



Prairie Rose Wind Farm

Project Description:

The Prairie Rose Project is a Large Wind Energy Conversion System (LWECS), as defined in the Wind Siting Act, Minnesota Stat. §216F.01. The Project is located in Rock Minnesota, on Approximately 12734 Acres. The project will have an electrical generating capacity of up to 200 megawatts (mW), consisting from 66 to 133 wind turbine generators. The Developer has not made a final selection on turbines for the Project and proposes to permit the Project for a range in turbine size from 1.5 to 3.0 MW. The application uses the General Electric (GE) 1.5 MW machine as a representative turbine for the 1.5 MW Class, the Suzlon 2.1 MW machine as a representative turbine for the 2.1 MW Class, the GE 2.5 MW machine as a representative turbine for the 2.5 MW Class and the Vestas 3.0 MW machine as a representative turbine for the 3.0 MW Class. Together these four turbines span the spectrum of the turbine models in the 1.5 to 3.0 MW range. The Applicant may elect to select turbines by other turbine vendors in the 1.5 to 3.0 MW range. Associated facilities include gravel access roads, interconnecting to the Anson Natural Gas Plant in Sioux Falls, South Dakota, permanent meteorological towers and wind electrical collection system. There is the potential for as yet undetermined utility connections to occur outside of the submitted area; if and when the location of these connections is determined an additional data request will be completed. This project will use standard construction methods associated with wind energy conversion system parks at the time of construction. The Project is expected to come online in 2010.

Current/Past Land Use:

The area is predominantly agricultural with a mix of livestock and cropping activities and has, historically been under this use post settlement. Some of this farmland may have been recently converted to conservation uses in the form of CRP, Reinvest in Minnesota or other conservation programs that included both private and public ownership. A number of both current and uninhabited farmsteads are located within the project boundaries. Because of the large size of this project a number of non-agricultural industrial and commercial uses may be present but are as yet to be identified by the developer. These may range from gravel pits to private stores and service providers.

From: Patrick Smith [Patrick@geronimowind.com]
Sent: Wednesday, November 19, 2008 6:57 PM
To: Lisa Joyal
Subject: RE: Prairie Rose Wind Farm
Attachments: PrairieRose_v3.dbf; PrairieRose_v3.prj; PrairieRose_v3.sbn; PrairieRose_v3.sbx;
PrairieRose_v3.shp; PrairieRose_v3.shp.xml; PrairieRose_v3.shx

Hi Lisa,

Attached is how we are planning on moving our footprint based on your comments.

I am currently working out what routs our electrical collector system will take and would greatly appreciate any guidance you have. These would be smaller lines, probably above ground in the already existing Road ROW. I am assuming that you would like us to avoid cutting into what look to me like potential habitat corridors. I had originally planned two lines, one along Co. Rd 7 and one along Tw Hywy 76 straight to the border. These lines need to be as short and straight as I can make them because their cost can go way up and hurt our project.

Best,
Patrick

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

From: Lisa Joyal [<mailto:Lisa.Joyal@dnr.state.mn.us>]
Sent: Tuesday, November 18, 2008 10:57 AM
To: Patrick Smith
Subject: Re: Prairie Rose Wind Farm

Hi Patrick,

I've attached two GIS shapefiles (NAD 83, UTM Zone 15N) of preliminary MCBS Sites of Biodiversity Significance within Pipestone and Rock counties. These shapefiles, and the biodiversity rankings within them, are preliminary and are subject to change. They are not final products and should not be construed as such. Please do not share these shapefiles and do not include the layers in any maps that will be publicly distributed. Please note that the shapes where DRAFT_BIOD = ? in Rock County are the Sites that were surveyed in 2008.

