas found in the BIWRA are most likely to attract foraging bats.

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. The species most commonly found as fatalities at wind-energy facilities include hoary bats, silver-haired bats and eastern red bats (Table 5). The highest numbers of bat fatalities found at wind-energy facilities to date have occurred in eastern North America on ridge tops dominated by deciduous forest and where documented use rates have been high (NWCC 2004, Table 6). However, Barclay et al. (2007) recently reported relatively high fatality rates from a facility in Canada located in grassland and agricultural habitats. Unlike the eastern US wind-energy facilities with high bat mortality, the Alberta facility is in open grasslands and crop fields, although it is adjacent to foothills along the Rocky Mountains and may lie within a bat migration corridor.

Limited or no quantitative bat use surveys have been conducted in North Dakota, at least that are publicly available. Based on bat use and bat fatalities studies from other parts of the country, including Minnesota (Table 6), it would be expected that bat impacts would be similar to other open grassland/agricultural landscapes. However, the exact magnitude of these fatalities and the degree to which bat species will be affected is difficult to determine.

**Table 5. Species composition of bat fatalities from wind-energy facilities in the US
(Adapted from NRC 2007, p. 65).**

Common Name	Scientific Name	Total (number and percentage)	
hoary bat	<i>Lasiurus cinereus</i>	1,023	41
eastern red bat	<i>Lasiurus borealis</i>	580	23
eastern pipistrelle	<i>Pipistrellus subflavus</i>	261	11
silver-haired bat	<i>Lasionycteris noctivagans</i>	209	8.4
little brown myotis	<i>Myotis lucifugus</i>	145	5.8
Brazilian (or Mexican) free-tailed bat	<i>Tadarida brasiliensis</i>	143	5.7
big brown bat	<i>Eptesicus fuscus</i>	59	2.4
northern long-eared myotis	<i>Myotis septentrionalis</i>	8	0.4
western red bat	<i>Lasiurus blossomvilli</i>	4	0.2
Seminole bat	<i>Lasiurus seminolus</i>	1	0.1
unknown	-	53	2.1
Total		2,486	100

Table 6. Wind-energy facilities in the US with both pre-construction Anabat sampling data and post-construction mortality data for bat species (adapted from Kunz et al. 2007).

Wind-Energy Facility	Activity (#/detector night)	Mortality (bats/turbine/year)
Foote Creek Rim, WY	2.2	1.3
Buffalo Ridge, MN	2.1	2.2
Buffalo Mountain, TN	23.7	20.8
Top of Iowa, IA	34.9	10.2
Mountaineer, WV	38.3	38

CONCLUSIONS

A summary of the potential for wildlife and habitat conflicts in the proposed wind-energy facility development area is presented in Table 7.

No federally-listed endangered, threatened, or candidate plant species are known to occur in the BIWRA. There are seven wildlife species listed as endangered, threatened, or candidate by the USFWS known or potentially could occur in Morton and Oliver Counties: Dakota skipper, pallid sturgeon, gray wolf, black-footed ferret, least tern, piping plover, and whooping crane. Of these seven, the whooping crane and Dakota skipper have the highest potential, however still remote, of occurring in the BIWRA. Habitat for the others is either completely lacking or extremely limited in the region.

Potential direct impacts to Dakota skipper can be minimized or reduced by avoiding specific types of native grasslands and areas occupied by the species. Potential direct impact to whooping cranes (i.e., mortality) is not likely given the current evidence. There are concerns regarding the displacement of whooping cranes from potential habitat within WRA once developed. Analysis indicates that there is some potential roosting habitat in the BIWRA, but that there is also suitable habitat outside of the WRA if cranes do avoid the project area after construction.

The State of North Dakota maintains a list of 100 species of conservation concern. Several of these species have been documented near the project area during Breeding Bird Surveys conducted by the USGS as well as another wind facility study adjacent to the BIWRA. Impacts to many of these species can be avoided or minimized by focusing construction activities on cultivated landscapes. Studies have been initiated to investigate impacts of the project on sharp-tailed grouse.

In general, native land cover in most of the BIWRA, including native grasslands and wetlands, are not unique in the region, but are of concern on a broader scale (i.e., concern regarding loss of native prairie). As the land cover is not unique to the region, these characteristics are not likely to attract or concentrate bird or bat species compared to surrounding areas. Project developments in the areas with less wetlands and native grasslands would likely have lower impacts (i.e., displacement) to wildlife, particularly grassland and bird species and bats.

Numerous birds and bats, both as measured by species and individuals, will utilize the area. Raptors, especially red-tailed hawk, northern harrier, Swainson's hawk, and American kestrel, are likely to frequent the area. The presence of larger trees in woodlots provide nesting habitat for the tree-nesting species and the grasslands provide nesting opportunities for ground-nesting birds such as the northern harrier. These are all species and habitat types common to the region.

Deciduous trees and buildings in the area provide potential roosting habitat and hibernacula for bats. Research to date on the impacts of wind-energy facilities on bats has shown that species that conduct long distance migrations usually make up the vast majority of bat fatalities at wind-energy facilities. Additionally, the timing of bat fatalities at wind-energy facilities indicates that

most bats are killed by turbines during the migration season. Few bat fatalities have been recorded at wind-energy facilities during spring or summer, although bat use at wind-energy facilities has been recorded during those seasons. Migrating bats appear to be at much higher risk of collision than resident bat species that may breed near wind-energy facilities. Maximizing distances from open water and wetlands should decrease the potential impacts to bats.

As the proposed BIWRA moves forward, further wildlife and habitat surveys may be warranted on specific site(s), such as grasslands. The results can be used to identify areas of high wildlife use and sensitive habitats to assist with turbine siting and to compare with post-construction data collection. These surveys are likely to include:

- Jurisdictional wetlands and waters of the US are present in the BIWRA. A formal delineation should be performed prior to construction.
- Update of vegetation community mapping in selected areas of the BIWRA to assist in micro-siting away from grassland areas if current project layout changes.
- Surveys for nesting raptors should be conducted to determine breeding raptor use of the BIWRA and to avoid nesting areas during construction.
- Fixed-point bird use surveys could be conducted to help evaluate the project area use levels in comparison to other WRA in the region and nationally. By evaluating use rates and fatality rates at existing WRA's to use rates at proposed development locations it may be possible to estimate potential direct impacts levels (e.g., low, moderate, or high).
- There is little information on bat migration routes in the Midwest and potential impacts of wind-energy development on bats are of increasing concern. The BIWRA has trees and several rural buildings/structures as potential roosts. Although there is no evidence that significant numbers of bats would migrate through the BIWRA, acoustic bat surveys could help predict possible levels of impact.
- Species-specific surveys for federal or state species of concern likely to be impacted by the BIWRA should be made once construction plans are finalized and it is known if the layout will impact potential habitat (e.g., Dakota skipper). This would include both plant and animal surveys as appropriate.
- Post-construction bird and bat mortality monitoring to estimate fatality rates and at least one year post-construction surveys for breeding birds, bats, and bird use surveys to compare to pre-construction survey information.

**Table 7. A summary of the potential for wildlife and habitat conflicts in the BIWRA.
 VH = Very High, H = High, M = Medium, and L = Low.**

Issue	VH	H	M	L	Notes
Potential for raptor nest sites			✓		Several tree rows and woodlots
Concentrated raptor flight potential				✓	The general lack of stark topography over the majority of the BIWRA 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. Missouri River is about 25 miles east of project.
Potential for raptor prey species			✓		Suitable habitat for small mammals
Potential for protected species to occur		✓			Protected species may occur in the area (e.g., bald eagles). Within the whooping crane migratory corridor.
Potential for State Issues		✓			Protection of native grasslands is a likely state species issues, grasslands are in the area.
Uniqueness of habitat at wind-energy facility			✓		Overall, habitat in the BIWRA is not unique compared to the surrounding landscape, but is of concern on a broader scale (e.g., loss of native grasslands).
Potential for rare plants to occur				✓	No federally listed plants known to occur in county.
Potential for use by bats			✓		The site has scattered trees, buildings, and wetlands.

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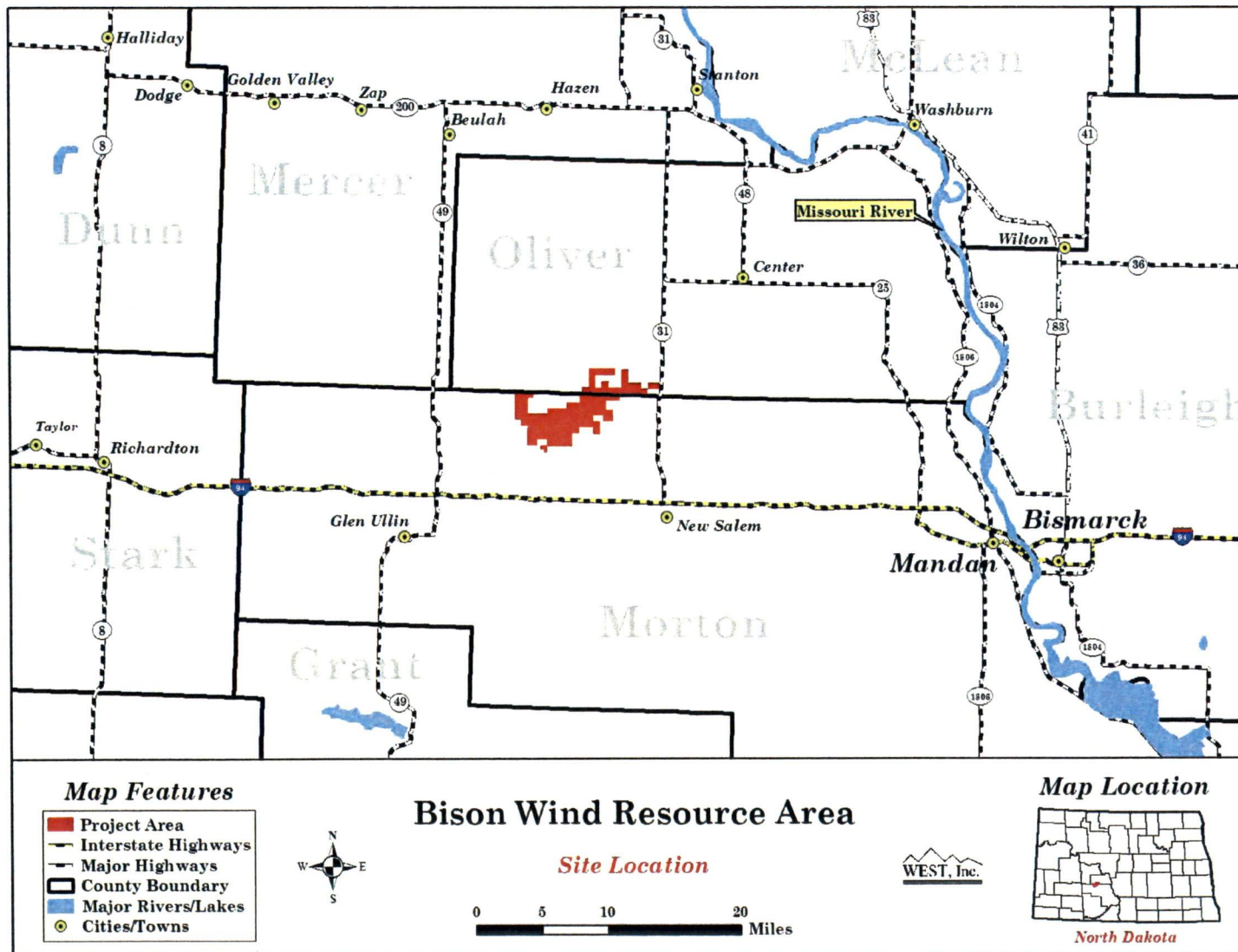


Figure 1. Location of the BIWRA.

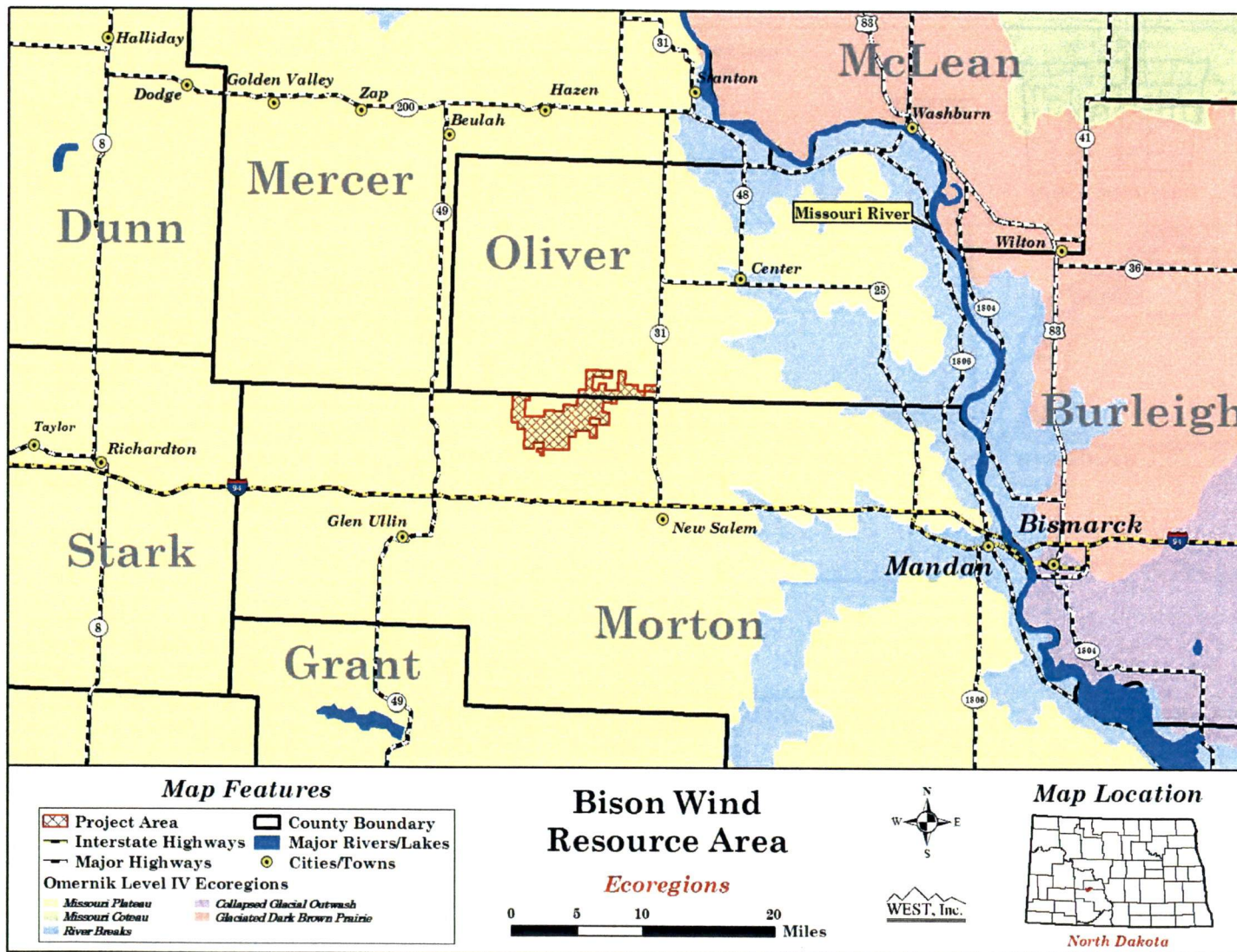


Figure 2. Ecoregion map of the BIWRA.

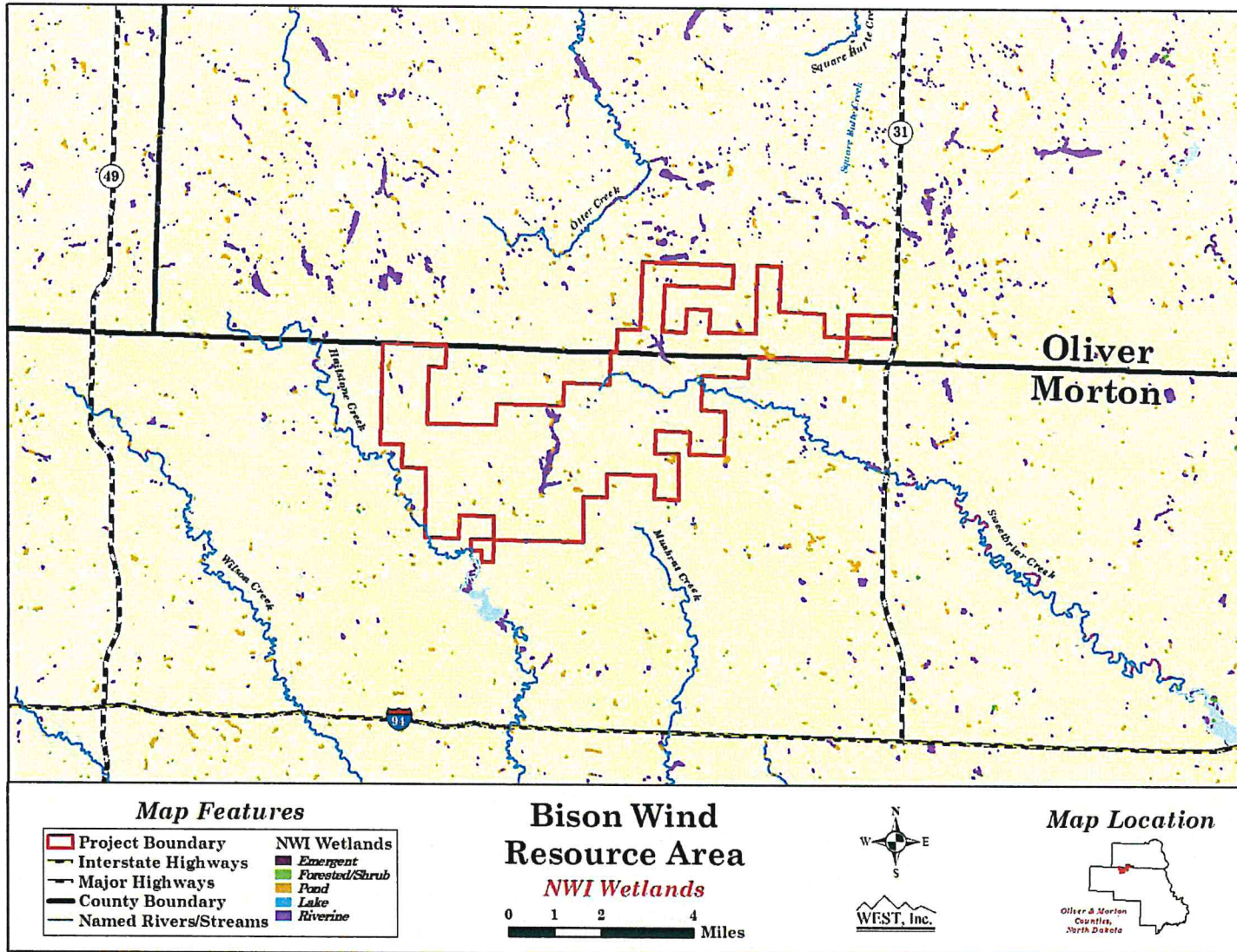


Figure 3. NWI wetland map of BIWRA.

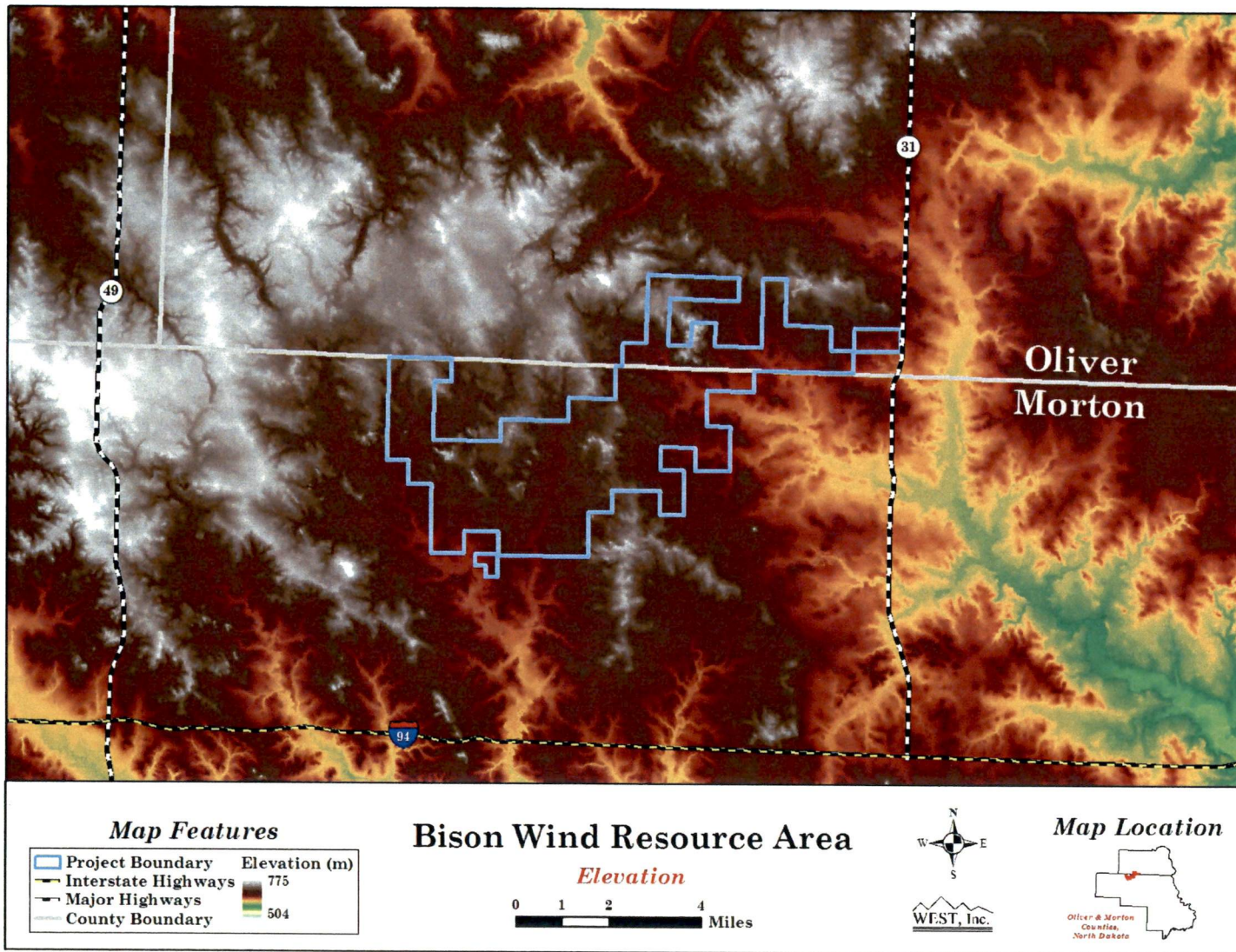


Figure 4. Digital elevation model of the BIWRA.