Thank you,

Lisa

~~~~~  
Lisa Joyal  
Endangered Species Environmental Review Coordinator NHIS Data Distribution Coordinator Division of Ecological Resources Minnesota  
Department of Natural Resources 500 Lafayette Road, Box 25 St. Paul, MN 55155

phone: 651-259-5109  
fax: 651-296-1811  
[lisa.joyal@dnr.state.mn.us](mailto:lisa.joyal@dnr.state.mn.us)  
[www.mndnr.gov/eco](http://www.mndnr.gov/eco)

**From:** Patrick Smith [Patrick@geronimowind.com]  
**Sent:** Saturday, January 31, 2009 12:18 PM  
**To:** Lisa.Joyal@dnr.state.mn.us  
**Subject:** Re: Prairie Rose Wind Farm

Hi Lisa,

The redrafted boundary I sent you is still our target area. On Monday I will send you a couple maps showing what our collector system plan currently is. We are moving forward with the project there at a steady rate as far as land acquisition, I'm waiting to hear back from our utility partner in mid february and then we will probably move into scheduling environmental reviews need.

Thank you for your help,  
Patrick

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

From: Lisa Joyal <[Lisa.Joyal@dnr.state.mn.us](mailto:Lisa.Joyal@dnr.state.mn.us)>  
To: Patrick Smith  
Sent: Fri Jan 30 17:11:27 2009  
Subject: RE: Prairie Rose Wind Farm

Hi Patrick,

Thank you for sending the revised boundary. Is this still the working boundary?

Also, I tried reviewing the Co. Rd. 7 and Hwy 76 routes, but our road coverage often has mistakes in it and I'm not sure that I'm looking at the right place. If you would still like me to look at this, please send a map. I promise to respond in a timely manner.

Please accept my apologies for the slow response to your email.

Sincerely,

Lisa

~~~~~  
Lisa Joyal
Endangered Species Environmental Review Coordinator
NHIS Data Distribution Coordinator
Division of Ecological Resources
Minnesota Department of Natural Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155

phone: 651-259-5109

fax: 651-296-1811

lisa.joyal@dnr.state.mn.us

www.mndnr.gov/eco

>>> "Patrick Smith" <Patrick@geronimowind.com> 11/19/2008 6:57 PM >>>

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Lisa Joyal  
Endangered Species Environmental Review Coordinator NHIS Data  
Distribution Coordinator Division of Ecological Resources Minnesota  
Department of Natural Resources 500 Lafayette Road, Box 25 St. Paul, MN  
55155

phone: 651-259-5109

fax: 651-296-1811

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|                                 |                                 |                                                                                               |
|---------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------|
| Subject: Geronimo Wind Projects |                                 |                                                                                               |
| Client: Geronimo Wind           | Project No:112145<br>and 113498 |                                                                                               |
| Project: Prairie Rose*          | Meeting Location:               | Minnesota Valley<br>National Wildlife<br>Refuge,<br>Bloomington, MN<br>and Conference<br>Call |
| Meeting Date: July 21, 2009     | Notes by:                       | Mike DeRuyter                                                                                 |

**\*NOTE: ALTHOUGH SEVERAL GERONIMO WIND PROJECTS WERE DISCUSSED AT THIS MEETING, THESE MINUTES HAVE BEEN EDITED TO ONLY INCLUDE THE PORTIONS OF THE DISCUSSION RELEVANT TO THE PRAIRIE ROSE PROJECT**

**ATTENDEES:**

**Mike North** – (conference call) Minnesota DNR Regional Environmental Assessment Ecologist, Central Region, [michael.north@dnr.state.mn.us](mailto:michael.north@dnr.state.mn.us) 320-255-4279, ext. 235

**John Schaldweiler** – (conference call) Minnesota DNR , Ecological Resources Regional Manager, South Region, [john.schaldweiler@dnr.state.mn.us](mailto:john.schaldweiler@dnr.state.mn.us), 507-359-6003

**Todd Mattson** – HDR, Senior Environmental Project Manager, [todd.mattson@hdrinc.com](mailto:todd.mattson@hdrinc.com), 763-278-5931

**Mike DeRuyter** – HDR, Environmental Scientist, [michael.deruyter@hdrinc.com](mailto:michael.deruyter@hdrinc.com), 763-591-5479

**Patrick Smith** – Geronimo, Environmental Specialist, [patrick@geronimowind.com](mailto:patrick@geronimowind.com), 952-988-9000

**Charlie Daum** – Geronimo, Director of Development, [charlie@geronimowind.com](mailto:charlie@geronimowind.com), 952-988-9000

**Justin Pickar** – Geronimo, Development Associate, [justin@geronimowind.com](mailto:justin@geronimowind.com), 952-988-9000

**Kevin Mixon** – (conference call) Minnesota DNR, Regional Environmental Assessment Ecologist, South region, [kevin.mixon@dnr.state.mn.us](mailto:kevin.mixon@dnr.state.mn.us) , 507-359-6073

**Nick Snavelly** – (conference call) Minnesota DNR, Assistant Area Wildlife Manager, [nicholas.snavelly@dnr.state.mn.us](mailto:nicholas.snavelly@dnr.state.mn.us), 320-255-4279

**Rich Davis** – USFWS Fish and Wildlife Biologist, [Richard.Davis@fws.gov](mailto:Richard.Davis@fws.gov), 612-725-3548, ext. 2214

## TOPICS DISCUSSED

Introduce Geronimo Projects  
Near term projects and schedule  
Site characterization  
Additional Wildlife Studies

## ACTION/NOTES

Geronimo Projects: Multiple projects in early development stages throughout the state, including the 100 MW Prairie Rose Wind Farm in Rock County.

Near Term Projects and Schedules: Prairie Rose is slated for 2010 construction. Site characterization studies are in progress, and Minnesota Large Wind Energy Conversion System (LWECS) permits will be required by the Department of Commerce (DOC). The LWECS application for the project will be submitted to the DOC this fall, with approvals and pre-construction meetings expected in June or July, 2010. Geronimo is considering participation in the U.S. Department of Energy's loan guarantee program. While details about this program are not yet fully understood, this would be a non-discretionary federal funding mechanism that is expected to trigger NEPA review at an EA level.

Site Characterization: HDR described habitat, land cover, general characterization of the Prairie Rose site. Prairie Rose has several parcels within the project boundary ranked by the county biological survey (CBS) as "below". These areas were observed as heavily grazed pasture/grassland, with rock outcrops, which have potential to include native prairie remnants and support rare plants and/or wildlife. The remainder of the project boundary is cropland. The project boundary is surrounded by CBS sites, primarily to the west and south, some of which border the project boundary. There are records of state and federally listed endangered and threatened species within those areas. In addition, streams with records of Topeka shiners are located in all directions from the project boundary. Although no records have been found within the project boundary, tributaries of these streams occur within the site.

The DNR commented that their November 14, 2008 letter to Geronimo indicated the presence of western prairie fringed orchid within the Study Area. Patrick Smith said that the project boundary was altered in response to the letter to exclude the known records of western prairie fringed orchid and most of the CBS sites. DNR staff noted the change but asked that Geronimo double check the records for the revised project boundary. They also pointed out that native prairie remnants and rock outcrops within the site may support listed plants not identified by the CBS. DNR staff said that a native prairie protection plan will be required as part of the LWECS. They also asked whether shallow bedrock and outcrops would create geotechnical problems with construction.

The DNR asked how many turbines are proposed at the site. Patrick Smith said 63 turbines are currently planned for the project.

HDR presented a broad overview of the LWECS schedule. Layouts will be developed in August, field surveys will be completed this fall, and the LWECS permits will be submitted to the DOC in October. The plan is to hold site meetings with the agencies and have permit approvals in place in spring, 2010, with construction planned for mid-summer to autumn, 2010. Geronimo is exploring the possibility of applying for the U.S. Department of Energy's loan guarantee program, which is a federal discretionary funding mechanism for wind projects that is part of the

stimulus plan. This will trigger NEPA review, although the exact process has not been worked out.

USFWS staff expressed concern about project effects on Topeka shiner habitat near the Prairie Rose project. He recommended avoiding disturbance to channels in the site, to use best management practices (BMPs) to minimize erosion and sedimentation, to address long-term erosion potential from turbine foundations or access roads into streams, and to protect tributaries. DNR staff pointed out that the Stormwater Pollution Prevention Plan (SWPPP) required as part of the National Pollutant Discharge Elimination System (NPDES) permit will likely address the erosion/sedimentation issues. USFWS staff recommended avoiding the stream in the southeast corner of the site, to protect it with a setback or buffer, and to not increase the sediment or runoff to the stream from existing levels. He indicated that he will send a recommended buffer width to Geronimo.

DNR staff asked whether smoke discharge could conflict with a wind farm, as it sometimes creates conflicts with transmission lines during prescribed burns for management purposes. HDR and Geronimo staff said they did know of any conflicts with smoke discharge near wind farms.