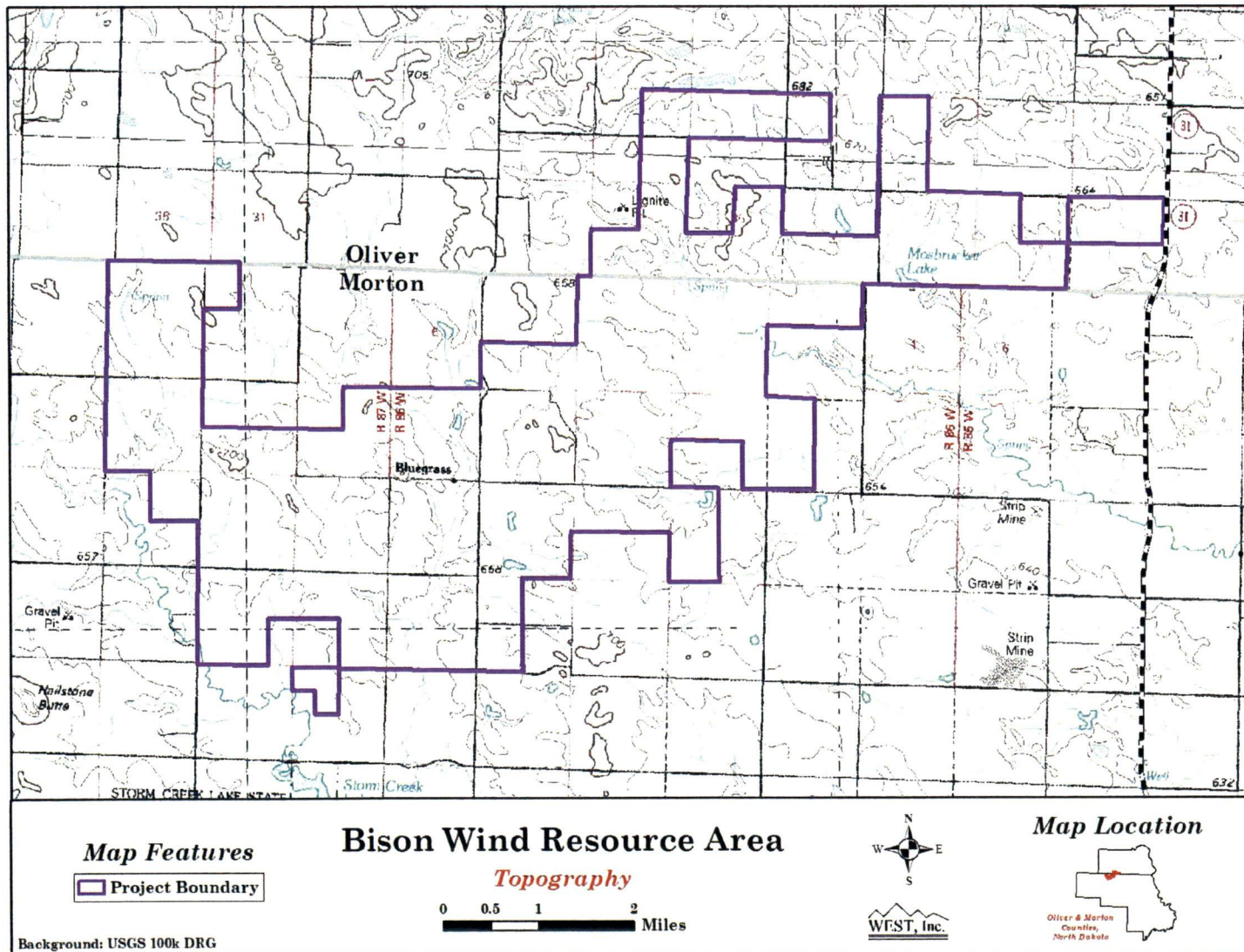


Figure 5. Topographic map of the BIWRA.

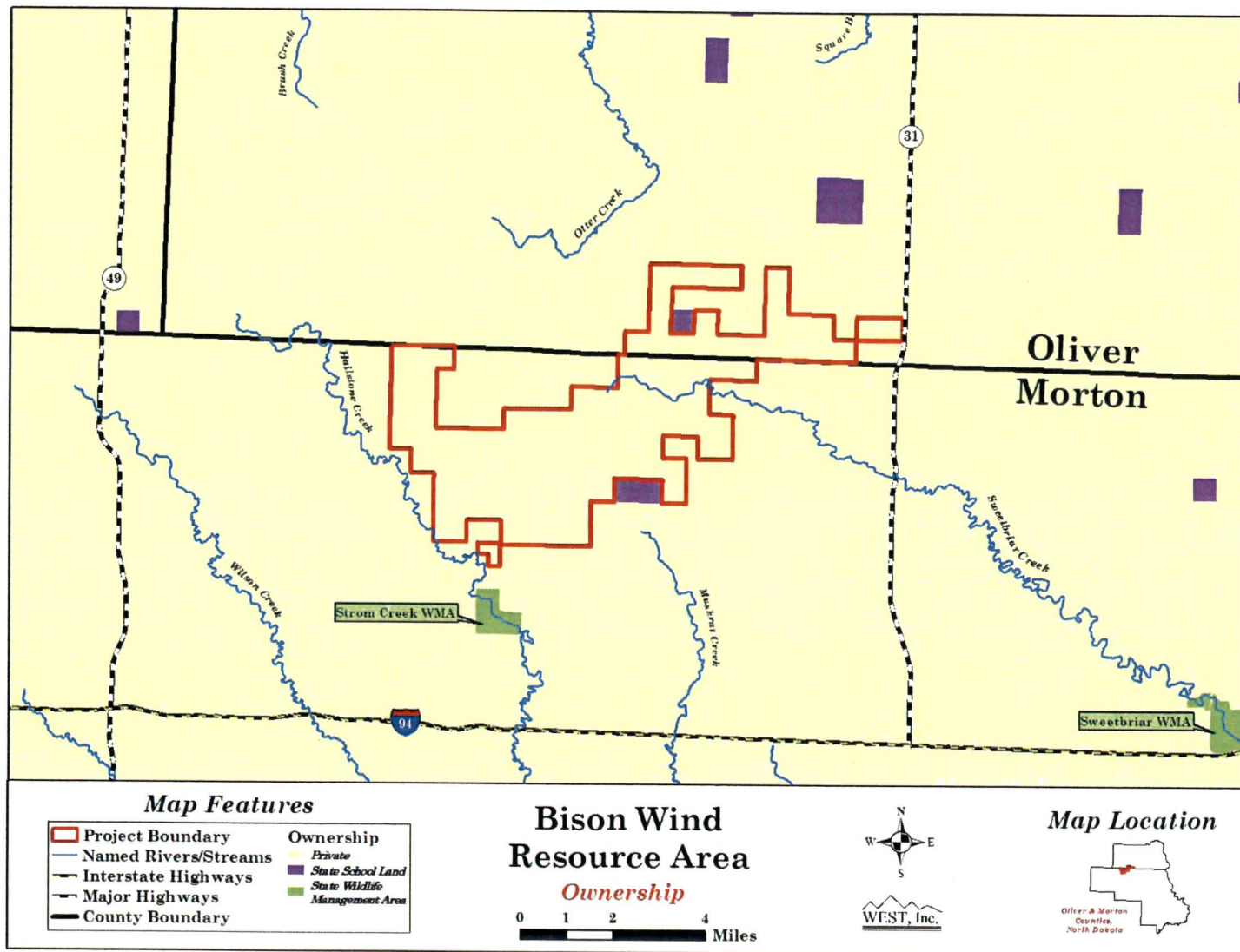


Figure 6. Surface ownership map of the BIWRA.

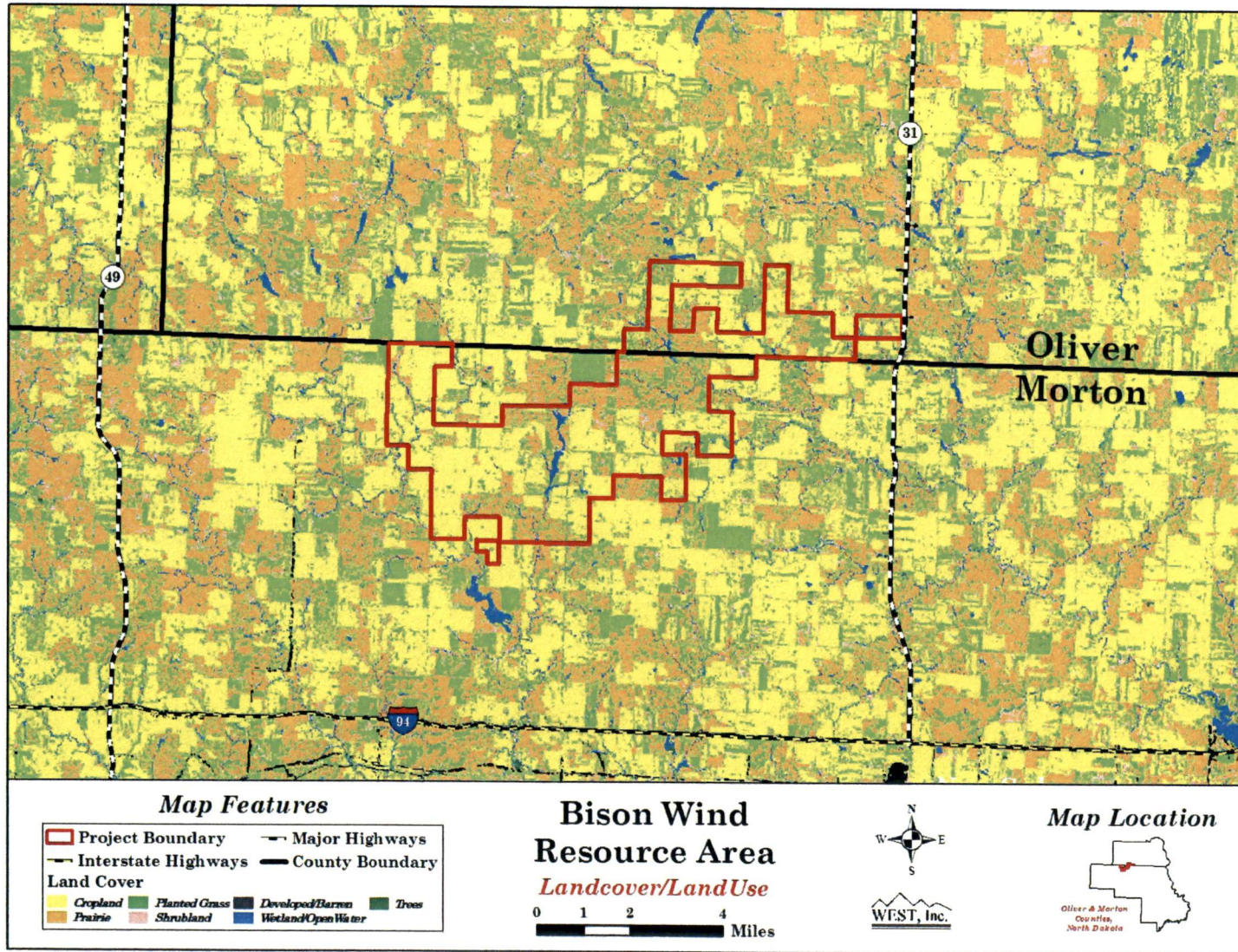


Figure 7. Land use/land cover with in the BIWRA.

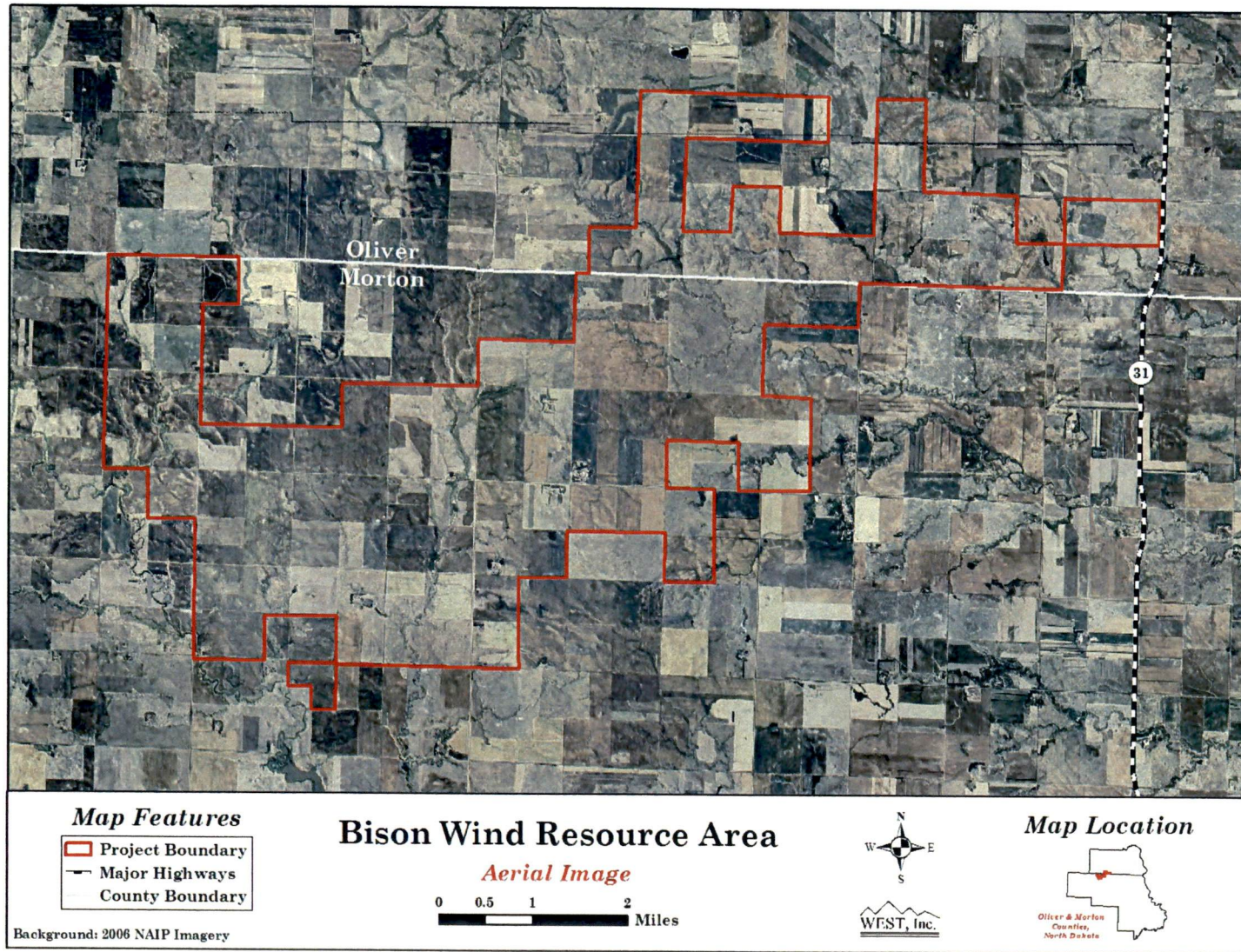


Figure 8. Aerial photograph of the BIWRA.

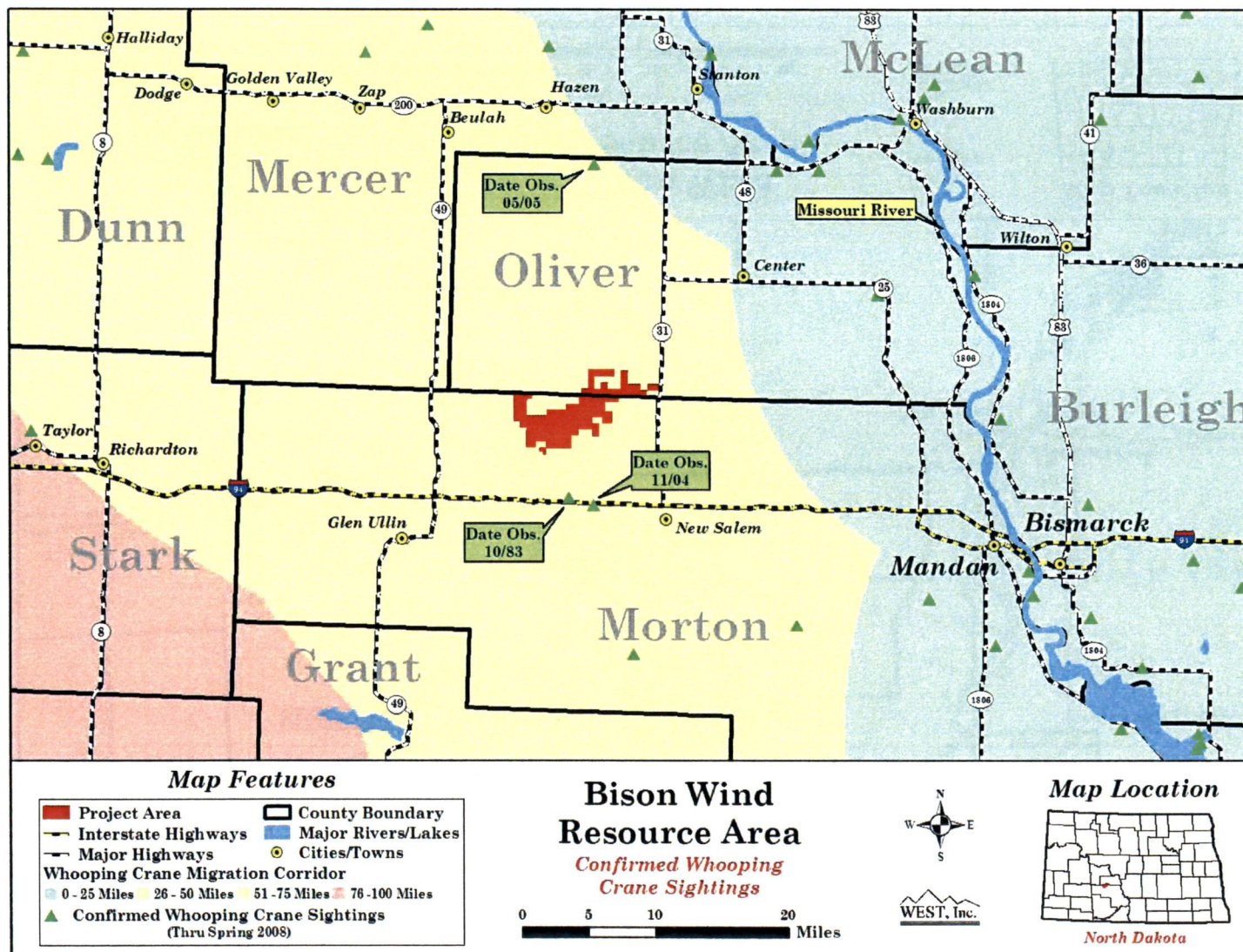


Figure 9. Whooping crane observations and migration corridor.

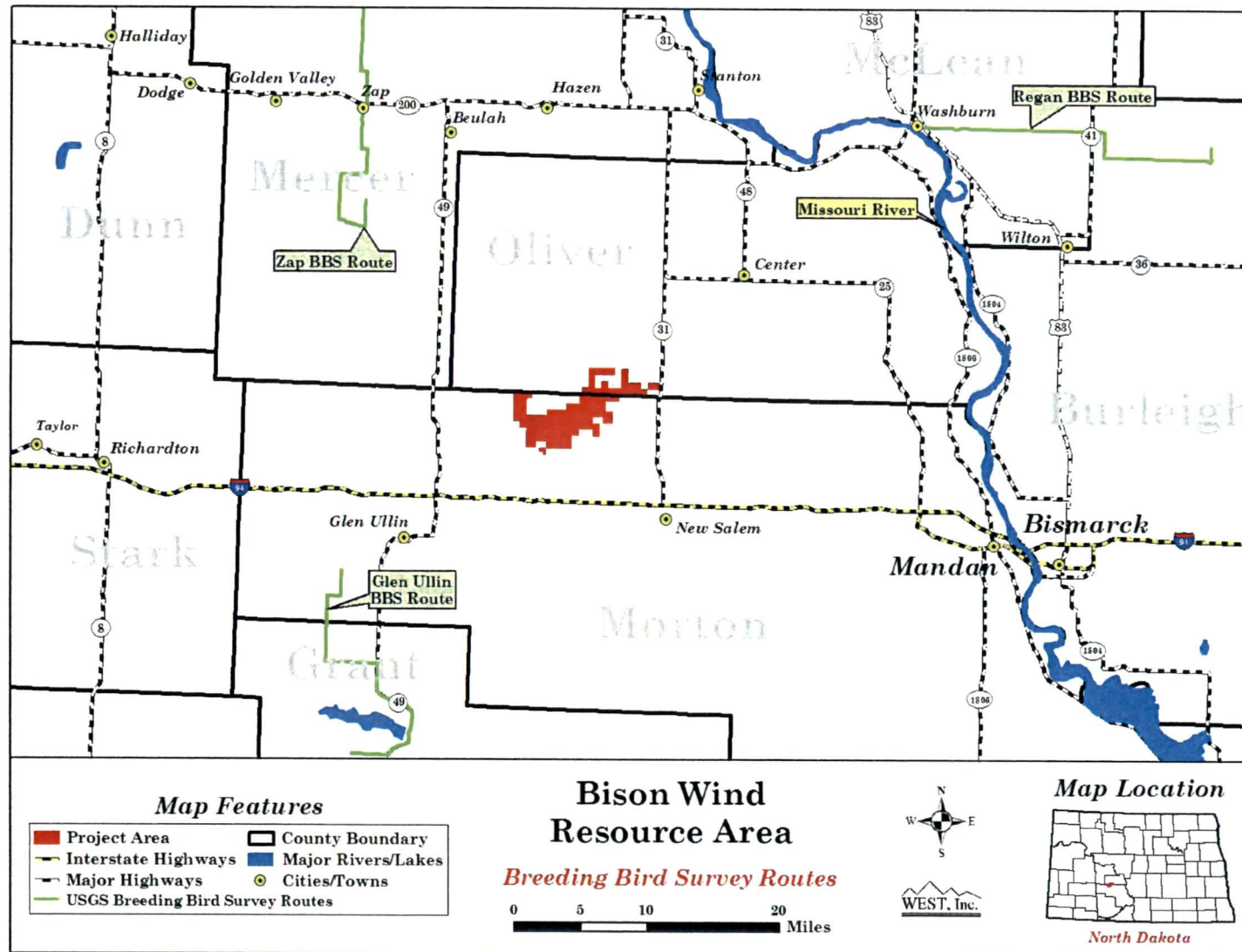


Figure 10. Breeding Bird Survey routes near the BIWRA.

Appendix A: Photographs from the BIWRA



Photo 1. Grassland (probably native) and cropland with met tower.



Photo 2. Grassland (introduced foreground with probable native background) and small creek.



Photo 3. CRP hayed 2008, except knob with tree.



Photo 4. Cropland (small grain) with small ridge line of native grass.



Photo 5. Cropland (corn) with buttes in background.



Photo 8. Cropland (small grain) and native grassland.

Appendix B: Correspondence with the USFWS and the NDGFD.



April 7, 2009

Mr. Jeffrey Towner
Ecological Services
North Dakota Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Towner:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

Typically, wind project construction includes erecting wind turbines and constructing associated facilities such as gravel access roads, an underground electrical collector system, electrical collector substations, and overhead transmission lines. Although final locations of the turbines, access roads, and the electrical collector system have not been determined at this time, the table below identifies Township sections potentially affected by the project:

Table 1 – Sections within Bison I Wind Project Boundary

County	Township	Range	Sections
Morton	140N	86W	2-5, 8-11, 15- 17, 20
	141N	85W	29- 34
Oliver	141N	86W	25, 26, 35, 36

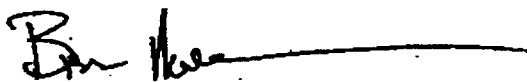
HDR welcomes comments the U.S. Fish and Wildlife Service (USFWS) may have on the project at this time. In particular, HDR requests your review of the sections identified in Table 1 for potential effects to federally listed threatened or endangered species or other sensitive natural resources.

HDR also requests that you provide locations of USFWS wetland or grassland easements, and the locations of parcels that the USFWS may be targeting for easements, within the proposed project boundary. Information provided in a GIS format, if available, would be most helpful; however, legal descriptions or hard copy maps would also help Minnesota Power and HDR in reviewing the project.

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

Sincerely,

HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering
Terry Ellsworth, U.S. Fish and Wildlife Service



April 7, 2009

Mr. Jeb Williams, Wildlife Resource Management Supervisor
North Dakota Game and Fish Department
100 North Bismarck Expressway
Bismarck, ND 58501-5095

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Williams:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

Typically, wind project construction includes erecting wind turbines and constructing associated facilities such as gravel access roads, an underground electrical collector system, electrical collector substations, and overhead transmission lines. Although final locations of the turbines, access roads, and the electrical collector system have not been determined at this time, the table below identifies Township sections potentially affected by the project:

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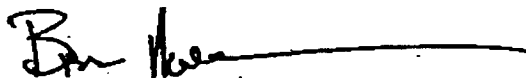
HDR welcomes comments the North Dakota Game and Fish Department (NDGFD) may have at this time or throughout the permit application process. In particular, HDR requests your review of the sections identified in Table 1 for potential effects to known threatened or endangered species or other sensitive natural resources. The project boundary is located approximately 3 miles northeast of the Storm Creek Wildlife Management Area. Your comments will be incorporated into the NDPS review process for the project.

HDR also requests you provide locations of any state easements, and the locations of parcels that the NDGFD may be targeting for easements within the proposed project boundary. Information provided in the format of a GIS layer, if available, would be most helpful; however, legal descriptions or hard copy maps would also assist Minnesota Power and HDR in reviewing the project.

This project notification and information request precedes filing of the NDPS Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

Sincerely,

HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering

Appendix C: Comprehensive Wildlife Conservation Strategy 100 species.

Level-I Species	
Common Name	Scientific Name
Horned Grebe	<i>Podiceps auritus</i>
American White Pelican	<i>Pelecanus erythrorhynchos</i>
American Bittern	<i>Botaurus lentiginosus</i>
Swainson's Hawk	<i>Buteo swainsoni</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Yellow Rail	<i>Coturnicops noveboracensis</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Upland Sandpiper	<i>Bartramia longicauda</i>
Long-billed Curlew	<i>Numenius americanus</i>
Marbled Godwit	<i>Limosa fedoa</i>
Wilson's Phalarope	<i>Phalaropus tricolor</i>
Franklin's Gull	<i>Larus pipixcan</i>
Black Tern	<i>Chlidonias niger</i>
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>
Sprague's Pipit	<i>Anthus spragueii</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Baird's Sparrow	<i>Ammodramus bairdii</i>
Nelson's Sharp-tailed Sparrow	<i>Ammodramus nelsonii</i>
Lark Bunting	<i>Calamospiza melanocorys</i>
Chestnut-collared Longspur	<i>Calcarius ornatus</i>
Canadian Toad	<i>Bufo hemiophrys</i>
Plains Spadefoot	<i>Spea bombifrons</i>
Smooth Green Snake	<i>Liochlorophis vernalis</i>
Western Hognose Snake	<i>Heterodon nasicus</i>
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>
Sturgeon Chub	<i>Macrhybopsis gelida</i>
Sicklefin Chub	<i>Macrhybopsis meeki</i>
Pearl Dace	<i>Margariscus margarita</i>
Blue Sucker	<i>Cycleptus elongatus</i>
Level-II Species	
Northern Pintail	<i>Anas acuta</i>
Canvasback	<i>Aythya valisineria</i>
Redhead	<i>Aythya americana</i>
Northern Harrier	<i>Circus cyaneus</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Prairie Falcon	<i>Falco mexicanus</i>

Bison I Site Characterization Study

Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>
Greater Prairie Chicken	<i>Tympanuchus cupido</i>
Greater Sage-grouse	<i>Centrocercus urophasianus</i>
Piping Plover	<i>Charadrius melodus</i>
American Avocet	<i>Recurvirostra americana</i>
Least Tern	<i>Sterna antillarum</i>
Short-eared Owl	<i>Asio flammeus</i>
Burrowing Owl	<i>Athene cunicularia</i>
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Sedge Wren	<i>Cistothorus platensis</i>
Dickcissel	<i>Spiza americana</i>
Le Conte's Sparrow	<i>Ammodramus leconteii</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Common Snapping Turtle	<i>Chelydra serpentina</i>
Short-horned Lizard	<i>Phrynosoma douglassi</i>
Northern Redbelly Snake	<i>Storeria occipitomaculata</i>
Pygmy Shrew	<i>Sorex hoyi</i>
Richardson's Ground Squirrel	<i>Spermophilus richardsonii</i>
Swift Fox	<i>Vulpes velox</i>
River Otter	<i>Lutra canadensis</i>
Black-footed Ferret	<i>Mustela nigripes</i>
Paddlefish	<i>Polyodon spathula</i>
Pallid Sturgeon	<i>Scaphirhynchus albus</i>
Silver Chub	<i>Macrhybopsis storeriana</i>
Northern Redbelly Dace	<i>Phoxinus eos</i>
Flathead Chub	<i>Platygobio gracilis</i>
Trout-perch	<i>Percopsis omiscomaycus</i>
Threeridge	<i>Amblema plicata</i>
Wabash Pigtoe	<i>Fusconaia flava</i>
Mapleleaf	<i>Quadrula quadrula</i>
Black Sandshell	<i>Ligumia recta</i>
Creek Heelsplitter	<i>Lasmigona compressa</i>
Pink Heelsplitter	<i>Potamilus alatus</i>
Level-III Species	
Whooping Crane	<i>Grus americana</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Brewer's Sparrow	<i>Spizella breweri</i>
McCown's Longspur	<i>Calcarius mccownii</i>
Smooth Softshell Turtle	<i>Apalone mutica</i>

Bison I Site Characterization Study

False Map Turtle	<i>Graptemys pseudogeographica</i>
Northern Prairie Skink	<i>Eumeces septentrionalis</i>
Northern Sagebrush Lizard	<i>Sceloporus graciosus</i>
Arctic Shrew	<i>Sorex arcticus</i>
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>
Long-eared Myotis	<i>Myotis evotis</i>
Long-legged Myotis	<i>Myotis volans</i>
Plains Pocket Mouse	<i>Perognathus flavescens</i>
Hispid Pocket Mouse	<i>Chaetodipus hispidus</i>
Sagebrush Vole	<i>Lemmiscus curtatus</i>
Eastern Spotted Skunk	<i>Spilogale putoris</i>
Gray Wolf	<i>Canis lupis</i>
Chestnut Lamprey	<i>Ichthyomyzon castaneus</i>
Silver Lamprey	<i>Ichthyomyzon unicuspis</i>
Central Stoneroller	<i>Campostoma anomalum</i>
Hornyhead Chub	<i>Nocomis biguttatus</i>
Pugnose Shiner	<i>Notropis anogenus</i>
Blacknose Shiner	<i>Notropis heterolepis</i>
Rosyface Shiner	<i>Notropis rubellus</i>
Finescale Dace	<i>Phoxinus neogaeus</i>
Yellow Bullhead	<i>Ameiurus natalis</i>
Flathead Catfish	<i>Pylodictis olivaris</i>
Logperch	<i>Percina caprodes</i>
River Darter	<i>Percina shumardi</i>
Pink Papershell	<i>Potamilus ohioensis</i>

APPENDIX C

Agency Letters

C-1 Letters from HDR



April 7, 2009

Mr. Daniel E. Cimarosti, State Project Manager
U.S. Army Corps of Engineers
North Dakota Regulatory Office
1513 South 12th Street
Bismarck, ND 58504-6640

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Cimarosti:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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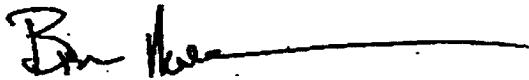
County	Township	Range	Sections
Morton	140N	86W	2-5, 8-11, 15- 17, 20
Oliver	141N	85W	29- 34
	141N	86W	25, 26, 35, 36

HDR welcomes comments the U.S. Army Corps of Engineers (USACE) may have at this time or throughout the permit application process. In particular, HDR requests your review of the sections identified in Table 1 for jurisdictional waters or other potential permit requirements for the USACE. Your comments will be incorporated into the NDPSC review process for the project.

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

Sincerely,

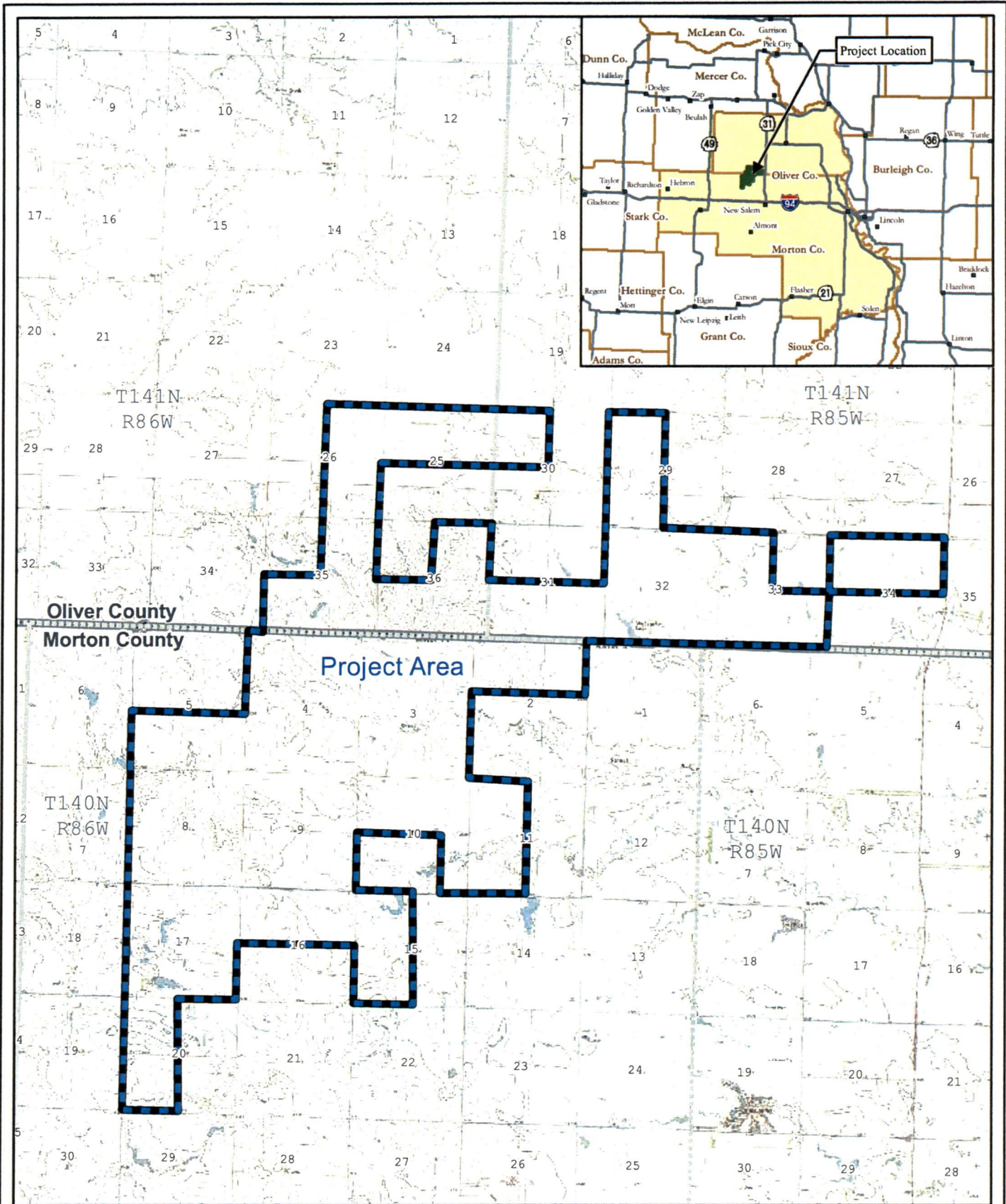
HDR Engineering, Inc.

A handwritten signature in black ink, appearing to read "Bruce Moreira", with a long horizontal line extending to the right.

Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering



Map Document: (v:\nspe-gis-flg\proj\MinPower106318\map_docs\mxd\WindApplication\Figures\Figure1_ProjectVicinityMap.mxd) 3/31/2009 9:58:41 AM

HDR



0 0.5 1 Miles

Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

- Proposed Phase 1 Project Boundary
- County Boundary



April 7, 2009

Mr. David D. Pfliiger, District Conservationist
Oliver County Soil and Water Conservation District
345 Center Avenue South, Box 87
Center, ND 58530-0087

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Pfliiger:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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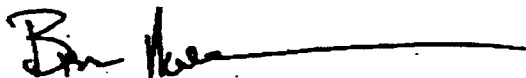
HDR welcomes comments the Oliver County Soil and Water Conservation District (SWCD) may have at this time or throughout the permit application process. Your comments will be incorporated into the NDPSC review process for the Bison I project.

HDR would like to work with your office to identify Conservation Reserve Program (CRP) properties in the project area. Please identify the preferred method of obtaining information from your office on the parcels within the project area that participate in the CRP program.

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

Sincerely,

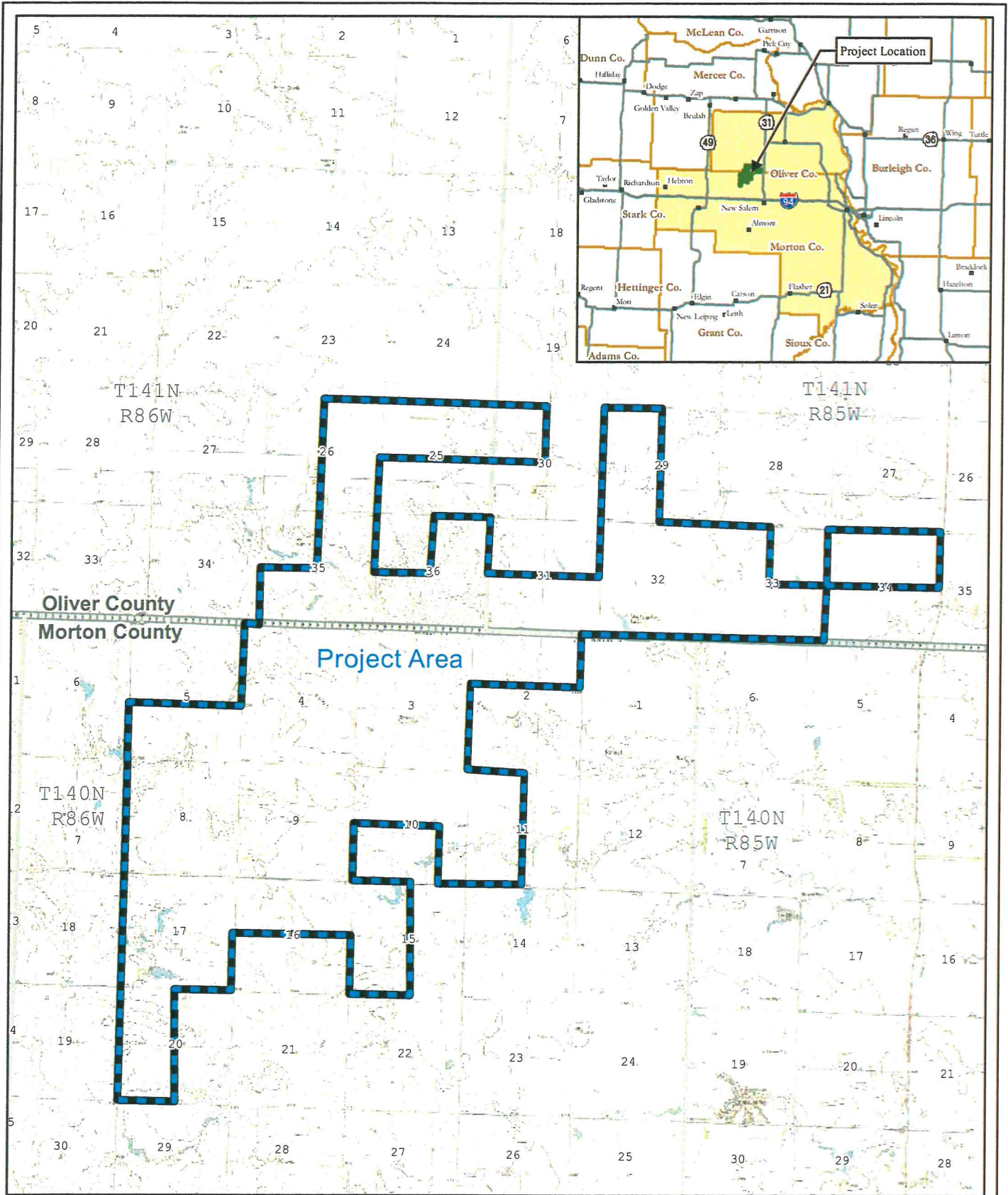
HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering



0 0.5 1 Miles

Figure 1: Project Vicinity Map
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

Legend

- Proposed Phase 1 Project Boundary
- County Boundary



April 7, 2009

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

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Wicklund:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

Typically, wind project construction includes erecting wind turbines and constructing associated facilities such as gravel access roads, an underground electrical collector system, electrical collector substations, and overhead transmission lines. Although final locations of the turbines, access roads, and the electrical collector system have not been determined at this time, the table below identifies Township sections potentially affected by the project:

Table 1 – Sections within Bison I Wind Project Boundary

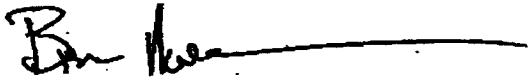
County	Township	Range	Sections
Morton	140N	86W	2-5, 8-11, 15- 17, 20
Oliver	141N	85W	29- 34
	141N	86W	25, 26, 35, 36

HDR welcomes comments the Oliver County Planning and Development Department may have at this time or throughout the permit application process. HDR requests your review of the sections listed in Table 1 to identify any permits that may be required for the project. HDR anticipates completing a Conditional Use Permit in 2009 for the proposed project. Your comments will be incorporated into the NDPSC review process for the Bison I project.

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

Sincerely,

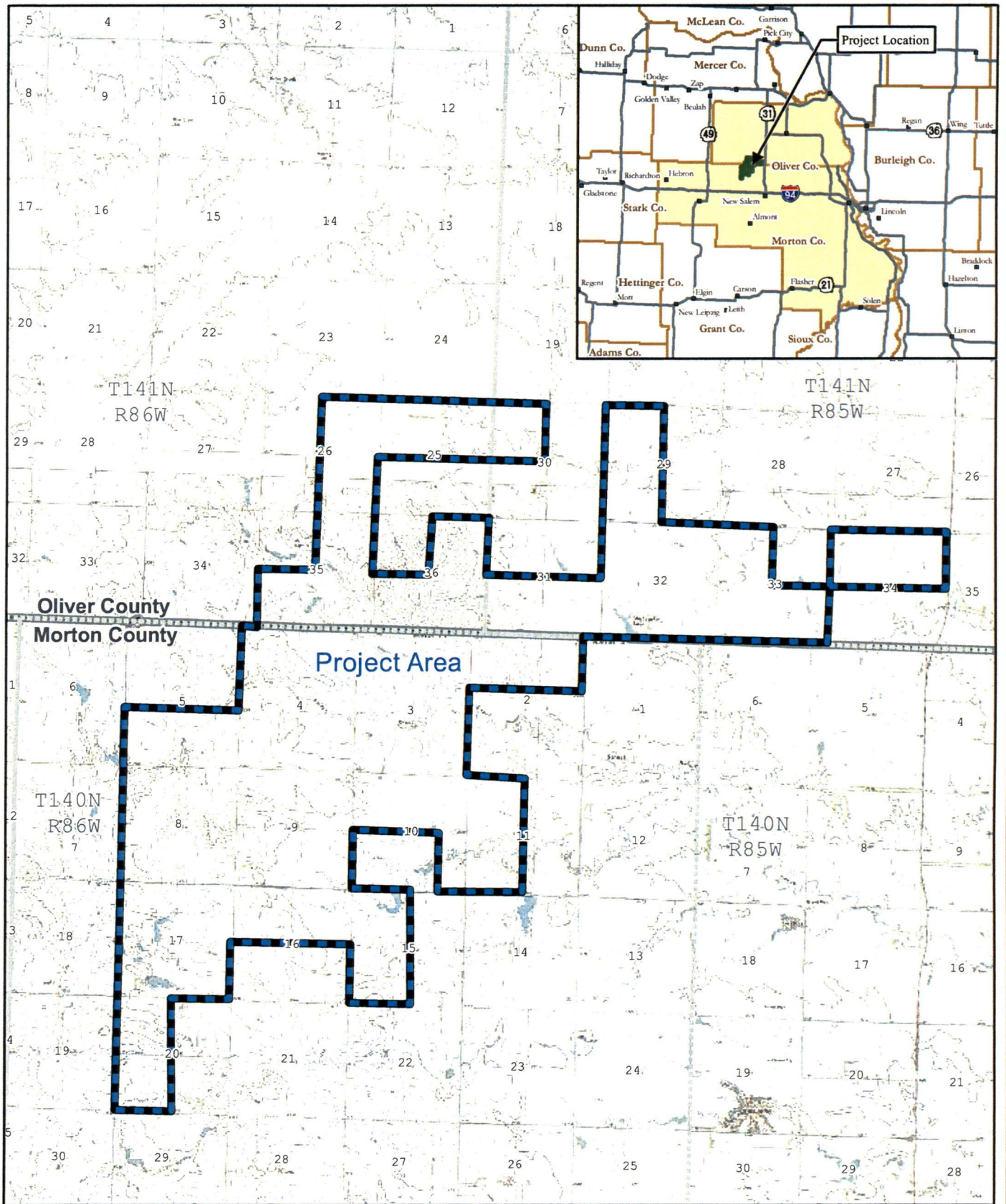
HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

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Map Document: (\\unsp-gis-file\gispro\MiniPower\106316\map_docs\mxd\WindApplication\Figures\Figure1_ProjectVicinityMap.mxd) 3/31/2009 9:58:41 AM

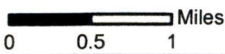


Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

- Proposed Phase 1 Project Boundary
- County Boundary



April 7, 2009

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

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Nelson:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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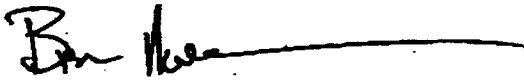
County	Township	Range	Sections
Morton	140N	86W	2-5, 8-11, 15- 17, 20
Oliver	141N	85W	29- 34
	141N	86W	25, 26, 35, 36

HDR welcomes comments the Oliver County Highway Department may have at this time or throughout the permit application process. HDR requests your review of the sections listed in Table 1 to identify potential impacts to County roadways and any permits that may be required for the project. Your comments will be incorporated into the NDPSC review process for the project.

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

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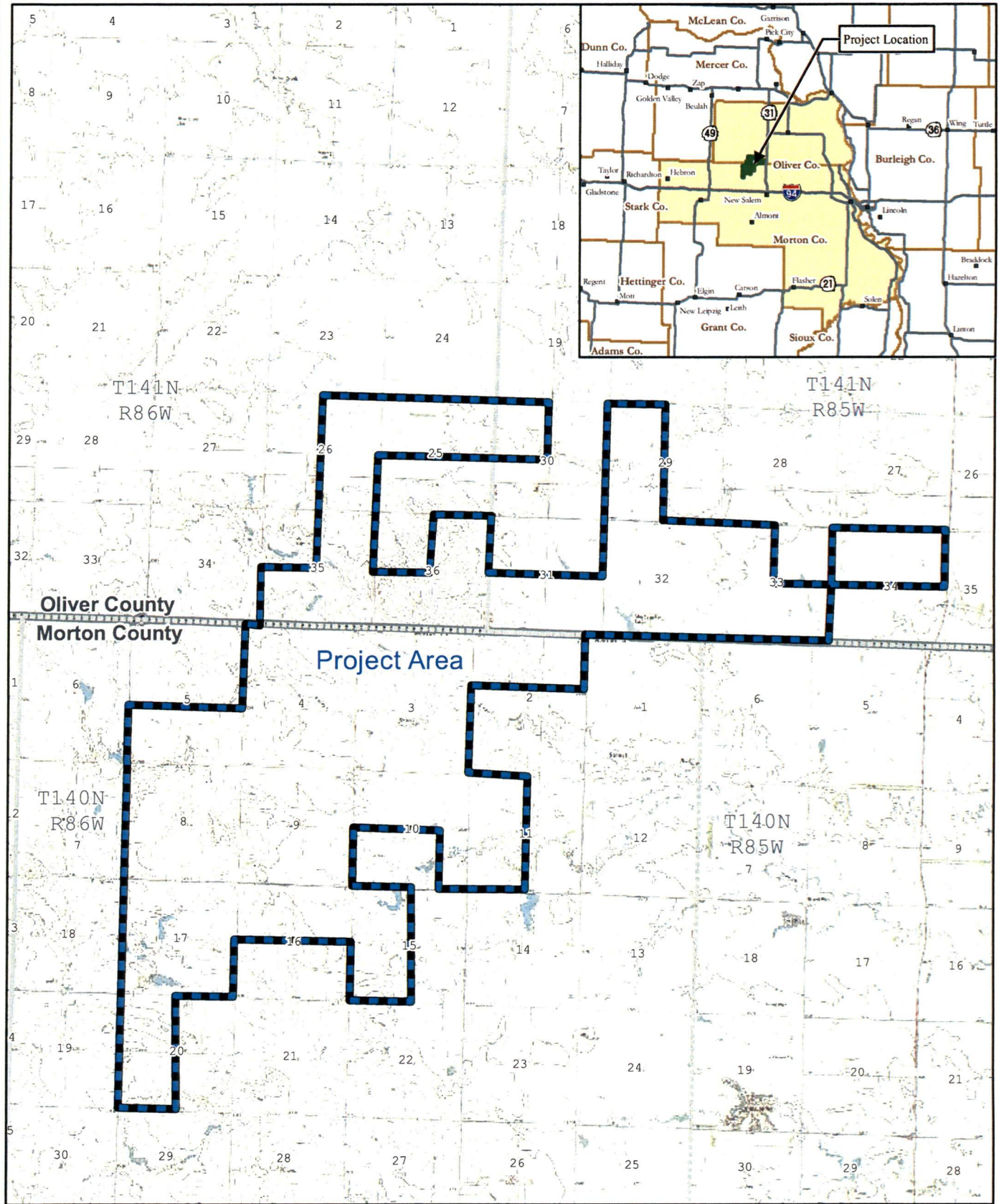
HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

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Map Document: (\\mspe-gis-fie\gis\proj\MapPower\100316\map_2\doc\mxd\WindApplication\Figures\Figure1_ProjectVicinityMap.mxd) 3/12/09 9:58:51 AM



HDR



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Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary



April 7, 2009

Mr. Dale Frink, State Engineer
North Dakota State Water Commission
900 East Boulevard Avenue, Department 770
Bismarck, ND 58505-0850

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Frink:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc.(hereinafter “Minnesota Power”) in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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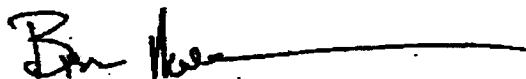
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HDR Engineering, Inc.