HDR said that site characterization studies are being completed based on USFWS wind farm siting guidelines. Emphasis will be placed on avoidance of significant habitat and features. Geronimo has committed to developing an Avian and Bat Protection Plan (ABPP) that will include specific commitments to project design standards that minimize impacts to birds and bats. HDR asked whether there are any specific issues regarding migratory birds that USFWS has, and how they want them addressed. USFWS staff said they had not looked at the Prairie Rose site in regard to avian issues.

DNR staff from the Rock County area said they are recommending avian mortality studies for wind projects. They are developing protocol that they will send to Geronimo in a few weeks, and will review the Prairie Rose site to provide comment in the next 2 to 3 weeks. They said to expect the survey protocol to consist of pedestrian surveys in a 100 meter radius around each turbine base for 5 days per week between April 1<sup>st</sup> and November 15<sup>th</sup>. They anticipate that this method will accurately measure mortality during the spring, breeding season, and fall, to account for any mortality during the season.

DNR staff also said they are working on a guidance document for wind projects that will include recommendations for setbacks from natural features. He said the draft document is not available yet, but they expect to adopt the draft in August or September. He said to expect the following setbacks to be included in the draft recommendations:

- 1,000 feet from Public Waters
- 600 feet from Circular 39 Types 3, 4, and 5 wetlands
- ¼ mile from native prairie
- 5 rotor diameter from WMAs in all directions
- Other areas that DNR staff want avoided, based on input from regional and Natural Heritage Program staff

HDR asked if any industry comments had been solicited during the development of these recommendations. DNR staff said that industry comment was not requested because the guidance is based solely on DNR's mission as an agency to protect the resource.

HDR asked if the recommendations are based on any scientific research relating to wind turbine impacts. DNR staff said that the 600 foot setback from Type 3, 4, and 5 wetlands is included in many county ordinances, and the 1,000 foot setback from Public Waters is meant to avoid shadow flicker and other impacts to Public Waters. DNR staff emphasized that the forthcoming guidance will be only be recommendations, not requirements, and that there would be flexibility based on site specific circumstances.

DNR staff asked how long the leases would be. Geronimo said they would be for 20 years, with three 10-year extensions possible.

DNR staff asked that during installation of collector lines, vehicles would be cleaned off after passing through wetland areas in order to avoid spreading exotic species.

**Date:** July 31, 2009

**Type of Notification:** New

**Project:** Prairie Rose

**County:** Rock

**State:** Minnesota

**Project Sponsor:** Geronimo Wind Energy - Patrick Smith [Patrick@geronimowind.com](mailto:Patrick@geronimowind.com)

**Turbine Description:**

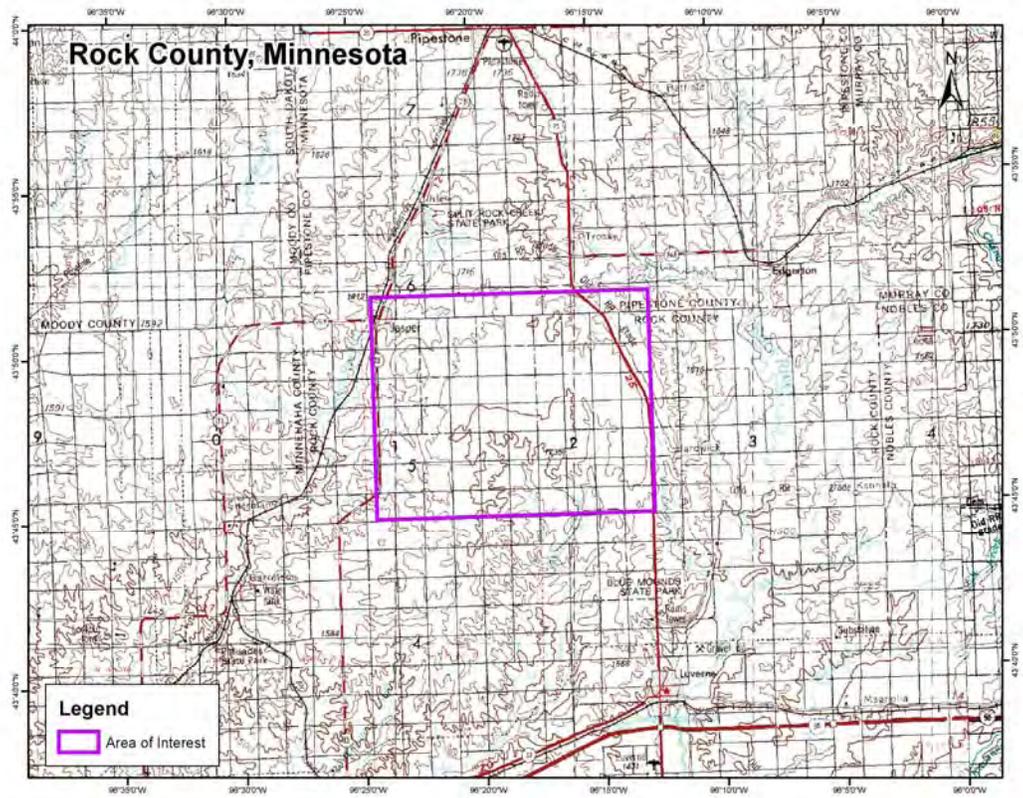
**Number of Turbines:** N/A  
**Turbine Hub Height AGL (meters):** 80  
**Turbine Blade Diameter (meters):** 80 - 101  
**Maximum Blade Tip Height AGL (meters):** 120 – 130.5