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Bruce Moreira
Environmental Scientist

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Todd Mattson, HDR Engineering

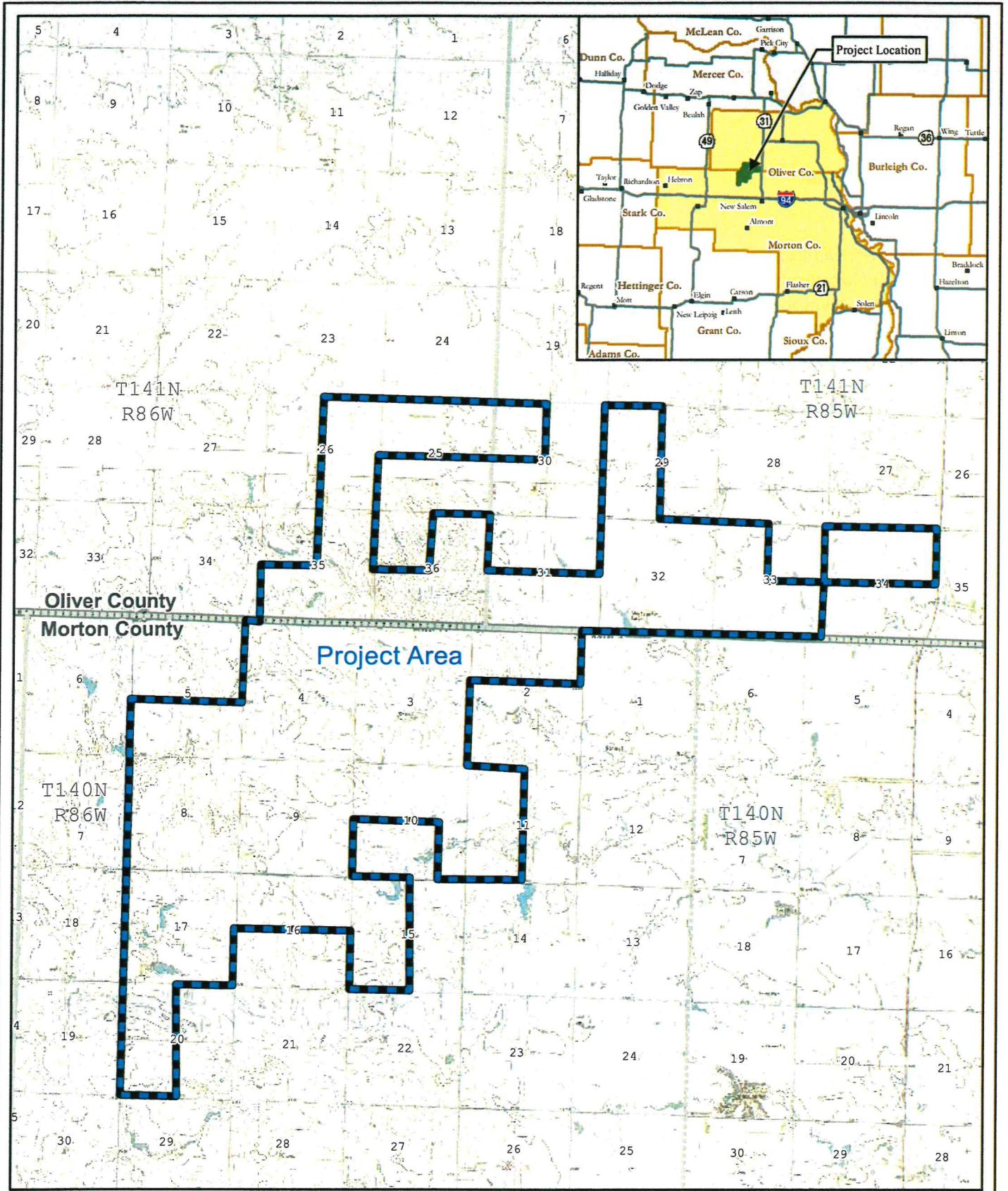


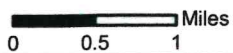


Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary





April 7, 2009

Mr. Jeff Engleson
North Dakota State Land Department
Energy Development Impact Office
PO Box 5523
Bismarck, ND 58506-5523

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Engleson:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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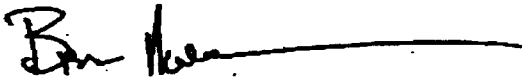
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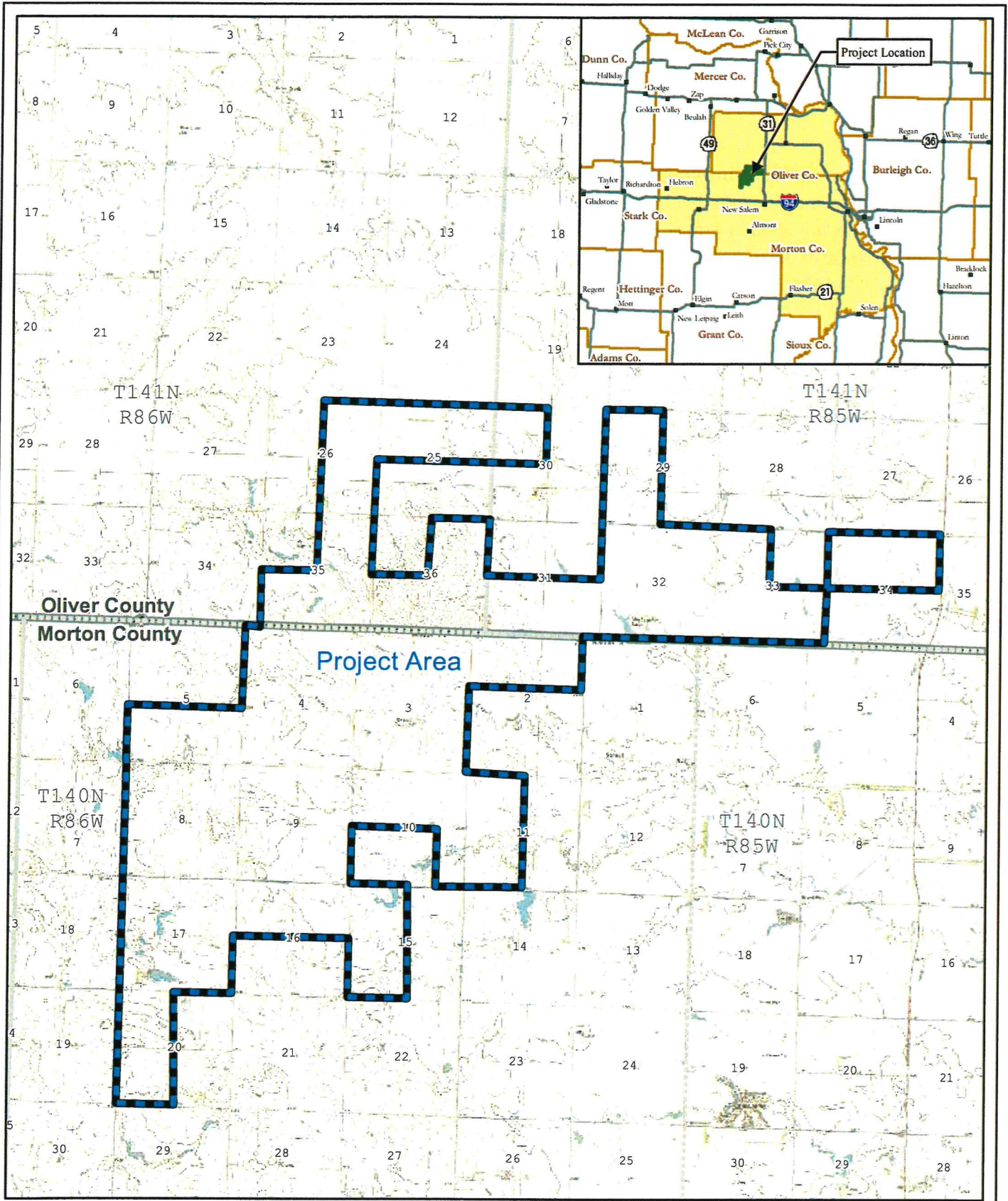
HDR Engineering, Inc.

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Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering



Map Document: (\\msps-gis-filegispro\MinPower\106316\map_docs\mxd\WindApp\calof\figures\Figure 1_ProjectVicinityMap.mxd) 2/12/2009 10:38:41 AM



HDR



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Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary



April 7, 2009

Mr. Gary Preszler, Land Commissioner
North Dakota State Land Department
1707 North 9th Street
PO Box 5523
Bismarck, ND 58506-5523

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Preszler:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc.(hereinafter “Minnesota Power”) in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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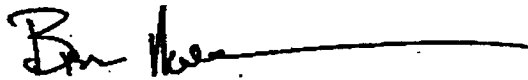
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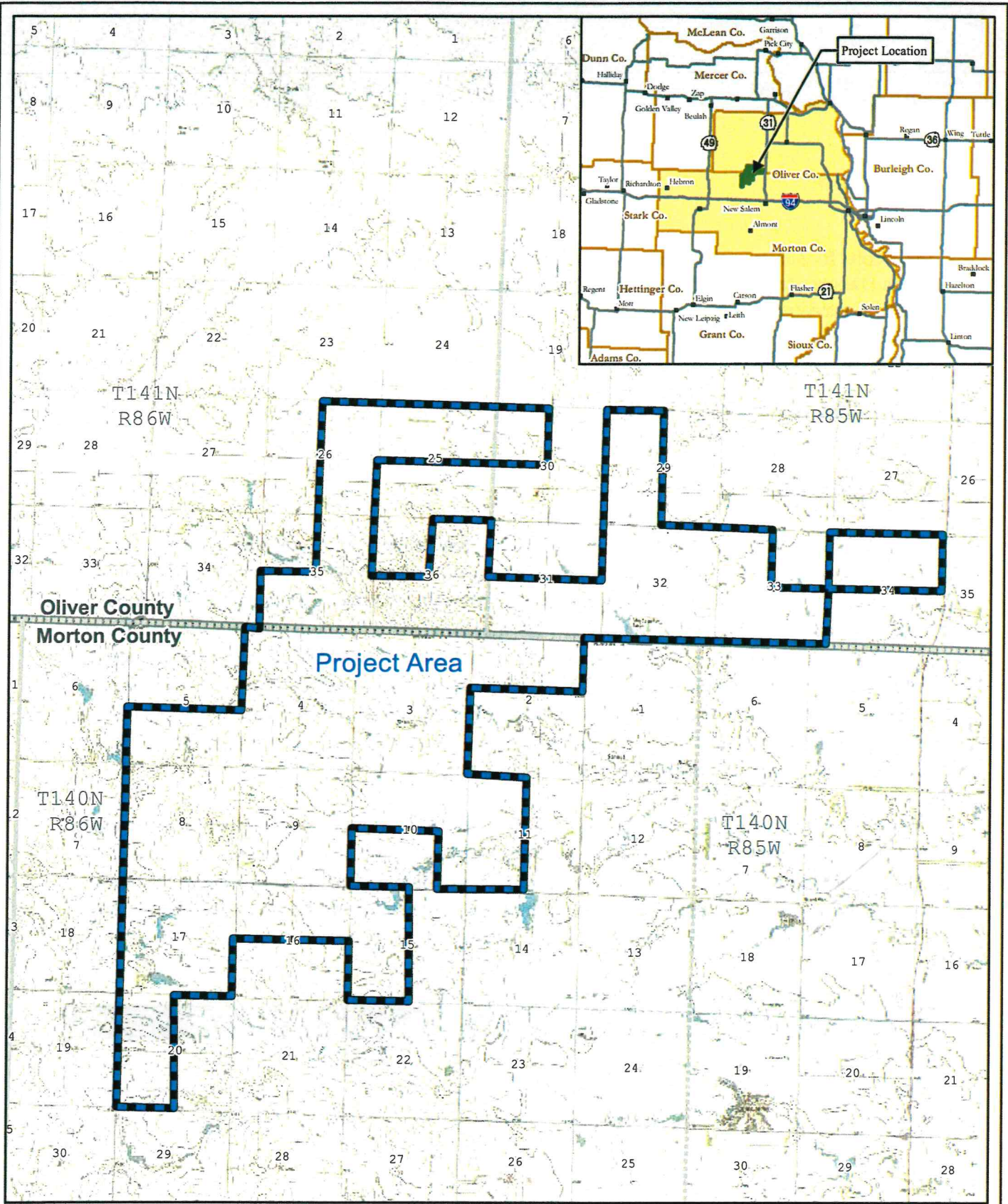
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Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

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Todd Mattson, HDR Engineering



Map Document: (mnpa-gis-file\gisproj)\MinnPower\106316\map_docs\mxd\WindApplication\Figures\Figure_1_ProjectVicinityMap.mxd
3/31/2009 9:58:41 AM

HDR



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Figure 1: Project Vicinity Map
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

Legend

- Proposed Phase 1 Project Boundary
- County Boundary



April 7, 2009

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

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Hochhalter:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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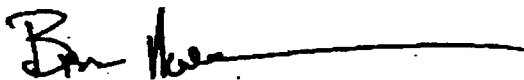
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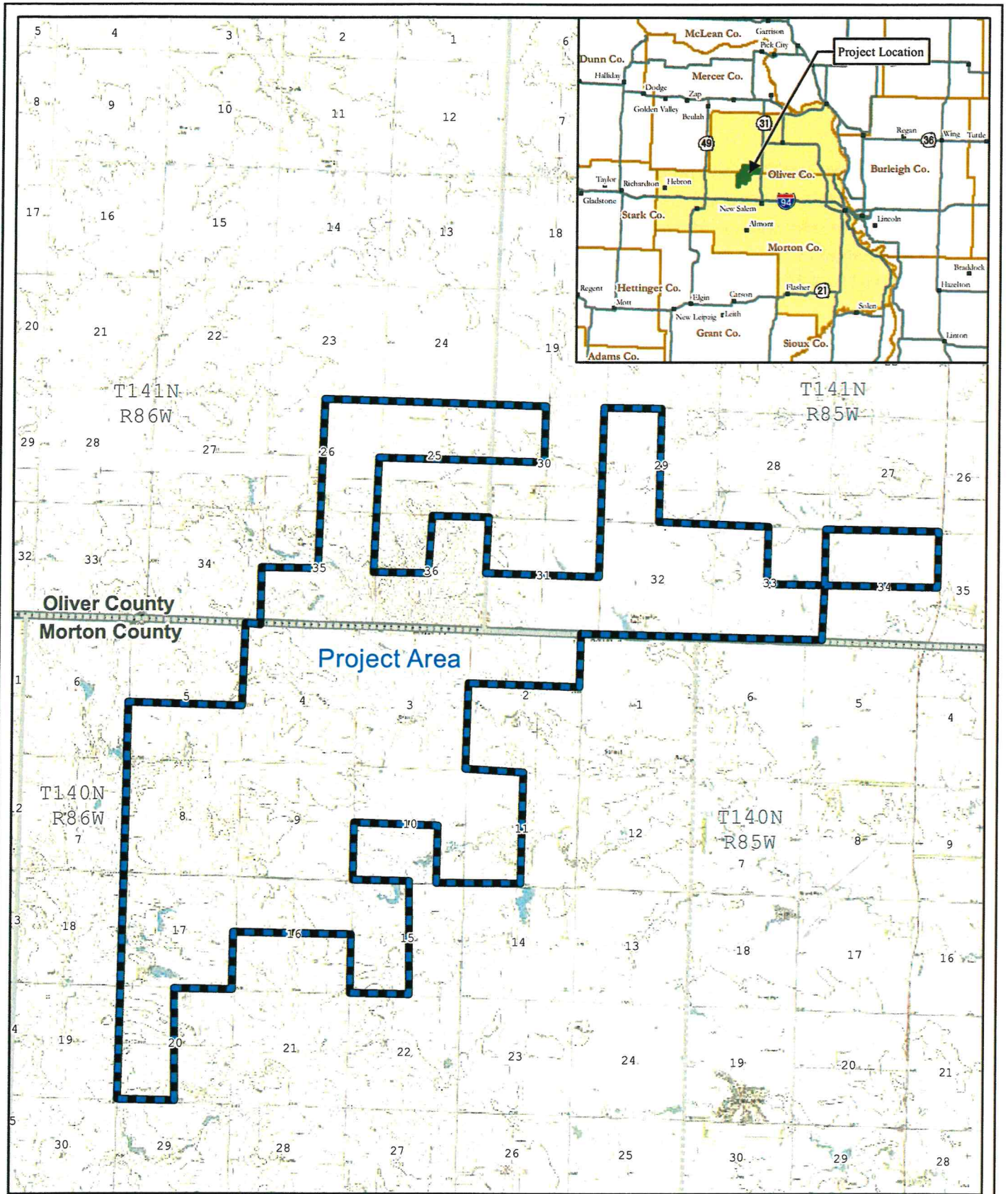
HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

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Todd Mattson, HDR Engineering



Map Document: (\\mspe-gis-figs\spoj\MinPower\106316\map_docs\msd\WindApplication\Figures\Figure1_ProjectVicinityMap.mxd) 3/31/2009 9:55:41 AM

Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

- Proposed Phase 1 Project Boundary
- County Boundary



April 7, 2009

Mr. Merlan E Paaverud, Jr
Director, State Historical Society of North Dakota and State Historic Preservation Officer
North Dakota Heritage Center
612 East Boulevard Avenue
Bismarck, ND 58505

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Paaverud:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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At present, there is no federal agency involvement in this project, and Minnesota Power realizes there is currently no requirement to consult under Section 106 of the National Historic

Preservation Act. However, in order for Minnesota Power to acquire the proper permits from the North Dakota Public Services Commission (NDPSC), North Dakota Century Code (NDCC) 49-22-09 requires that effects on historic sites and structures, and paleontological or archaeological sites be considered.

HDR anticipates conducting an archaeological inventory of areas within the project construction footprint that have a high probability for buried resources; we also anticipate an inventory of standing structures in the project construction footprint. Your agency's comments will be incorporated into the cultural resource reports for the project.

As project development and refinement occurs, Minnesota Power will actively consult with you on cultural resources issues.

If you require further information or have questions regarding this matter, please contact me at (763) 278-5992 or Stephen.Sabatke@hdrinc.com

Sincerely,
HDR Engineering, Inc



Stephen Sabatke
Archaeologist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Minnesota Power
Todd Mattson, HDR Engineering

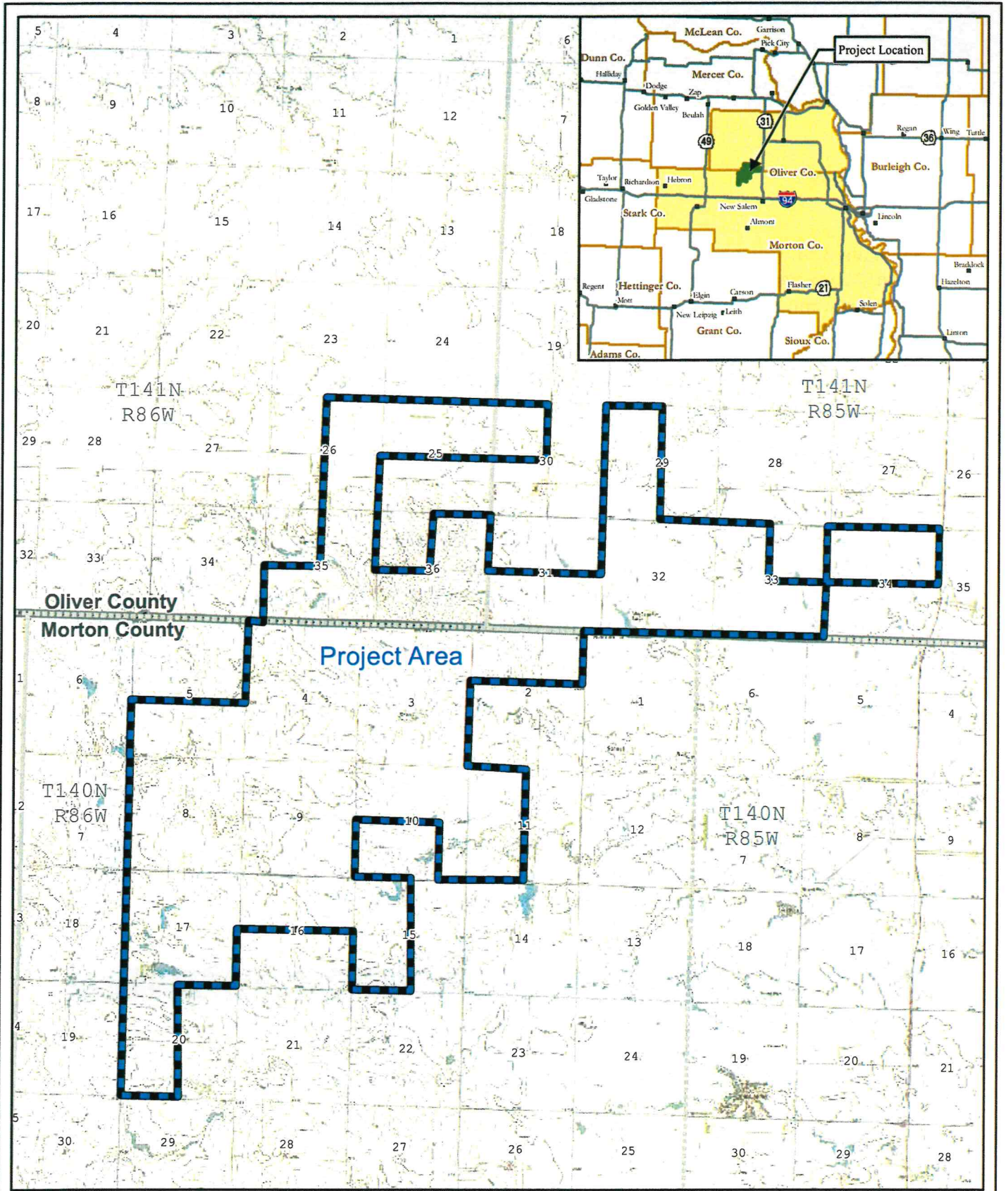


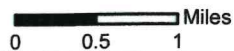


Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary





April 7, 2009

Ms. Kathy Duttonhefner
North Dakota Parks and Recreation Department
1600 East Century Avenue, Suite 3
Bismarck, ND 58503

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Ms. Duttonhefner:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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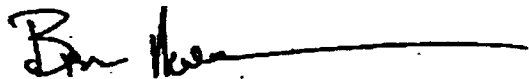
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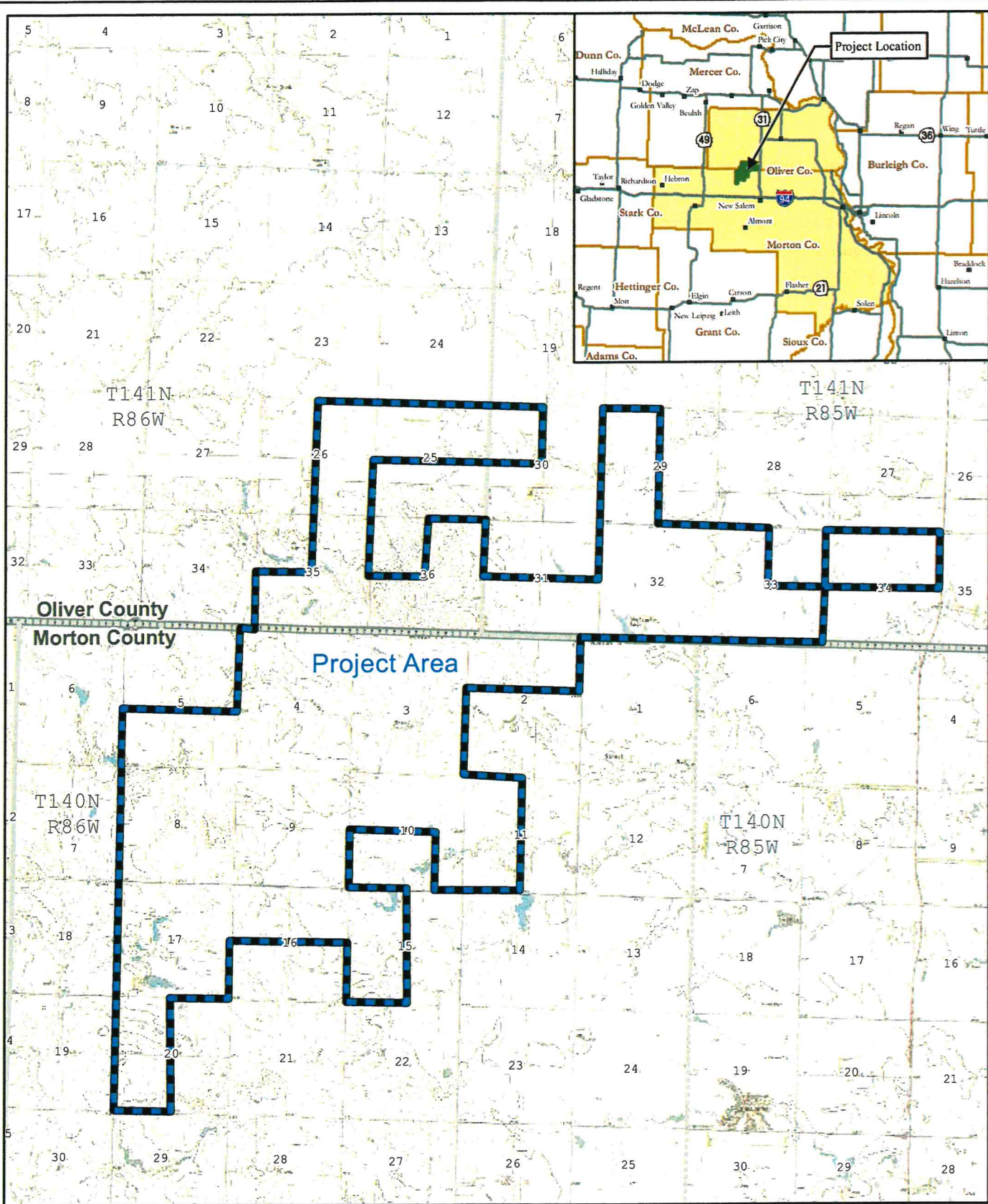
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Bruce Moreira
Environmental Scientist

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Map Document: (\\mspe-gis-filegisproj\MiniPower\106310\map_docs\mxd\WindApplication\figures\Figure1_ProjectVicinity\Map.mxd) 3/31/2009 9:56:41 AM



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Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

- Proposed Phase 1 Project Boundary
- County Boundary



April 7, 2009

Ms. Pam Sharp, Director
North Dakota Office of Management and Budget
1600 East Boulevard Avenue, Department 110
Bismarck, ND 58505-0400

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Ms. Sharp:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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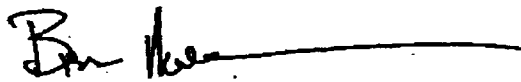
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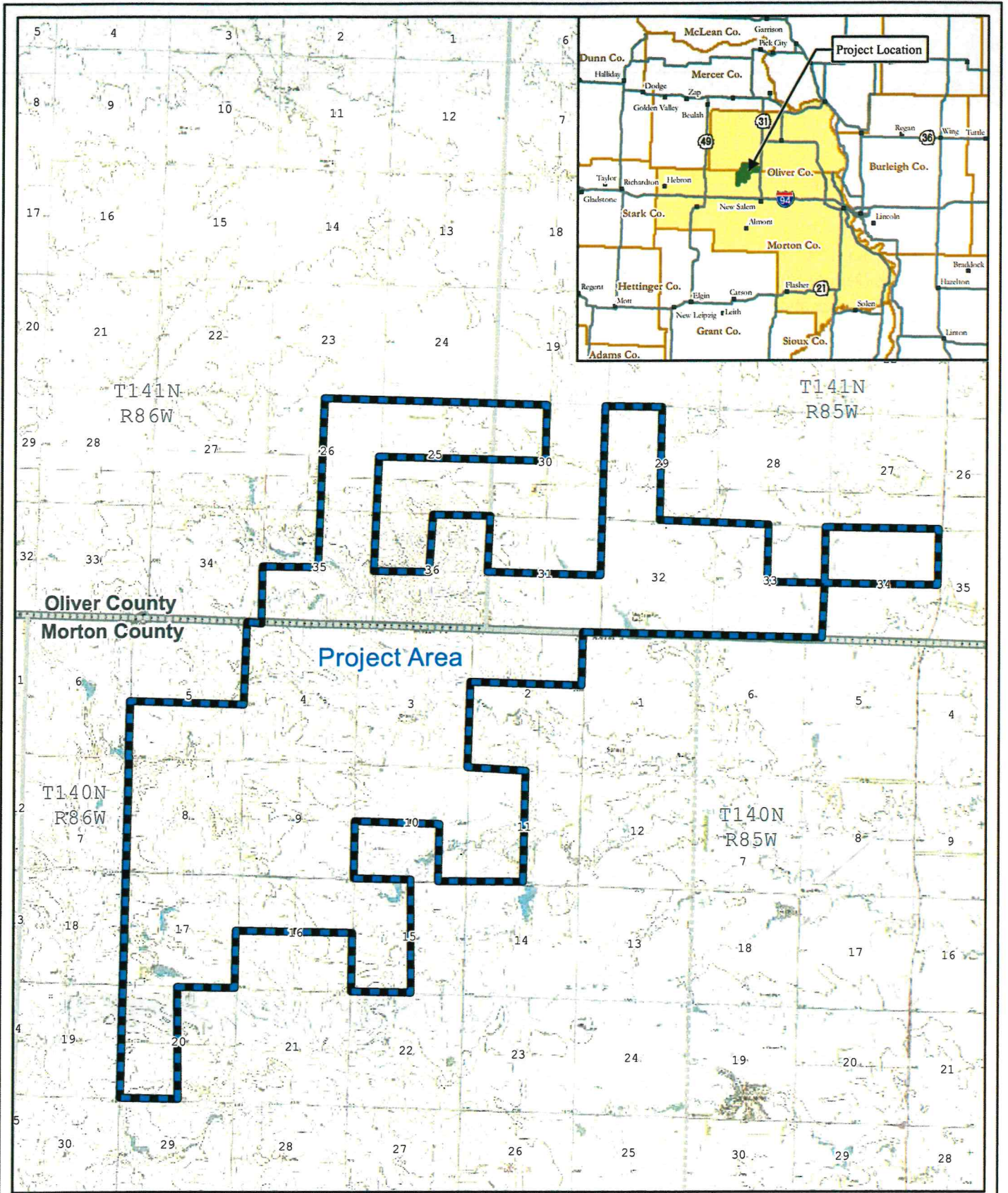




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 Minnesota Power
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Map Document: (\\msp-gis-fie\gispro\MinPower\10631\map_docs\mxd\WindApplication\Figures\Figure1_ProjectVicinityMap.mxd) 3/31/2009 9:58:41 AM

HDR



0 0.5 1 Miles



April 7, 2009

Ms. Cheryl M. Kulas, Executive Director
North Dakota Indian Affairs Commission
600 East Boulevard Avenue
1st Floor Judicial Wing Room #117
Bismarck, ND 58505

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Ms. Kulas:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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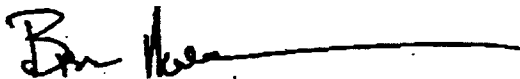
Table 1 – Sections within Bison I Wind Project Boundary

County	Township	Range	Sections
Morton	140N	86W	2-5, 8-11, 15- 17, 20
Oliver	141N	85W	29- 34
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This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

Sincerely,

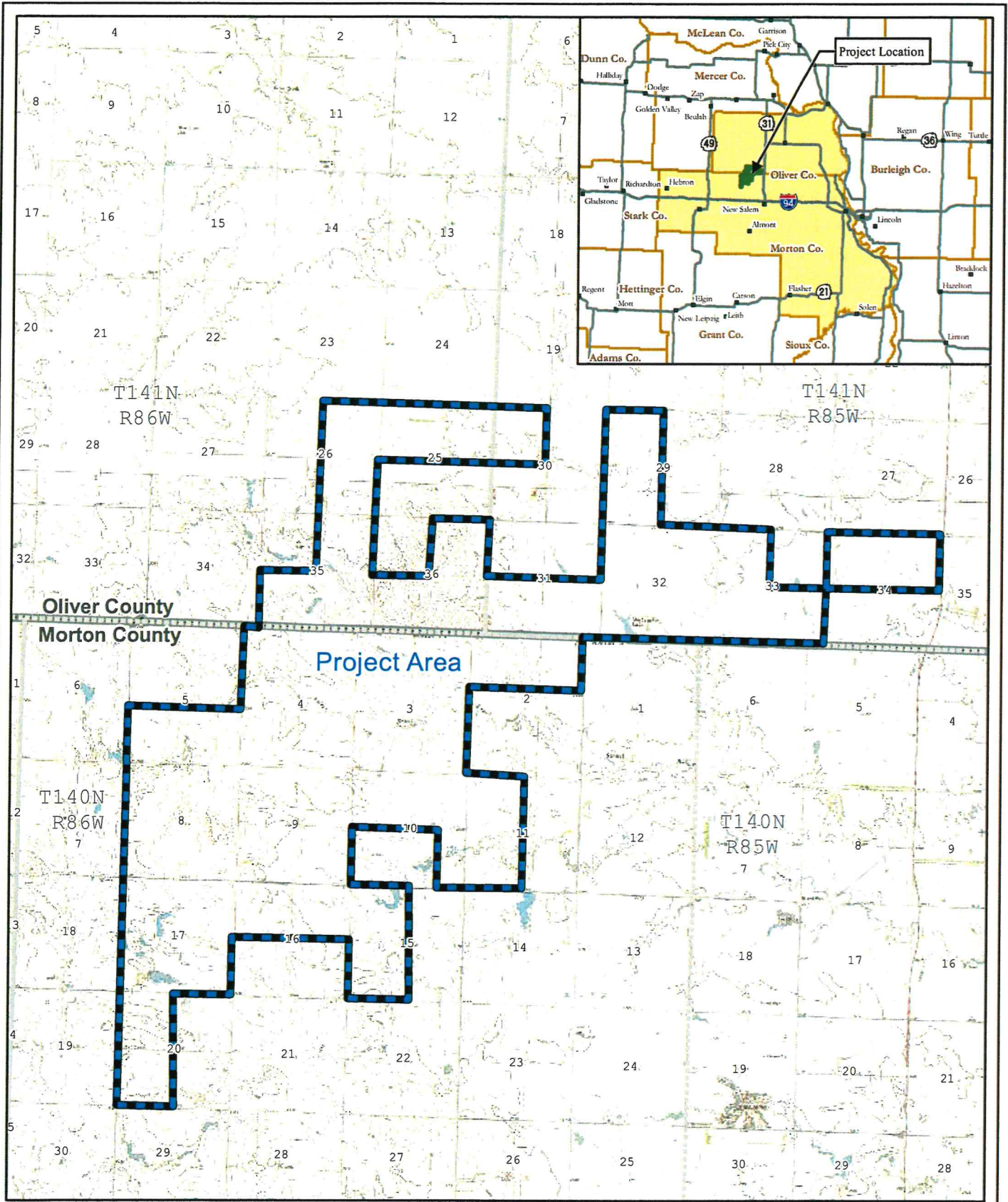
HDR Engineering, Inc.

A handwritten signature in black ink, appearing to read "Bruce Moreira", with a long horizontal line extending to the right.

Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering



Map Document: (m:\spgs-gis-file\gisproj\WindPower\106316\map_docs\mxd\WindApplication\Figures\Figure_1_ProjectVicinityMap.mxd)
 3/12/2009 3:35:41 AM



HDR



0 0.5 1 Miles

Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary



April 7, 2009

Governor John Hoeven
State of North Dakota
600 East Boulevard Avenue
Bismarck, ND 58505-0001

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Governor Hoeven:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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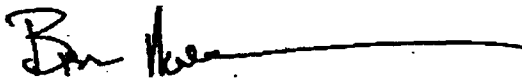
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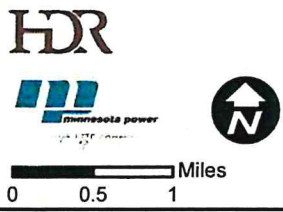
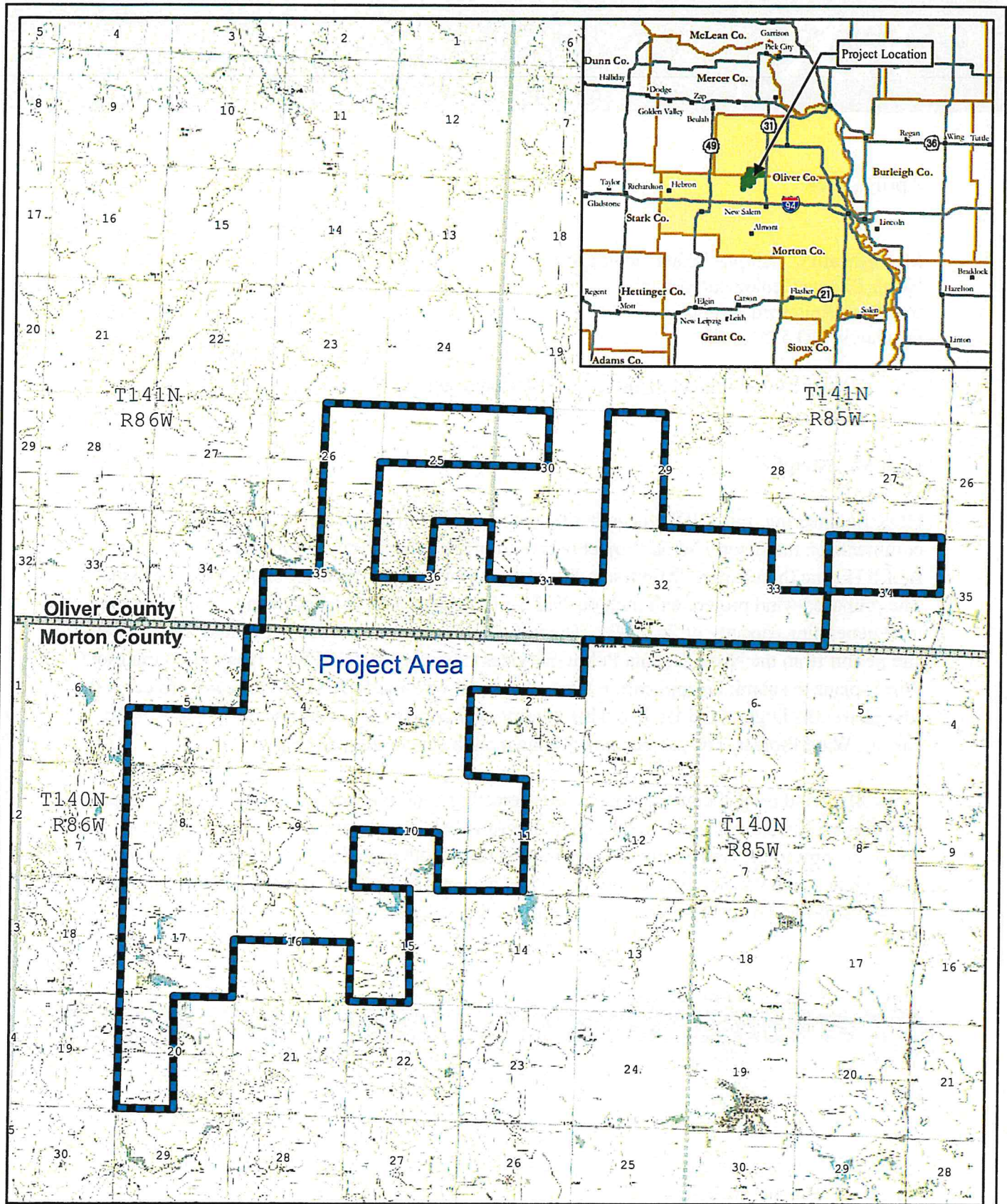




Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
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Map Document: (\\mspe-gis-ftp\gisproj\MinPower\106310\map_docs\mxd\WindApplication\Figures\Figure1_ProjectVicinityMap.mxd) 3/31/2009 9:58:41 AM



April 7, 2009

Mr. Edward C. Murphy, State Geologist
North Dakota Geological Survey
600 East Boulevard Avenue
Bismarck, ND 58505-0840

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Murphy:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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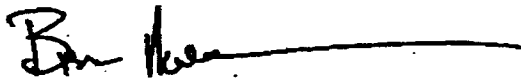
County	Township	Range	Sections
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We welcome any comments your agency may have on the project at this time or throughout the permit application process.

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

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HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

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Todd Mattson, HDR Engineering

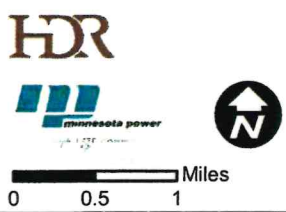
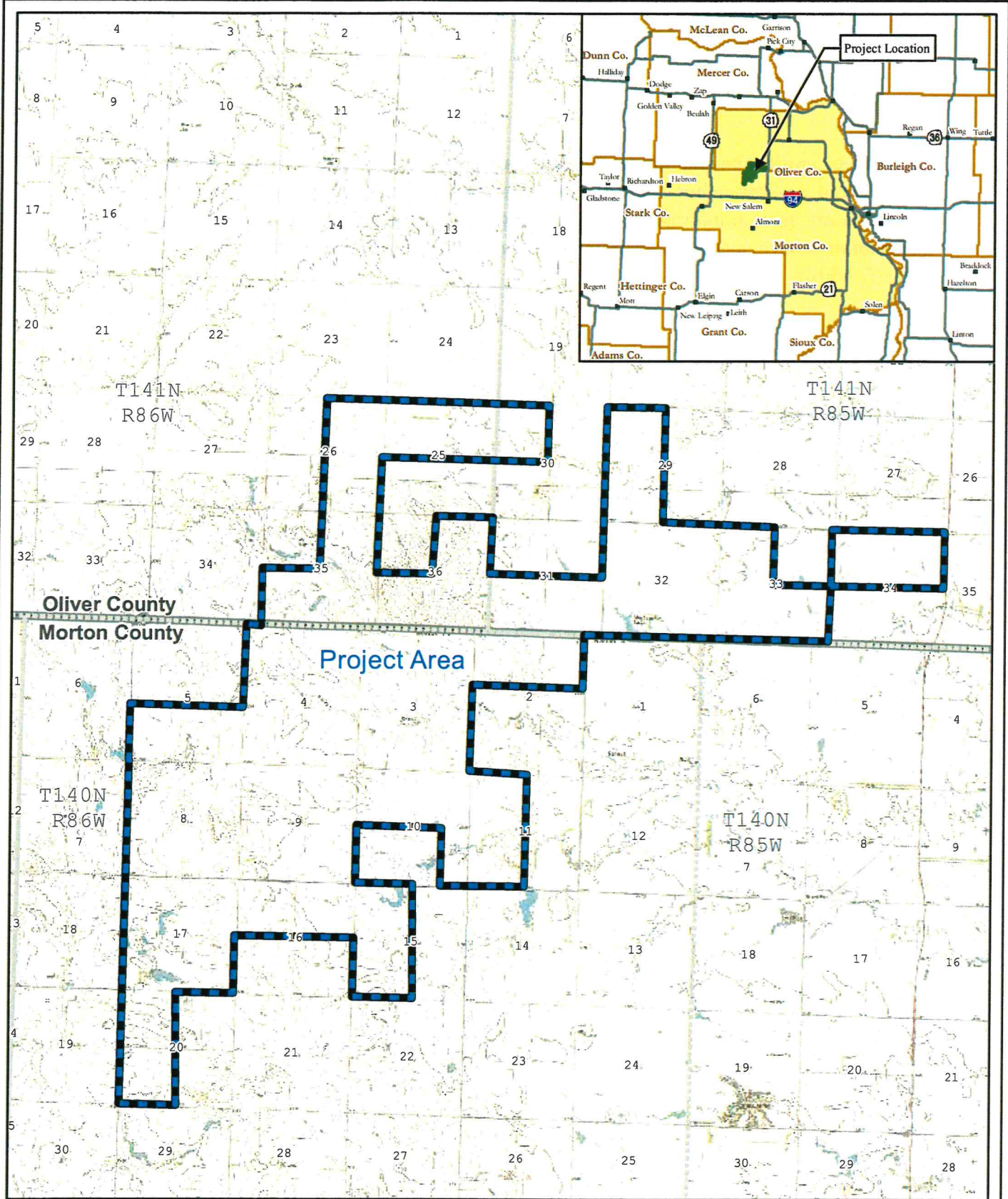




Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary

Map Document: (\\mspe-gis-file\gisproj\MinPower\106316\map_docs\mxd\WindApplication\Figures\Figure1_ProjectVicinityMap.mxd) 3/31/2009 9:55:41 AM



April 7, 2009

Mr. Jeb Williams, Wildlife Resource Management Supervisor
North Dakota Game and Fish Department
100 North Bismarck Expressway
Bismarck, ND 58501-5095

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Williams:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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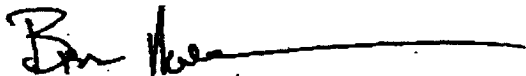
HDR welcomes comments the North Dakota Game and Fish Department (NDGFD) may have at this time or throughout the permit application process. In particular, HDR requests your review of the sections identified in Table 1 for potential effects to known threatened or endangered species or other sensitive natural resources. The project boundary is located approximately 3 miles northeast of the Storm Creek Wildlife Management Area. Your comments will be incorporated into the NDPSC review process for the project.

HDR also requests you provide locations of any state easements, and the locations of parcels that the NDGFD may be targeting for easements within the proposed project boundary. Information provided in the format of a GIS layer, if available, would be most helpful; however, legal descriptions or hard copy maps would also assist Minnesota Power and HDR in reviewing the project.

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

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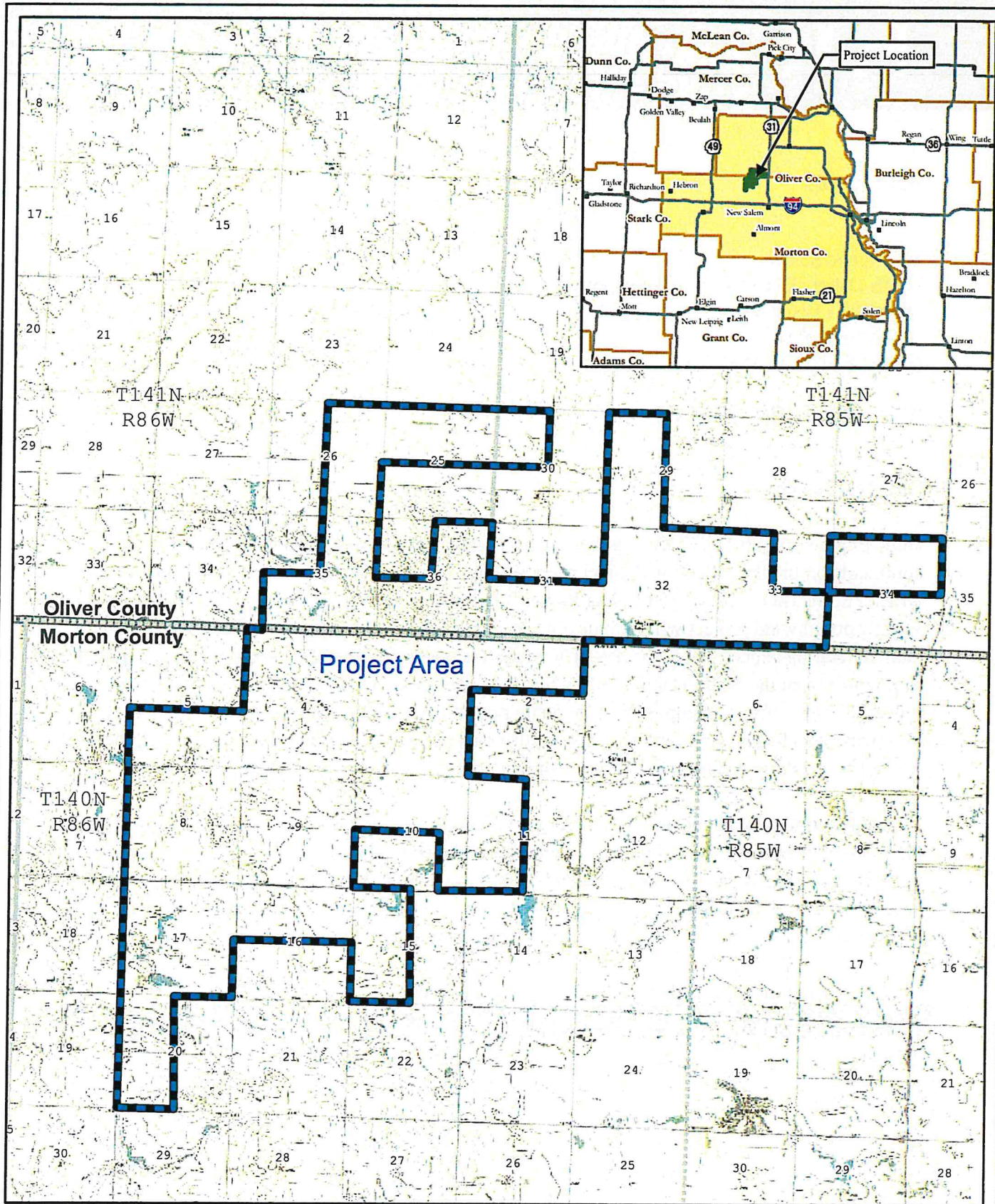
HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering



Map Document: (\\mspe-gis-filegisproj\minpower\106316\map_docs\mxd\wind\application\figures\figure1_projectvicinity\map.mxd) 3/31/2009 9:56:41 AM



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Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

- Proposed Phase 1 Project Boundary
- County Boundary



April 7, 2009

Ms. Renee Seibel
North Dakota Department of Transportation
District 1 - Bismarck
218 Airport Road
Bismarck, ND 58504-6003

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Ms. Seibel:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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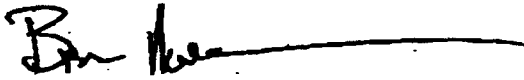
County	Township	Range	Sections
Morton	140N	86W	2-5, 8-11, 15- 17, 20
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HDR welcomes comments the North Dakota Department of Transportation (NDDOT) may have at this time or throughout the permit application process. HDR requests your review of the sections listed in Table 1 to identify potential impacts to state and federal roadways and any permits that may be required for the project. Your comments will be incorporated into the NDPSC review process for the project.