**Turbine Locations:** N/A

**Wind Farm Boundary Points:**

| Identifier | Latitude     | Longitude     |
|------------|--------------|---------------|
| Pt1        | 43:44:52.800 | 096:12:43.200 |
| Pt2        | 43:44:52.800 | 096:24:18.000 |
| Pt3        | 43:51:36.000 | 096:24:18.000 |
| Pt4        | 43:51:36.000 | 096:12:43.200 |

**Maps:**





August 6, 2009

Mr. Dave Studenski  
U.S. Army Corps of Engineers  
Attn: OP-R  
1114 South Oak Street  
La Crescent, MN 55947-1338

RE: Prairie Rose Wind Project in Rock County, MN

Dear Mr. Studenski:

HDR Engineering, Inc. (HDR) is currently gathering environmental information for the Prairie Rose Wind Project, proposed by Geronimo Wind Energy, LLC (Geronimo) in Rock County, MN (Figure 1-1). The proposed project will be up to 100 MW. This fall, Geronimo will submit a Site Permit Application for a Large Wind Energy Conversion System to the Minnesota Public Utilities Commission (PUC).

Typically wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads, an underground collector system and overhead 34.5 kV and 115 kV transmission lines. Although final turbine locations, access roads and electrical connections have not been determined at this time, the table below identifies Township sections potentially affected by the project:

**Table 1 – Sections within Project Boundary**

| Township Name | Township | Range | Section                  |
|---------------|----------|-------|--------------------------|
| Denver        | 104N     | 45W   | 5-8; 17-20; 29-30        |
| Rose Dell     | 104N     | 46W   | 1-2; 11-14; 23-27; 34-35 |

We welcome any comments the U.S. Army Corps of Engineers 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 PUC review process for the project.

Prairie Rose Wind Project  
U.S. Army Corps of Engineers  
August 6, 2009  
Page 2

Enclosed is a map detailing the location and project boundary of the Prairie Rose project area to facilitate your review. If you require further information or have questions regarding this matter, please call me at (763) 278-5925.