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

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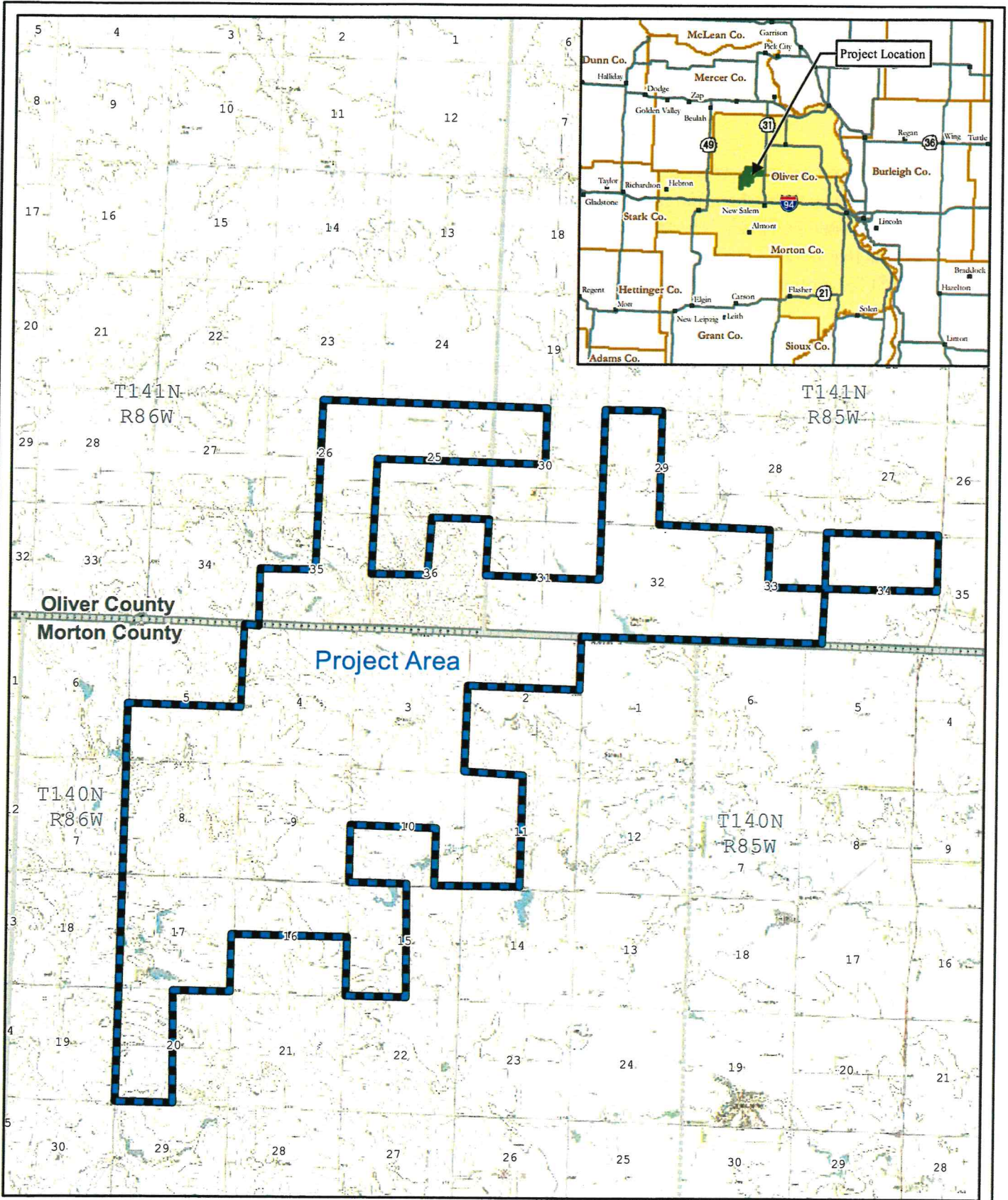
HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

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Todd Mattson, HDR Engineering



Map Document: (\\mspec-gis-file\proj\Wind\MapPower106316\map_docs\mxd\Wind\MapPower106316\MapPower106316_VicinityMap.mxd) 3/31/2009 9:56:41 AM



HDR



0 0.5 1 Miles

Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary



April 7, 2009

Mr. Paul Govig, Director
North Dakota Department of Commerce
Division of Community Services
1600 East Century Avenue, Suite 2
PO Box 2057
Bismarck, ND 58503

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Govig:

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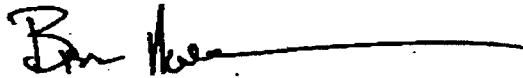
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Sincerely,

HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering



April 7, 2009

Ms. Carol K. Olson, Executive Director
North Dakota Department of Human Services
600 East Boulevard Avenue, Department 325
Bismarck, ND 58505-0250

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Ms. Olson:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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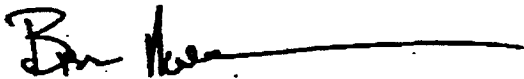
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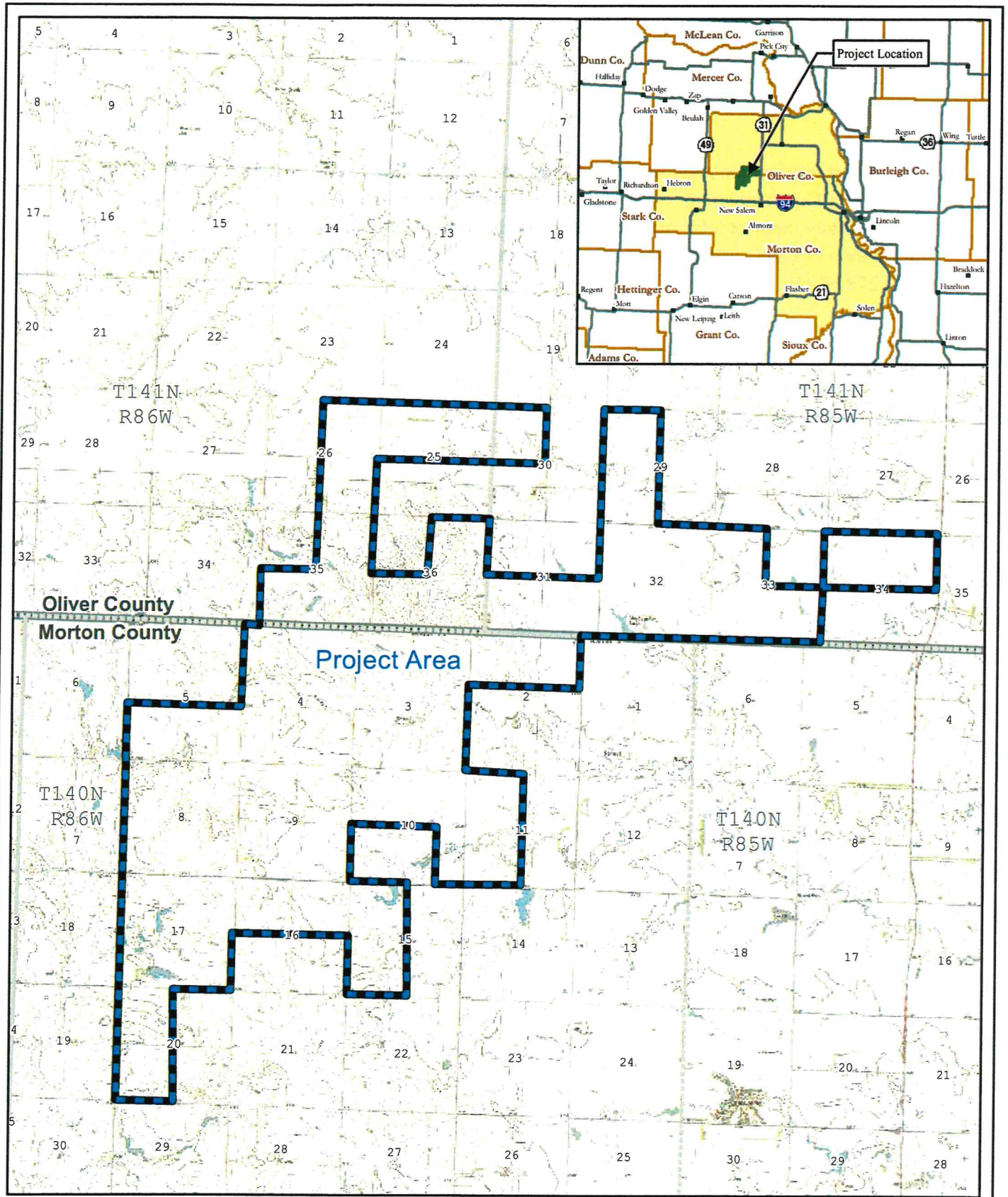
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Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

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Map Document: (\\mspe-gis-file\giproj\MinPower\106316\map_docs\mxd\WindApplication\Figures\Figure1_ProjectVicinityMap.mxd) 3/31/2008 -- 9:58:41 AM



HDR



0 0.5 1 Miles

Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary



April 7, 2009

Ms. Lisa Fair McEvers, Commissioner of Labor
North Dakota Department of Labor
600 East Boulevard Avenue, Department 406
Bismarck, ND 58505-0340

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Ms. McEvers:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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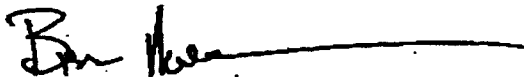
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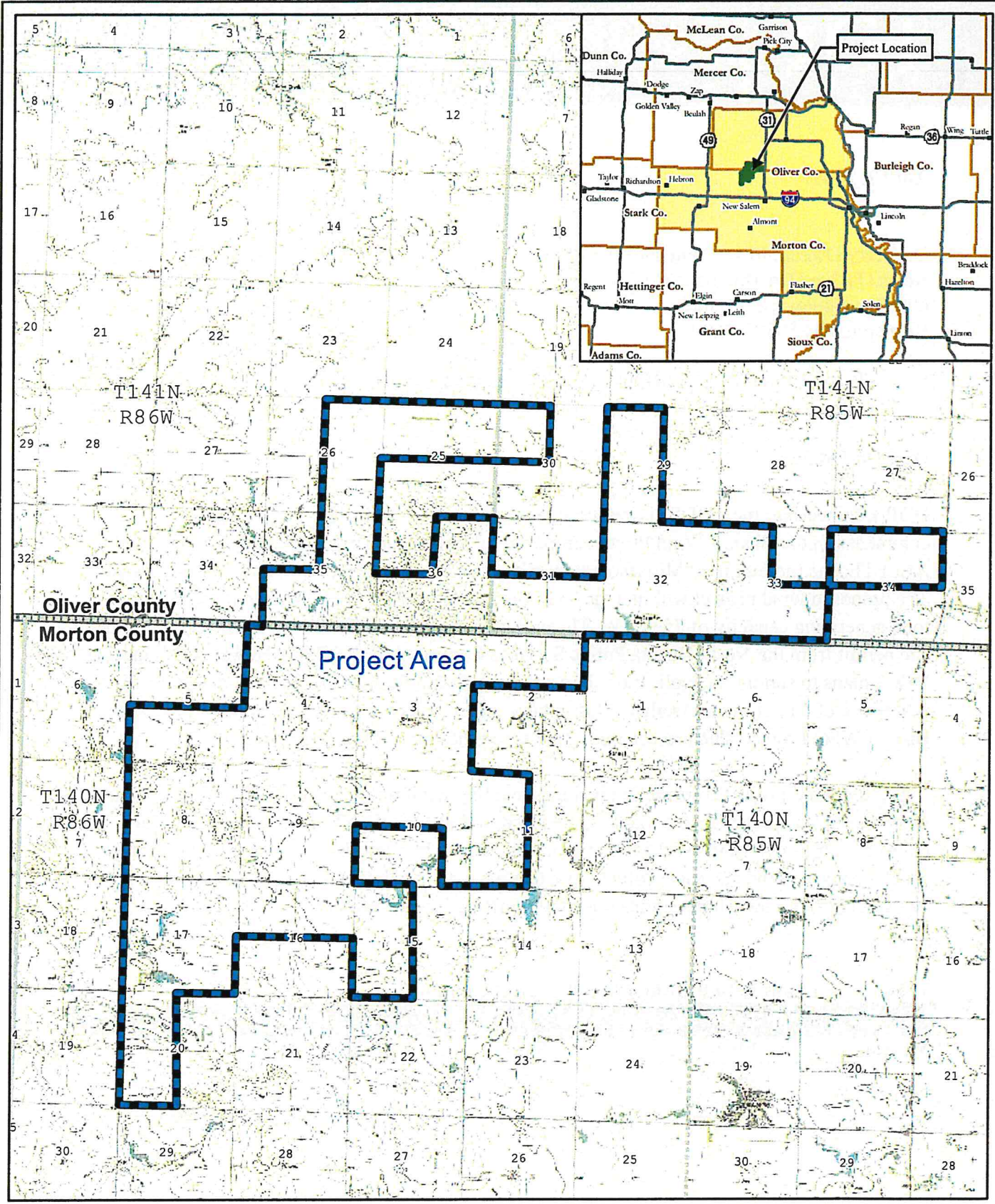
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Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

- Proposed Phase 1 Project Boundary
- County Boundary



April 7, 2009

Mr. Shane Goettle, Commissioner
North Dakota Department of Commerce
1600 East Century Avenue, Suite 2
PO Box 2057
Bismarck, ND 58503

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Goettle:

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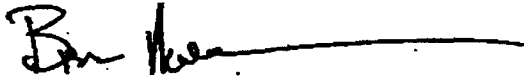
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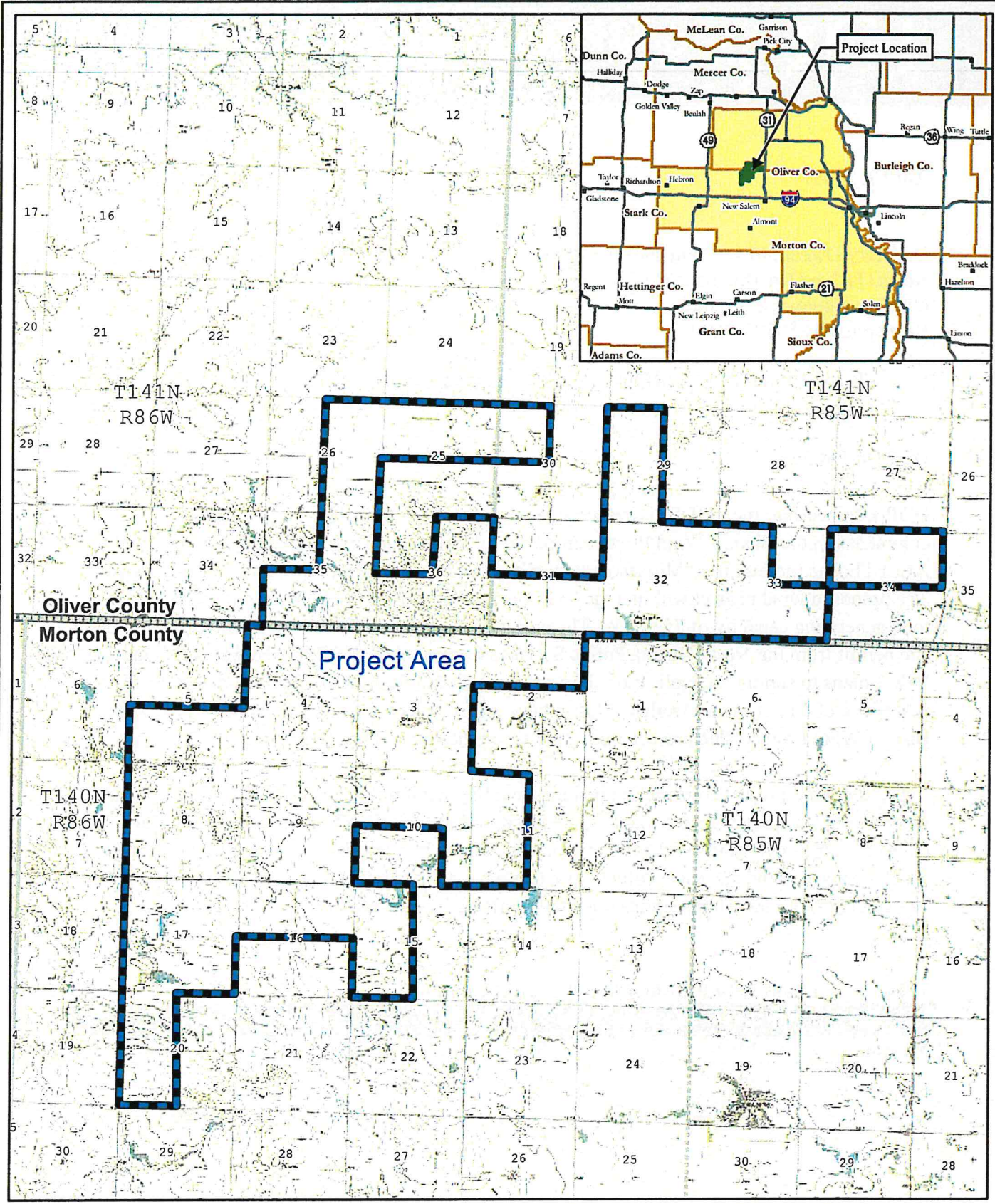
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 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

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- County Boundary



April 7, 2009

Dr. Terry Dwelle, M.D., State Health Officer
North Dakota Department of Health
600 East Boulevard Avenue
Bismarck, ND 58505-0200

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Dr. Dwelle:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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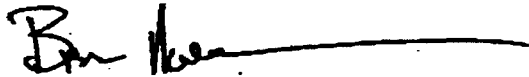
Table 1 – Sections within Bison I Wind Project Boundary

County	Township	Range	Sections
Morton	140N	86W	2-5, 8-11, 15- 17, 20
	141N	85W	29- 34
Oliver	141N	86W	25, 26, 35, 36

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

Sincerely,

HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering

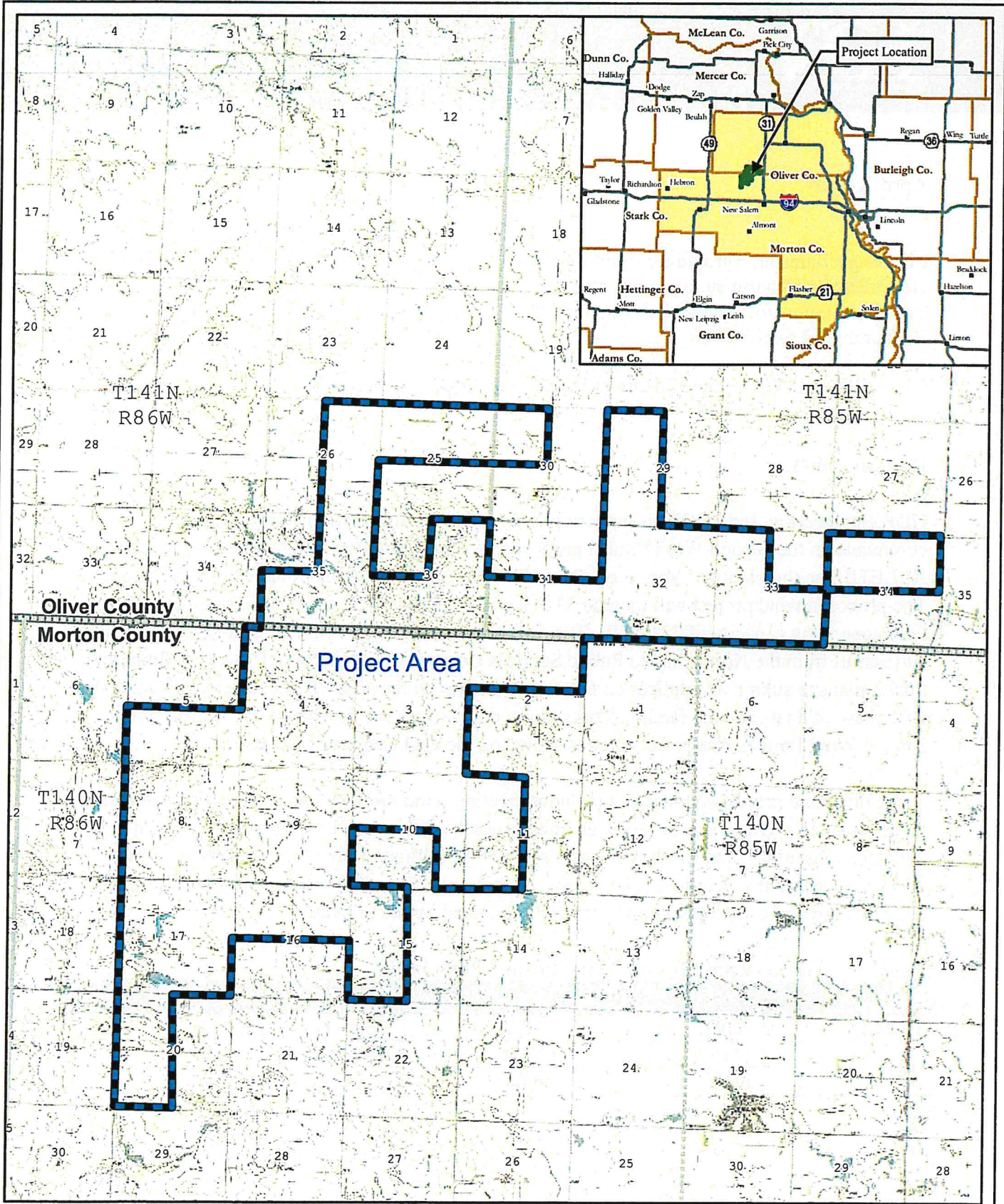


Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

- Legend
- Proposed Phase 1 Project Boundary
 - County Boundary

HDR



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April 7, 2009

Mr. Roger Johnson, Agriculture Commissioner
North Dakota Department of Agriculture
600 East Boulevard Avenue, Department 602
Bismarck, ND 58505-0020

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Johnson:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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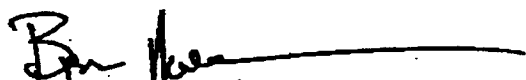
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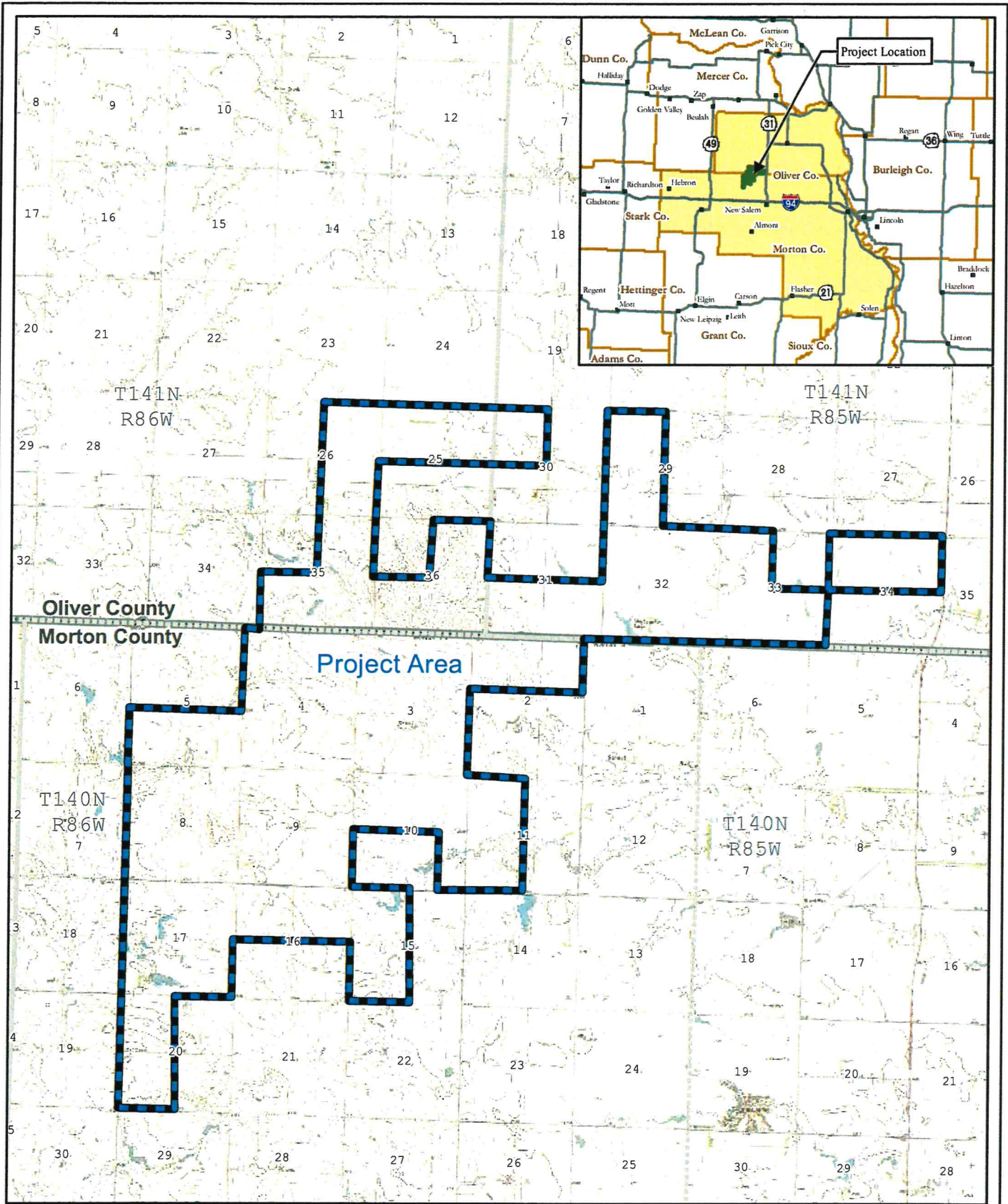
HDR Engineering, Inc.

A handwritten signature in black ink, appearing to read "Bruce Moreira", with a long horizontal line extending to the right.

Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering



Map Document: (m:\gis\gis-proj\MinPower\106316\map_docs\mxd\WindApplication\Figures\Figure1_ProjectVicinityMap.mxd) 3/12/09 11:38:41 AM



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Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend	
	Proposed Phase 1 Project Boundary
	County Boundary



April 7, 2009

Mr. Wayne Kutzer, Director and Executive Officer
North Dakota Department of Career and Technical Education
State Capitol 15th Floor
600 East Boulevard Avenue, Department 270
Bismarck, ND 58505-0610

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Kutzer:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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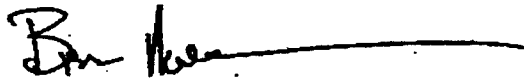
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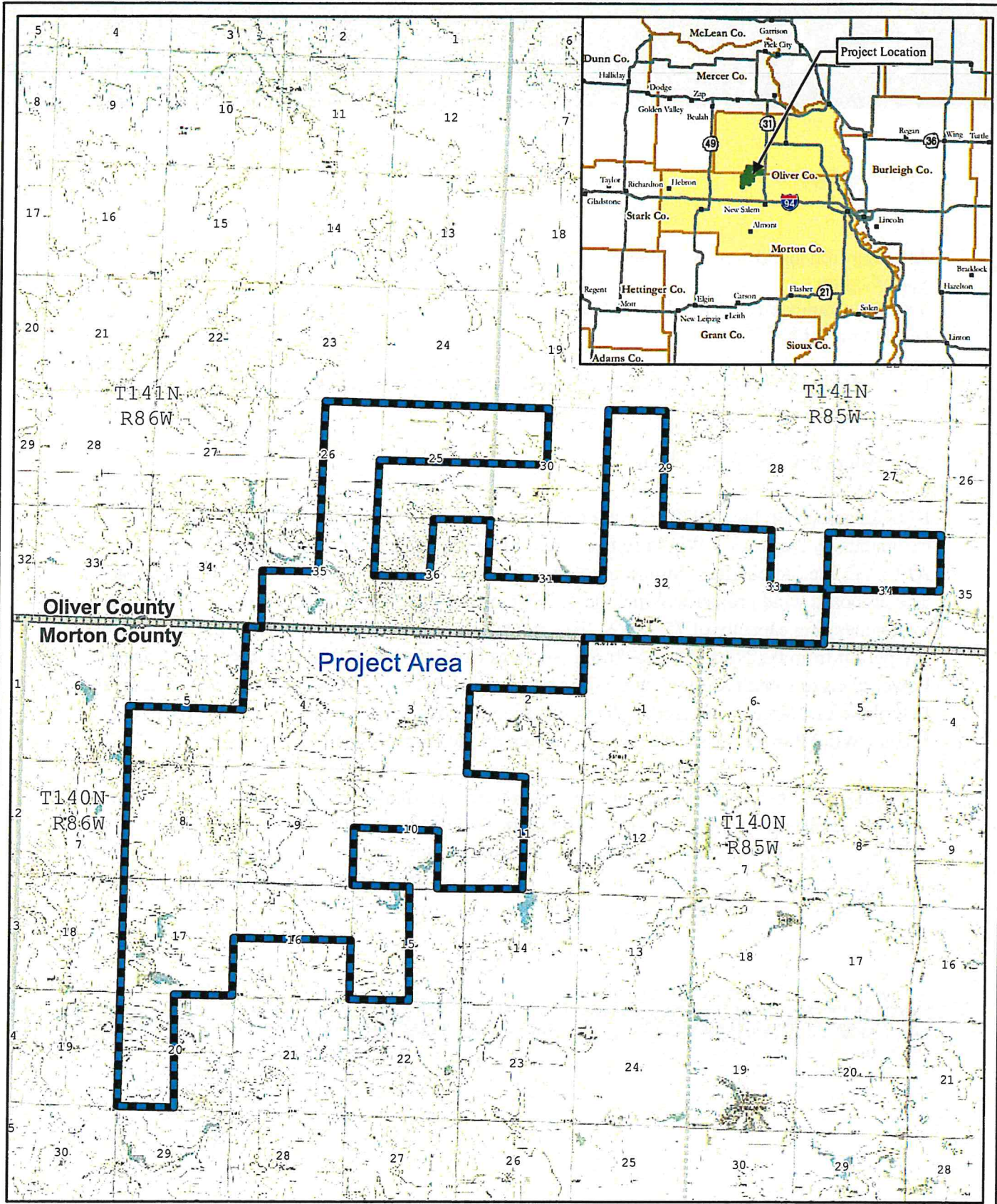
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Bruce Moreira
Environmental Scientist

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Todd Mattson, HDR Engineering



Map Document: (mspro-qls-file\gisp\Wind\MapPower106316\map_docs\mxd\WindApplication\Figures\Figure1_ProjectVicinityMap.mxd) 3/31/2009 - 9:56:41 AM



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Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

- Proposed Phase I Project Boundary
- County Boundary



April 7, 2009

Attorney General Wayne Stenehjem
State Capitol
600 East Boulevard Avenue, Department 125
Bismarck, ND 58505

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Attorney General Stenehjem:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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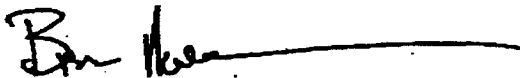
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Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering



April 7, 2009

Mr. Randy Christmann, President
North Dakota Association of Telecommunication Cooperatives
West River Telecommunications
401 3rd Avenue NE
Hazen, ND 58545-4429

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Christmann:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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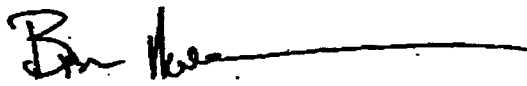
County	Township	Range	Sections
Morton	140N	86W	2-5, 8-11, 15- 17, 20
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HDR welcomes comments the North Dakota Association of Telecommunications Cooperatives (NDATC) may have at this time or throughout the permit application process. HDR requests your review of the sections listed in Table 1 to identify potential impacts to existing telecommunications infrastructure. Your comments will be incorporated into the NDPUC review process for the Bison I project. Please forward this letter to members of the NDATC that have telecommunications infrastructure in the project area.

This project notification and information request precedes filing of the NDPS Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

Sincerely,

HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allele
Todd Mattson, HDR Engineering

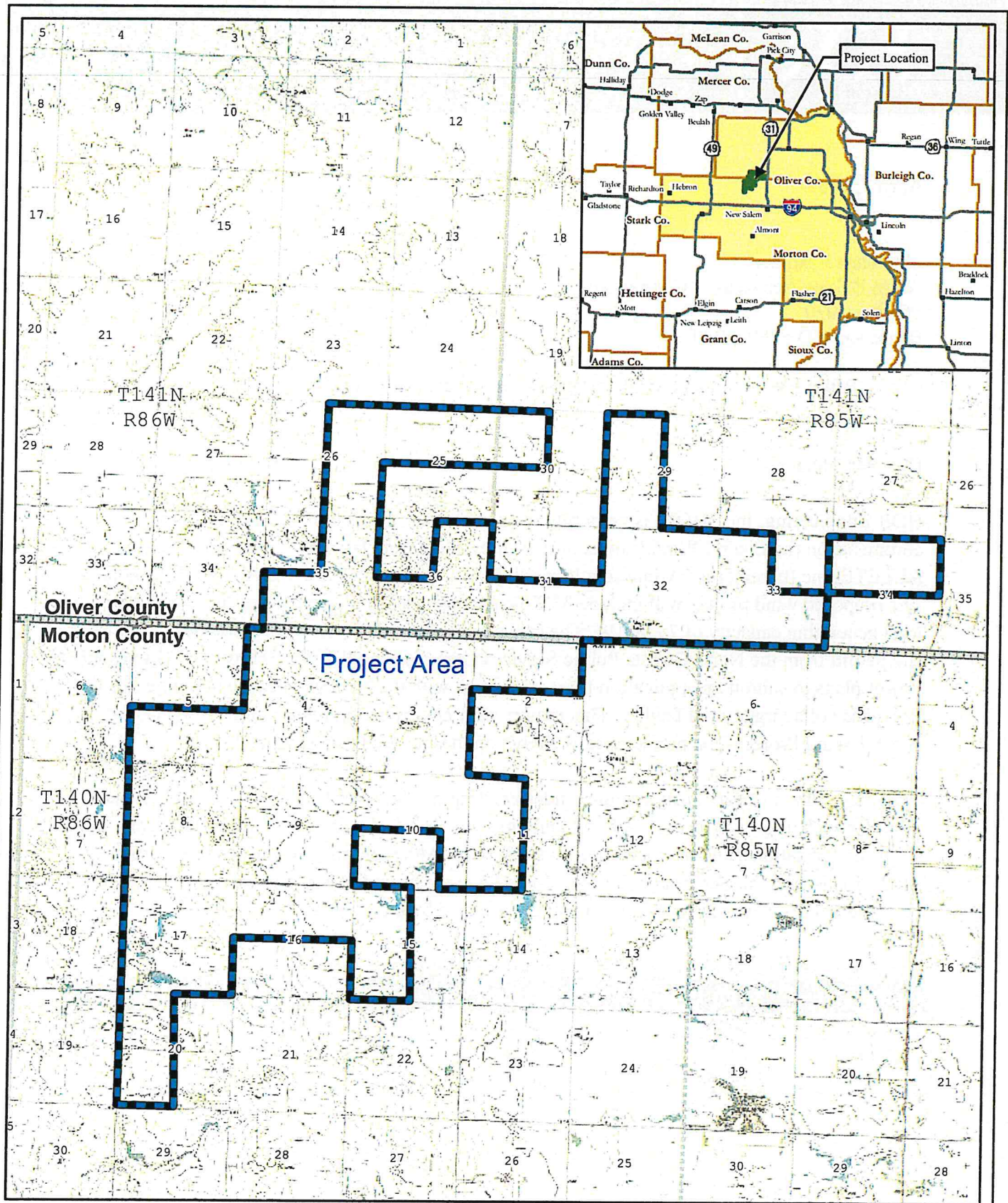




Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary





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April 7, 2009

Mr. Mark J. Holzer
North Dakota Aeronautics Commission
PO Box 5020
Bismarck, ND 58502-5020

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Holzer:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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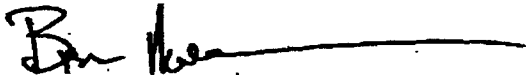
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HDR welcomes comments the North Dakota Aeronautics Commission may have at this time or throughout the permit application process. HDR requests your review of the sections listed in Table 1 to identify potential impacts to area flight paths and any permits that may be required for the project. Your comments will be incorporated into the NDPSC review process for the project.

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

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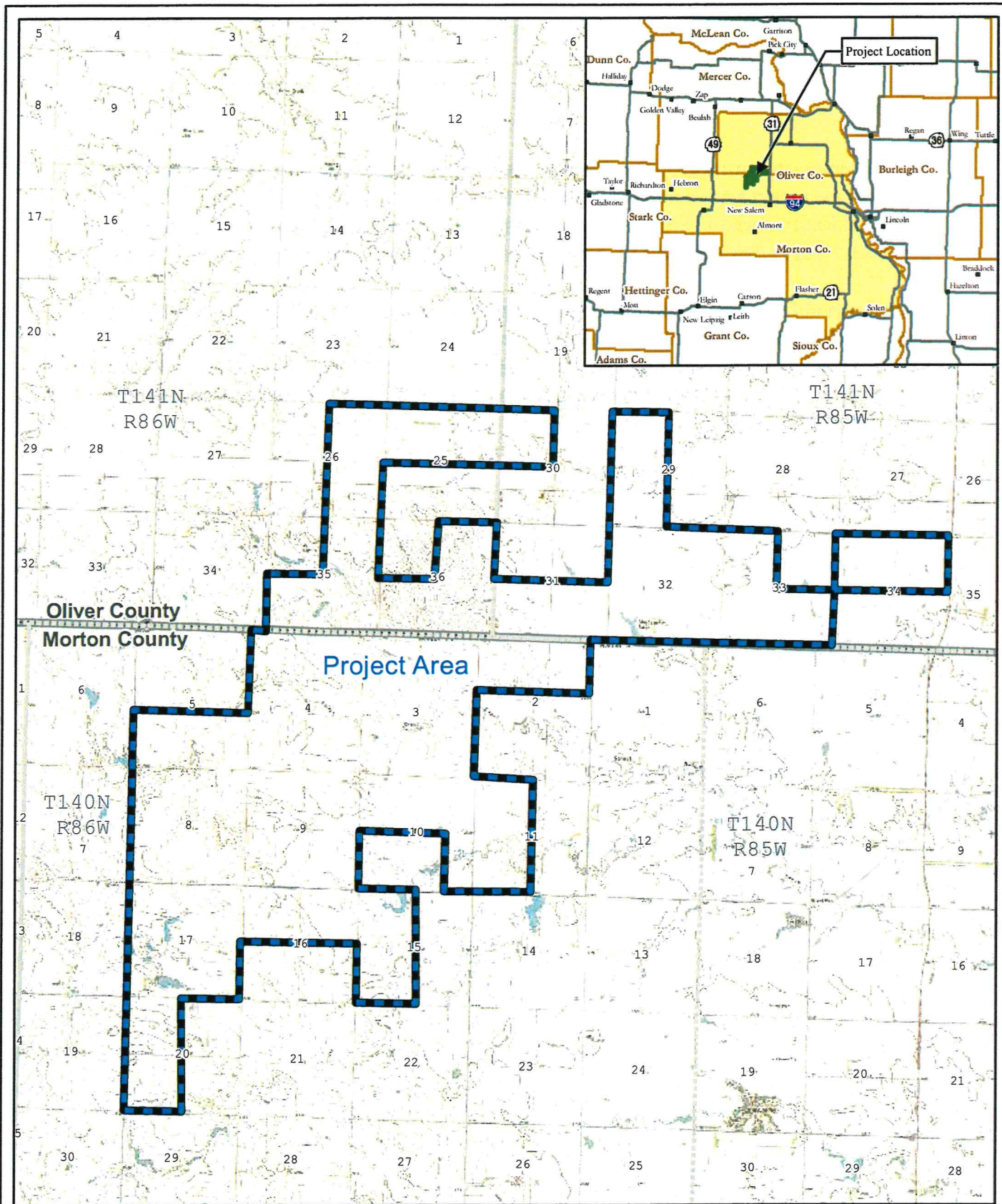
HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering



Map Document: (\\msps-gis-file\proj\MinPower\106316\map_docs\mxd\WindApplication\Figures\Figure 1_ProjectVicinityMap.mxd) 3/31/2009 9:56:41 AM

HDR



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Figure 1: Project Vicinity Map
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

Legend

- Proposed Phase 1 Project Boundary
- County Boundary



April 7, 2009

Ms. Michele R. Doyle, District Conservationist
Morton County Soil and Water Conservation District
Mandan Service Center
2540 Overlook Lane
Mandan, ND 58554

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Ms. Doyle:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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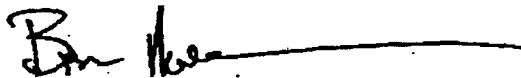
HDR welcomes comments the Morton County Soil and Water Conservation District (SWCD) may have at this time or throughout the permit application process. Your comments will be incorporated into the NDPSC review process for the Bison I project.

HDR would like to work with your office to identify Conservation Reserve Program (CRP) properties in the project area. Please identify the preferred method of obtaining information from your office on the parcels within the project area that participate in the CRP program.

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

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HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

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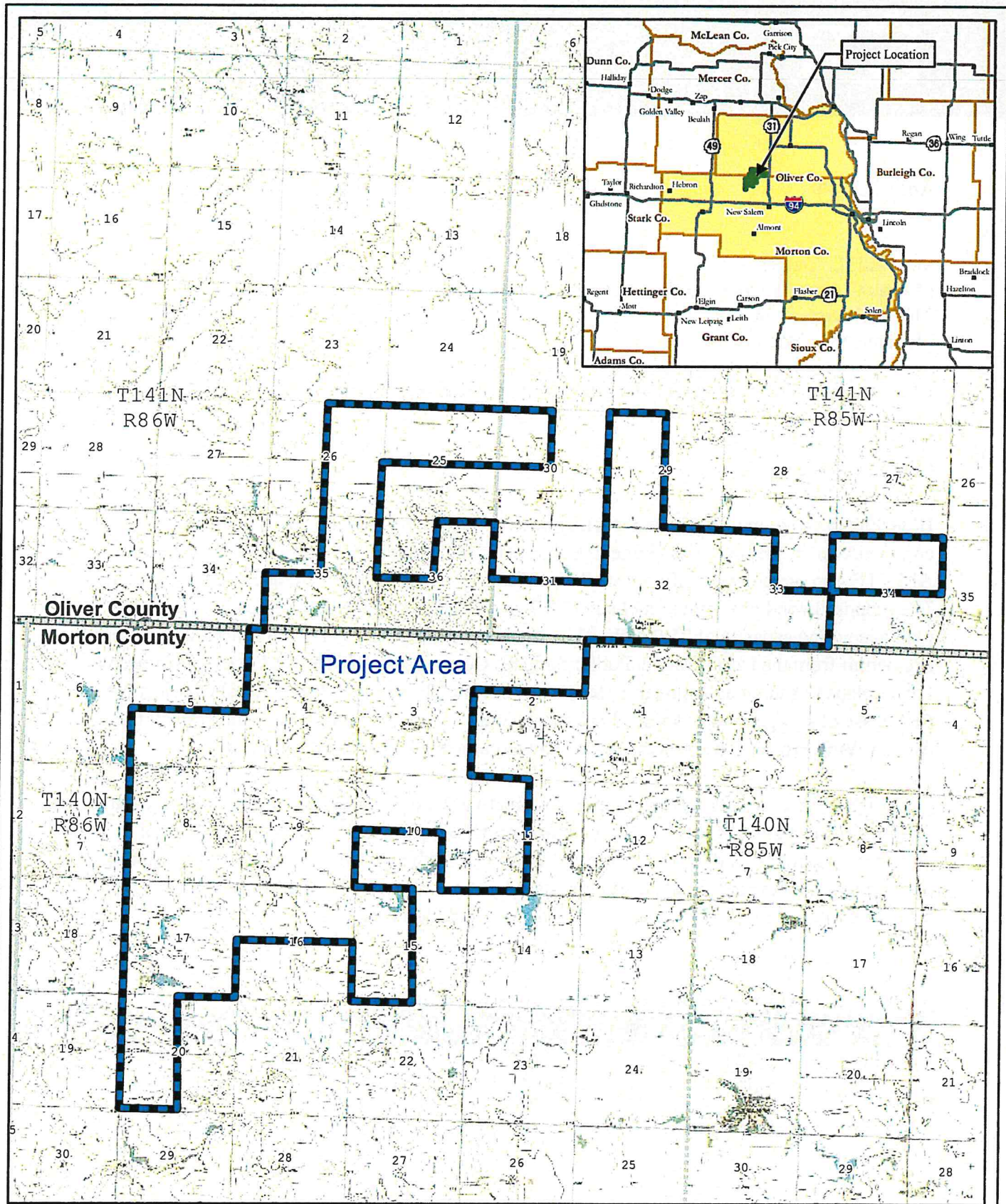







Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary

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April 7, 2009

Mr. Paul E. Trauger
Morton County Planning and Development Department
210 2nd Avenue NW
Mandan, ND 58554

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Trauger:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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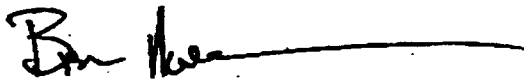
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HDR welcomes comments the Morton County Planning and Development Department may have at this time or throughout the permit application process. HDR requests your review of the sections listed in Table 1 to identify any permits that may be required for the project. HDR anticipates completing a Conditional Use Permit in 2009 for the proposed project. Your comments will be incorporated into the NDPSC review process for the project.

This project notification and information request precedes filing of the NDPSC Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

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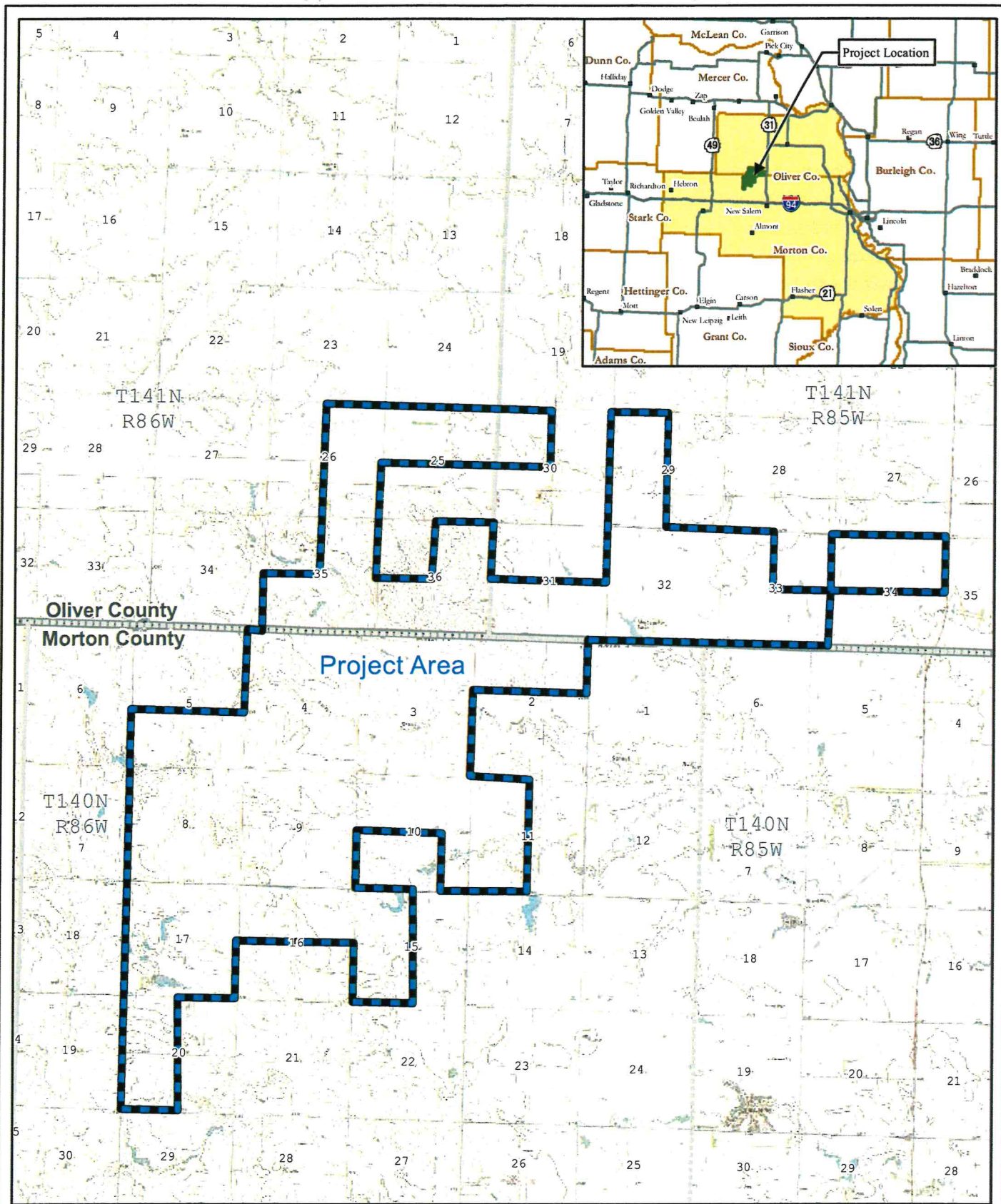
HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

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Todd Mattson, HDR Engineering



Map Document: (\\msps-qis-filegispro)\MinnPower\106316\map_docs\mxd\WindApplication\Figures\Figure_1_ProjectVicinityMap.mxd
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Figure 1: Project Vicinity Map
Bison I Wind Project
Minnesota Power
Morton & Oliver Counties, ND

Legend	
	Proposed Phase 1 Project Boundary
	County Boundary



April 7, 2009

Mr. Charles A. Mormon
Morton County Highway Department
Building A, Door 3
2916 37th Street NW
Mandan, ND 58554

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Mormon:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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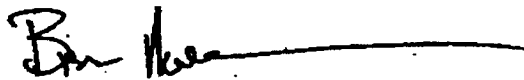
HDR welcomes comments the Morton County Highway Department may have at this time or throughout the permit application process. HDR requests your review of the sections listed in

Table 1 to identify potential impacts to County roadways and any permits that may be required for the project. Your comments will be incorporated into the NDPSC review process for the Bison I project.