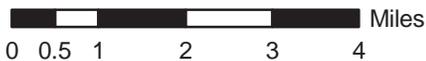
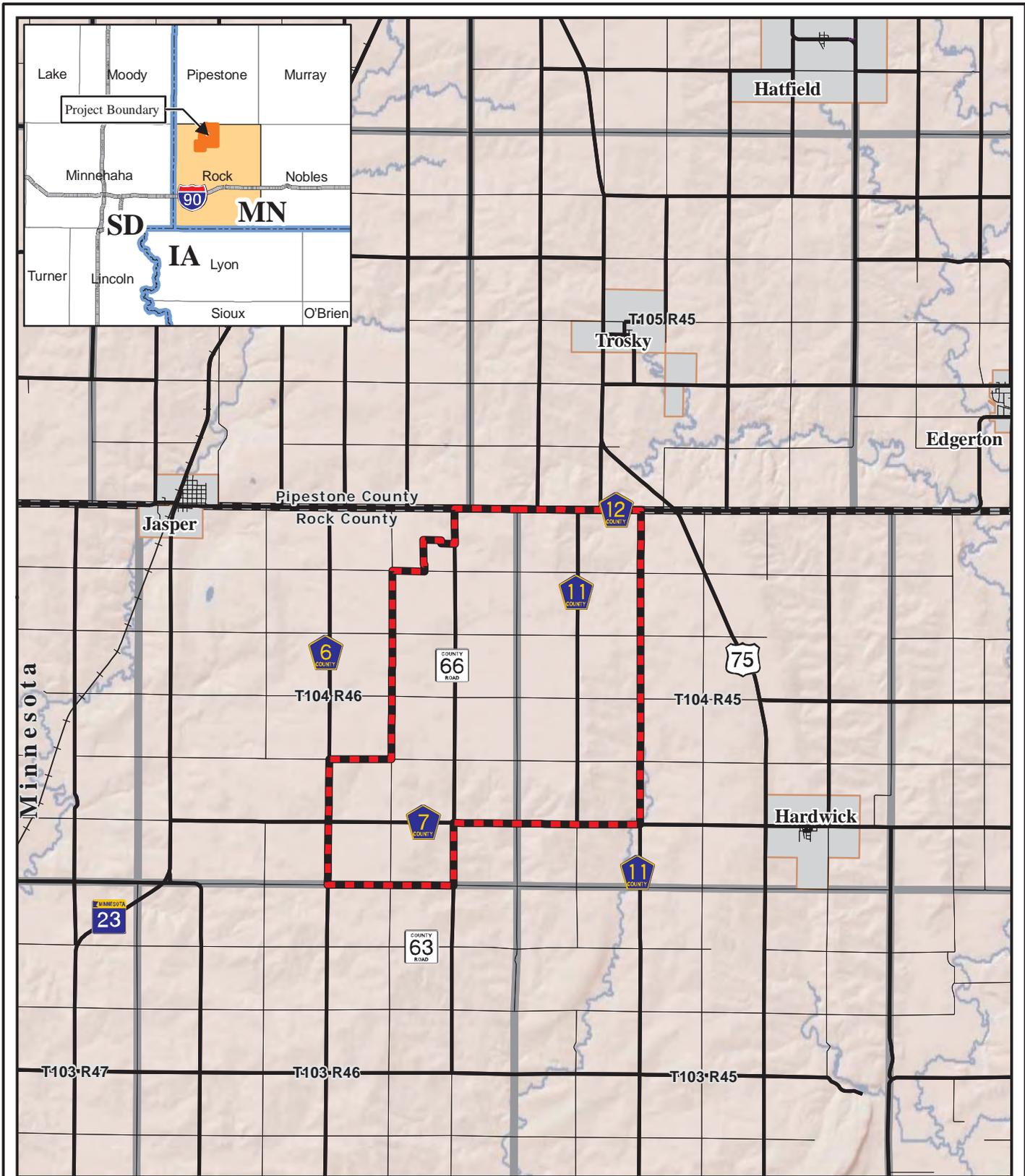
Sincerely,

A handwritten signature in black ink that reads "Mike DeRuyter". The signature is written in a cursive style with a long horizontal line extending from the end of the name.

Mike DeRuyter  
Environmental Scientist

Enclosures:  
Figure 1-1, Project Vicinity Map

Cc: Patrick Smith, Geronimo Wind Energy, LLC



Legend

-  Project Boundary
-  Cities
-  Townships
-  County Boundary

Figure 1-1. Project Vicinity Map  
 Prairie Rose Wind Farm  
 Geronimo Wind Energy  
 Rock County, MN

August 4, 2009

David Birkholz  
Minnesota Department of Commerce  
85 7<sup>th</sup> Place East, Suite 500  
St. Paul, MN 55155

**RE: Project Notice  
Proposed Prairie Rose Wind Project  
Rock County, Minnesota**

Dear David:

Geronimo Wind Energy, (Geronimo) is exploring development of the “Prairie Rose Wind Project” (Project) in Rock County, Minnesota. This Project includes a 22-square-mile study area. Geronimo has contracted with HDR Engineering, Inc. (HDR) to provide environmental and permitting services for the project. HDR is currently developing a constraint analysis for the Project study area. On behalf of Geronimo, HDR would like to coordinate with your office to review existing data and discuss potential cultural resource issues for this planning effort. Detailed discussion of specific cultural resource issues will occur as project plans, the survey process, and the report process become clear.