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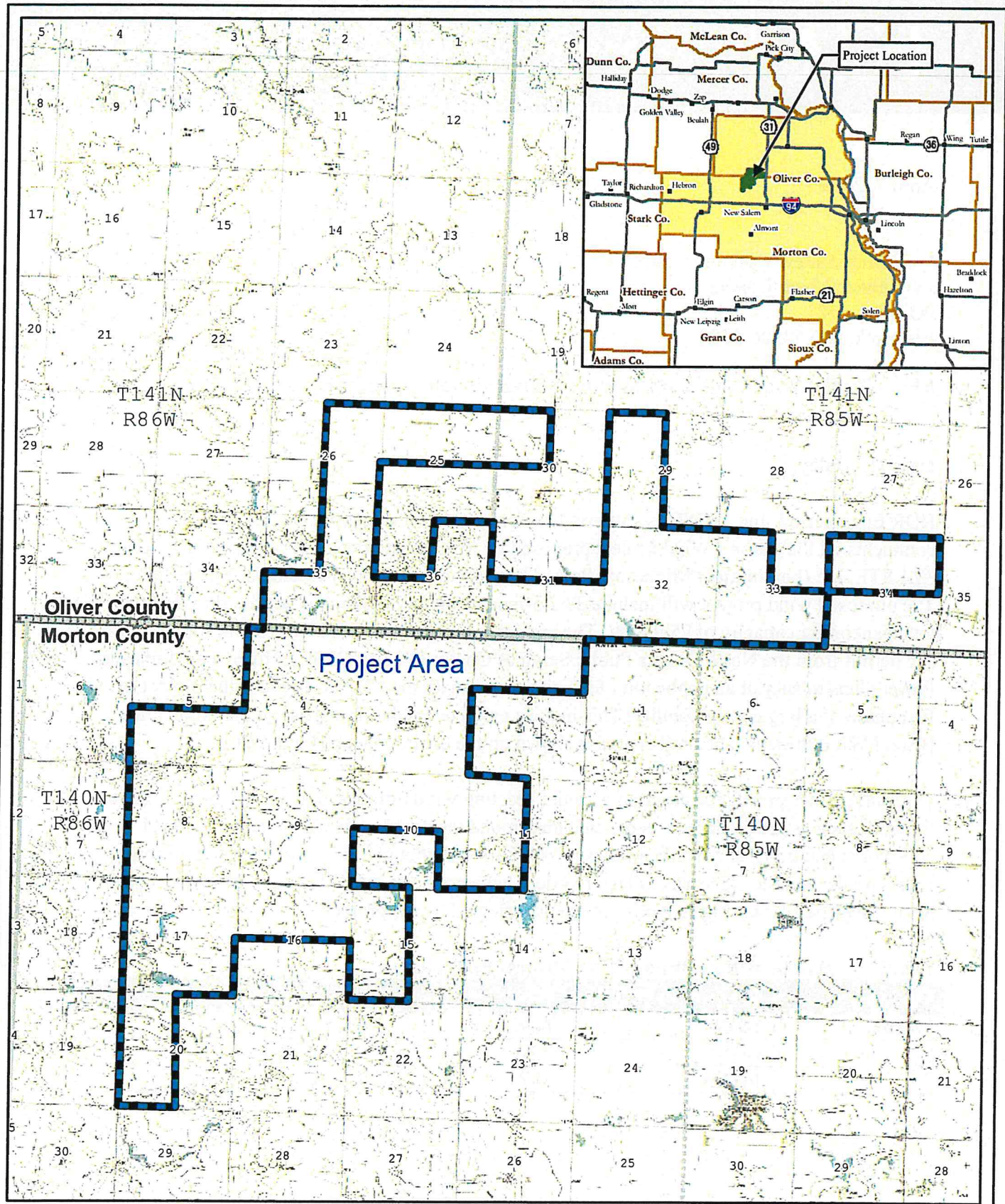
HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

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Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary



April 7, 2009

Ms. Maren Daley, Executive Director
Job Service North Dakota
PO Box 5507
Bismarck, ND 58506-5507

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Ms. Daley:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

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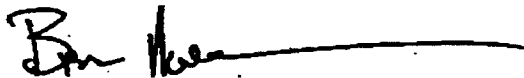
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This project notification and information request precedes filing of the NDPS Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

Sincerely,

HDR Engineering, Inc.

A handwritten signature in black ink, appearing to read "Bruce Moreira", with a long horizontal line extending to the right.

Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering



April 7, 2009

Mr. Jeffrey Towner
Ecological Services
North Dakota Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

RE: Bison I Wind Project in Oliver and Morton Counties, North Dakota

Dear Mr. Towner:

HDR Engineering, Inc. (HDR) is gathering environmental information and stakeholder comments on the Bison I Wind Project proposed by Minnesota Power, an operating division of ALLETE, Inc. (hereinafter "Minnesota Power") in Morton and Oliver Counties, North Dakota. The proposed wind project will include 33 2.3-megawatt (MW) Siemens wind turbines with a total generating capacity of 75.9 MW. The project is under the 100-MW threshold for a required site permit from the North Dakota Public Services Commission (NDPSC). However, Minnesota Power plans to submit an application for a site permit with the NDPSC because the project is the first phase of a larger wind facility. This inquiry only covers the first phase of the project, the Bison I Wind Project. The project area is shown on the enclosed map (Figure 1).

Typically, wind project construction includes erecting wind turbines and constructing associated facilities such as gravel access roads, an underground electrical collector system, electrical collector substations, and overhead transmission lines. Although final locations of the turbines, access roads, and the electrical collector system have not been determined at this time, the table below identifies Township sections potentially affected by the project:

Table 1 – Sections within Bison I Wind Project Boundary

County	Township	Range	Sections
Morton	140N	86W	2-5, 8-11, 15- 17, 20
	141N	85W	29- 34
Oliver	141N	86W	25, 26, 35, 36

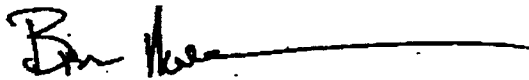
HDR welcomes comments the U.S. Fish and Wildlife Service (USFWS) may have on the project at this time. In particular, HDR requests your review of the sections identified in Table 1 for potential effects to federally listed threatened or endangered species or other sensitive natural resources.

HDR also requests that you provide locations of USFWS wetland or grassland easements, and the locations of parcels that the USFWS may be targeting for easements, within the proposed project boundary. Information provided in a GIS format, if available, would be most helpful; however, legal descriptions or hard copy maps would also help Minnesota Power and HDR in reviewing the project.

This project notification and information request precedes filing of the NDPS Energy Facility Siting Permit application but is not intended to preclude subsequent review and comment. We appreciate any input or information that you might provide at this time. If you require additional information or have questions regarding the Bison I Wind Project, please feel free to call me at (763) 278-5925.

Sincerely,

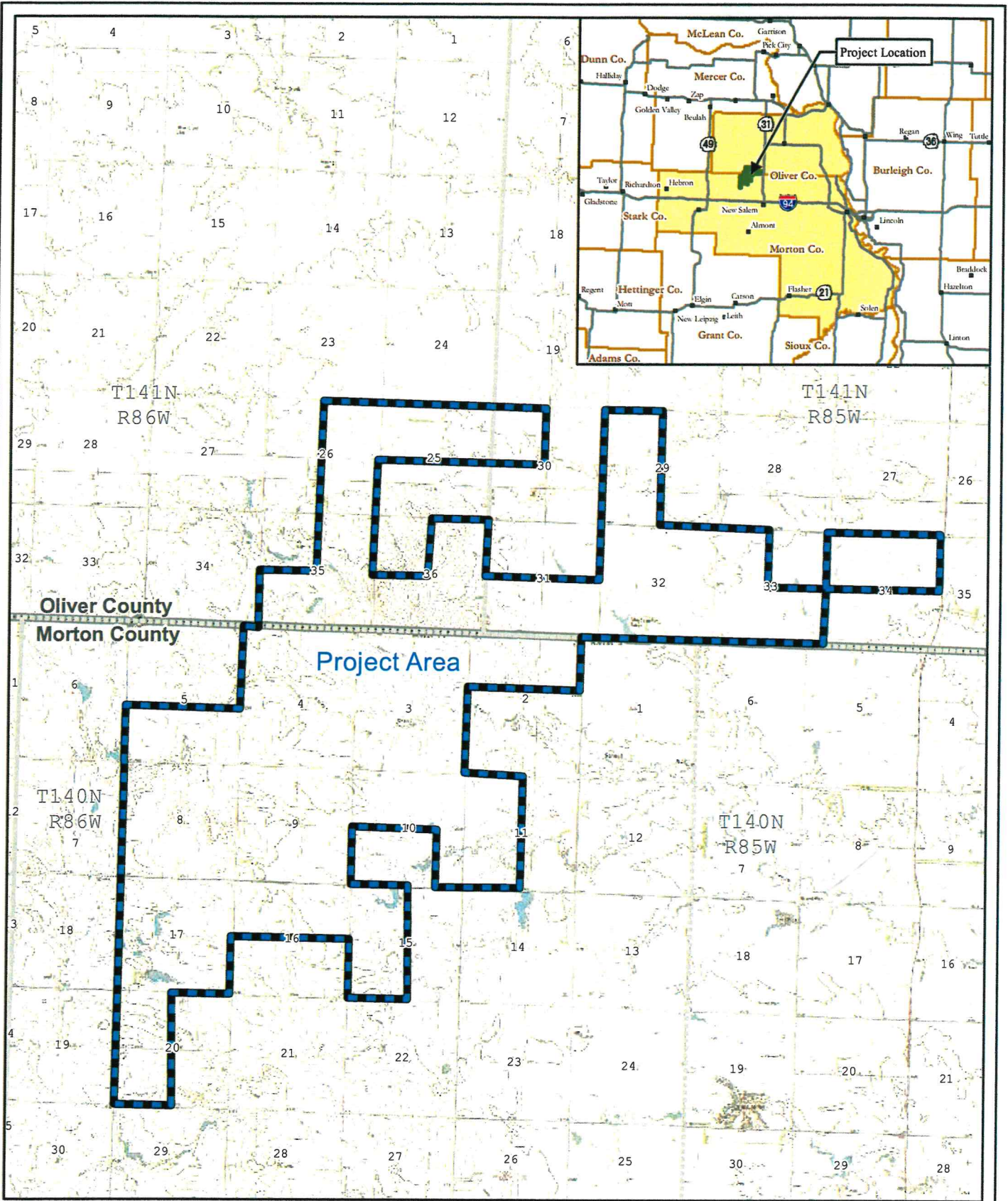
HDR Engineering, Inc.



Bruce Moreira
Environmental Scientist

Enclosures: Figure 1 - Project Location Map

cc: Jim Atkinson, Allete
Todd Mattson, HDR Engineering
Terry Ellsworth, U.S. Fish and Wildlife Service





Map Document: (\\msps-cis-filegapsproj\MinPower\106316\map_dcs\mxd\Wind\Application\Figures\Figure_1_ProjectVicinityMap.mxd) 3/31/2009 9:56:41 AM



0 0.5 1 Miles

Figure 1: Project Vicinity Map
 Bison I Wind Project
 Minnesota Power
 Morton & Oliver Counties, ND

Legend

-  Proposed Phase 1 Project Boundary
-  County Boundary

Agency Letters
C-2 Letters to HDR

United States Department of Agriculture



Natural Resources Conservation Service
P.O. Box 2096
Jamestown, ND 58402-2096

April 15, 2009

Bruce Moreira
Environmental Specialist
HDR Engineering, Inc
701 Xenia Ave S
Minneapolis, Mn 55416-3636

RECEIVED
APR 20 2009
HDR Engineering, Inc.

RE: Bison I Wind Project, Oliver and Morton Counties, North Dakota

Dear Mr. Moreira,

Recently David Pfiliger the District Conservationist in Center contacted me about your office requesting comments about how the construction of wind towers impacts parcels of land in Oliver and Morton Counties. Information regarding Conservation Reserve Program properties in the project areas can be obtained by contacting Allison Hoffer, County Executive Director, Oliver County Farm Service Agency, 345 Center Ave S, Center, ND 58530 for Oliver County and Linda Urlacher, County Executive Director, Morton County Farm Service Agency, 2540 Overlook Ln., Mandan, ND 58554 for Morton County. The Natural Resources Conservation Service (NRCS) concerns are in regards to prime farmlands, wetlands, and soil erosion in Oliver and Morton Counties. NRCS policy regarding prime farmlands and wetlands is as follows.

Farmland Protection Policy Act (FPPA) – NRCS has a major responsibility with FPPA in documenting conversion of farmland (i.e., prime, statewide, and local importance) to non-agricultural use. If your proposed project does not include any federal funds FPPA does not apply; therefore, no further action is needed. If your project includes, any federal funds, FPPA may apply, and the form AD-1006 must be completed. A fill-able, web based form Farmland Conversion Impact Rating Form AD-1006 is available at http://www.nrcs.usda.gov/Programs/fppa/pdf_files/AD1006.PDF to record the following information. Please complete Part I and Part III and return to me. I will also need a map of the sites at an appropriate scale so I can accurately assess the area (e.g., 1:20,000 or 1:24,000). If the farmland (i.e., prime, statewide, and local importance) is determined to be subject to the FPPA, I will then complete Parts II and IV. NRCS will measure the relative value of the site as farmland on a scale of 0 to 100, according to the information sources listed in CFR 658.5(a). If FPPA applies to this site, Form AD- 1006 will be returned to your agency for completion of Part VI, Site Assessment Criteria.

For the past year, NRCS has been monitoring Farmland Conversion Impact Ratings (Form AD-1006 and Form AD-106). Over this period of time, we have become concerned with how the forms are being completed, particularly Part IV – Site Assessment Criteria, which is consistently being scored below 60 points.

Helping People Help the Land

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Mr. Moreira
Page 2

As a general rule, if FPPA applies and the site is in agricultural production, rarely would it be appropriate for it to have a score of less than 60 points. According to CFR 658.4(g), your agency is requested to return a copy of the Form AD-1006, which Page 2 indicates, the final decision, to NRCS so we can meet our reporting requirements and for data collection process.

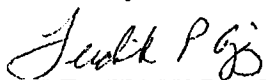
Wetlands - The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, provide that if a USDA participant converts a wetland for the purpose of, or to have the effect of, making agricultural production possible, loss of USDA benefits could occur.

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(s) will be considered minimal allowing USDA participants to continue to receive USDA benefits. Following are the requirements: 1) Disturbance to the wetland(s) must be temporary, 2) no drainage of the wetland(s) is allowed (temporary or permanent), 3) mechanized landscaping necessary for installation is kept to a minimum and preconstruction contours are maintained, 4) temporary side cast material must be placed in such a manner not to be dispersed in the wetland, and 5) all trenches must be backfilled to the original wetland bottom elevation.

NRCS would recommend that impacts to wetland(s) 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 landowner/operator. In addition, care should be taken during the construction of the proposed project to minimize soil blowing and water erosion as these may cause negative impacts to adjacent farmlands.

If you have additional questions pertaining to FPPA, please contact me, at (701) 252-1460 EXT 115

Sincerely,

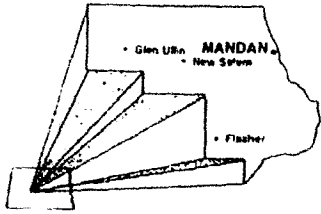


FREDERICK P. AZIZ

Area Resource Soil Scientist

Cc:

David D. Pfliger, DC, NRCS, Center, ND
Michele R. Doyle, DC, NRCS, Mandan, ND
Mike Collins, ASTC (FO), NRCS, Jamestown, ND
Steven J. Sieler, SSL, NRCS, Bismarck, ND



Morton County
Road Department
2916 37th Street NW
Mandan, ND 58554

Administration: Charles A. Morman
E-mail: cmorman@mortoncountynd.org
Assistant Roads & Bridges: Nick Kraft
E-mail: nkraft@mortoncountynd.org
Website: www.co.morton.nd.us
Telephone: (701) 667-3346
Fax: (701) 667-3362

RECEIVED

April 17, 2009

APR 20 2009

HDR Engineering, Inc.

Bruce Moreira
Environmental Scientist
HDR Engineering, Inc.
701 Xenia Avenue South, Suite 600
Minneapolis, MN 55416-3636

Dear Bruce,

This is in response to your letter dated April 7, 2009, regarding the Bison I Wind Project in Oliver and Morton County. At this time it will be difficult to make any comments as to the roads you are going to use because it is not indicated what roads are going to be used as the primary route to get the facilities up and running. It would appear that the two primary routes, one being County Route 86, which is the westerly edge of the project, and number two will be County Route 140, which runs approximately through the center of the project.

We will need in much more detail as to the amount of traffic that is going to come into this particular project, the size of the loads, the number of the loads, the time span of the construction and especially the time of the year that the construction is anticipated to take place. We will be very sensitive to the time of the year especially. We will expect that the dust control be in place when this is being done so that we don't have a lot of complaints from the locals. My office will expect to be kept informed of all phases of the project as it moves forward. In other words, we don't want any surprises when some contractor moves in and starts hauling and we haven't heard a word of this before it is going on. It will be expected that somebody will need to fix whatever damage has been caused to the county roads.

We also expect to see the entire project before it gets started as to the layout of the project and placement of the wind towers and to see the access roads that will be built to get to these access points. We have already been contacted by a contractor concerning access roads, gravel and such, so I don't know if they are already acting in consult with this company and with this project or if they are merely a contractor speculating on bidding for this particular project.. We need to again keep in contact with what is going on with this so we are aware of this. I truly do not like surprises on these projects when this comes up and I would hope that these be kept to a minimal or ideally none at all.

Thank you in advance for your understanding of Morton County's position on this project. We definitely will not stand in opposition to the project and we are willing to work with you in all phases of it. We just need to be involved in decision making concerning the roads and bridges in this particular area to protect the Morton County infrastructure that will be used to build this project and as I understand the continuing projects that will come after this.

Thank you,

A handwritten signature in black ink, appearing to read "Charles Morman", with a long horizontal flourish extending to the right.

Charles Morman
Road Superintendent



John Hoeven, Governor • Maren L. Daley, Executive Director

PO Box 5507 • Bismarck, ND 58506-5507

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APR 20 2009
HDR Engineering, Inc.

April 17, 2009

Mr. Bruce Moreira
Environmental Scientist
HDR Engineering, Inc.
701 Xenia Avenue South
Minneapolis, Minnesota 55416-3636

RE: Bison I Wind Project
Oliver and Morton Counties, North Dakota

Dear Mr. Moreira:

Job Service North Dakota administers the employment service and unemployment insurance programs.

We have no comments regarding the proposed project and have no applicable permits that are required from Job Service North Dakota.

Sincerely,

A handwritten signature in cursive script, appearing to read "Maren Daley".

Maren Daley
Executive Director

Desmond, Meg

From: Schwingler, Ingrid
Sent: Tuesday, April 21, 2009 2:14 PM
To: Schwingler, Ingrid
Subject: Message from HDR WEB Visitor

-----Original Message-----

From: McMorris, Michelle
Sent: Tuesday, April 21, 2009 1:23 PM
To: Moreira Bruce B.
Subject: FW: Message from HDR WEB Visitor

-----Original Message-----

From: lbrocke@nd.gov [mailto:lbrocke@nd.gov]
Sent: Tuesday, April 21, 2009 1:21 PM
To: web_gen_locations
Subject: Message from HDR WEB Visitor

The following message was sent by a visitor of HDR's Web site (HDRInc.com). Please respond to the sender in a timely manner.

If you have questions regarding this message, please contact Michelle McMorris, HDR Web Content Manager.

Date Sent: Tuesday, April 21 2009 1:21 PM
Sent To: State: Minnesota Office: Minneapolis Contact: General Inquiries
Subject: Bison I Wind Project in Oliver & Morton Co, ND

Responding to the April 7, 2009, letter from Bruce Moreira. The office of Attorney General is prohibited by law from providing legal assistance or reviewing legal matters for private businesses. Further, this office does not have jurisdiction over wind projects. Accordingly, we will not take any action in response to Mr. Moreira's letter.

Name: Liz Brocker
Title and Company: Executive Assistant, ND Attorney General
Phone: (701) 328-2210
Email: lbrocke@nd.gov



**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

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John Hoeven
Governor of North Dakota

North Dakota
State Historical Board

Albert I. Berger
Grand Forks - President

Chester E. Nelson, Jr.
Bismarck - Vice President

Gerold Gerntholz
Valley City - Secretary

A. Ruric Todd III
Jamestown

Diane K. Larson
Bismarck

Marvin L. Kaiser
Williston

Richard Kloubec
Fargo

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Douglass Prchal
Director
Parks and Recreation
Department

Francis Ziegler
Director
Department of Transportation

Merlan E. Paaverud, Jr.
Director

Accredited by the
American Association
of Museums

April 9, ~~2009~~ 16 2009

HDR Engineering, Inc.

Mr. Stephen Sabatke
Project Manager
HDR Engineering, Inc.
701 Xenia Avenue South Suite 600
Minneapolis, MN 55416-3636

**NDSHPO REF. : 09-0662 PSC Minnesota Power Bison 1 Wind Farm,
Transmission Line(s), and Ancillary Facilities
[T140-141N R85-86W, Morton and Oliver Counties]**

Dear Mr. Sabatke:

We have received and reviewed the initial consultation letter for: **09-0662 PSC Minnesota Power Bison 1 Wind Farm, Transmission Line(s), and Ancillary Facilities**, [T140-141N R85-86W, Morton and Oliver Counties]. There is potential for recorded and unrecorded properties in a variety of physiographic settings in the overall Mercer-Oliver County study area. We recommend that a Class I CRI (file and records search) be prepared covering the project area and that it be submitted for review.

Further, we encourage and recommend a Class III CRI (pedestrian survey) of the Area of Potential Effect (APE), including proposed turbine locations, transmission line corridor(s), access roads, and other ancillary facilities, as part of the Environmental Assessment. *Further, if the project requires permits issued by a federal and/or state agency (e.g., PSC), then the respective agency(ies) are to be consulted regarding their recommendations on the project.*

Thank you for the opportunity to review the project, and we look forward to reviewing documents prepared for the project and to further consultation on it. If you have questions please contact either Susan Quinnell at (701) 328-3576 or Paul Picha at (701) 328-3574. Please include the NDSHPO REF. :09-0662 in correspondence regarding the project.

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and

Director, State Historical Society of North Dakota
cc: Patrick Fahn, PSC with map enc.