The Project site is in the northwestern part of Rock County. A table of Study Area legal descriptions (Table 1) is below and a map is enclosed. Information concerning the proposed number of turbines, megawatt output, access roads, underground cabling alignments, overhead transmission lines, substations footprints, and operation/maintenance buildings has not been determined.

**Table 1. Prairie Rose Study Area  
Legal Descriptions**

| County | Township | Range | Section                    |
|--------|----------|-------|----------------------------|
| Rock   | 104      | 46    | 1, 2, 11-14, 23-27, 34, 35 |
| Rock   | 104      | 45    | 5-8, 17-20, 29, 30         |

HDR understands that at this time, the Project does not involve a federal undertaking and is therefore not subject to federal Section 106 historic preservation regulations or guidance. The Project is, however, subject to regulations associated with:

- The Minnesota Wind Siting Act (Minnesota Statutes Chapter 216F)
- The Minnesota Administrative Rules Chapter 7836 Wind Siting
- The Minnesota Department of Commerce, Energy Facility, Permitting, Siting, and Routing Department’s PUC LWECs Site permit
- Minnesota Statute Chapter 138.661-138.699 (Minnesota Historic Sites Act)

David Birkholz  
Minnesota Department of Commerce  
Prairie Rose Wind Project  
August 4, 2009

- The Minnesota Pollution Control Agency's (PCA) National Pollutant Discharge Elimination System (NPDES) Permit No: MN R100001 (Appendix A, Part G. Discharges Affecting Historic Places Or Archeological Sites)

HDR understands that additional coordination with your office may be needed pursuant to these regulations and guidance.

HDR intends to review cultural resource site forms and surveys to establish the known properties in the project vicinity, review Government Land Office maps for additional information, and Geographic Information System-developed maps. The information we collect will be used for Project planning and to identify potential Project constraints. We will coordinate with your staff to collect data on file at your office.

We look forward to discussing the project and our data collection efforts with you or your staff. If you have any questions or comments please contact me at (763) 278-5992 or by e-mail at [stephen.sabatke@hdrinc.com](mailto:stephen.sabatke@hdrinc.com).

Sincerely,

**HDR Engineering, Inc.**



Stephen Sabatke  
Archaeologist

cc: Kelly Gragg-Johnson SHPO Review and Compliance Associate  
Scott Anfinson State Archaeologist  
Michael S. DeRuyter HDR Environmental Scientist  
Patrick Smith Geronimo Environmental Specialist

Enclosures: Project Location Map

August 4, 2009

Kelly Gragg-Johnson  
Review and Compliance Associate  
Minnesota Historical Society  
345 Kellogg Boulevard West  
Saint Paul, Minnesota 55102

**RE: Project Notice  
Proposed Prairie Rose Wind Project  
Rock County, Minnesota**

Dear Kelly:

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Kelly Gragg-Johnson  
Minnesota Historical Society  
Prairie Rose Wind Project  
August 4, 2009

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Sincerely,

**HDR Engineering, Inc.**



Stephen Sabatke  
Archaeologist

cc: David Birkholz Minnesota Department of Commerce  
Scott Anfinson State Archaeologist  
Michael S. DeRuyter HDR Environmental Scientist  
Patrick Smith Geronimo Environmental Specialist

Enclosures: Project Location Map

August 4, 2009

Scott Anfinson  
State Archaeologist  
Minnesota Office of the State Archaeologist  
Fort Snelling History Center  
Saint Paul, Minnesota 55111

**RE: Project Notice  
Proposed Prairie Rose Wind Project  
Rock County, Minnesota**

Dear Scott:

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Scott Anfinson  
Minnesota Office of the State Archaeologist  
Prairie Rose Wind Project  
August 4, 2009

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We look forward to discussing the project and our data collection efforts with you or your staff. If you have any questions or comments please contact me at (763) 278-5992 or by e-mail at [stephen.sabatke@hdrinc.com](mailto:stephen.sabatke@hdrinc.com).

Sincerely,

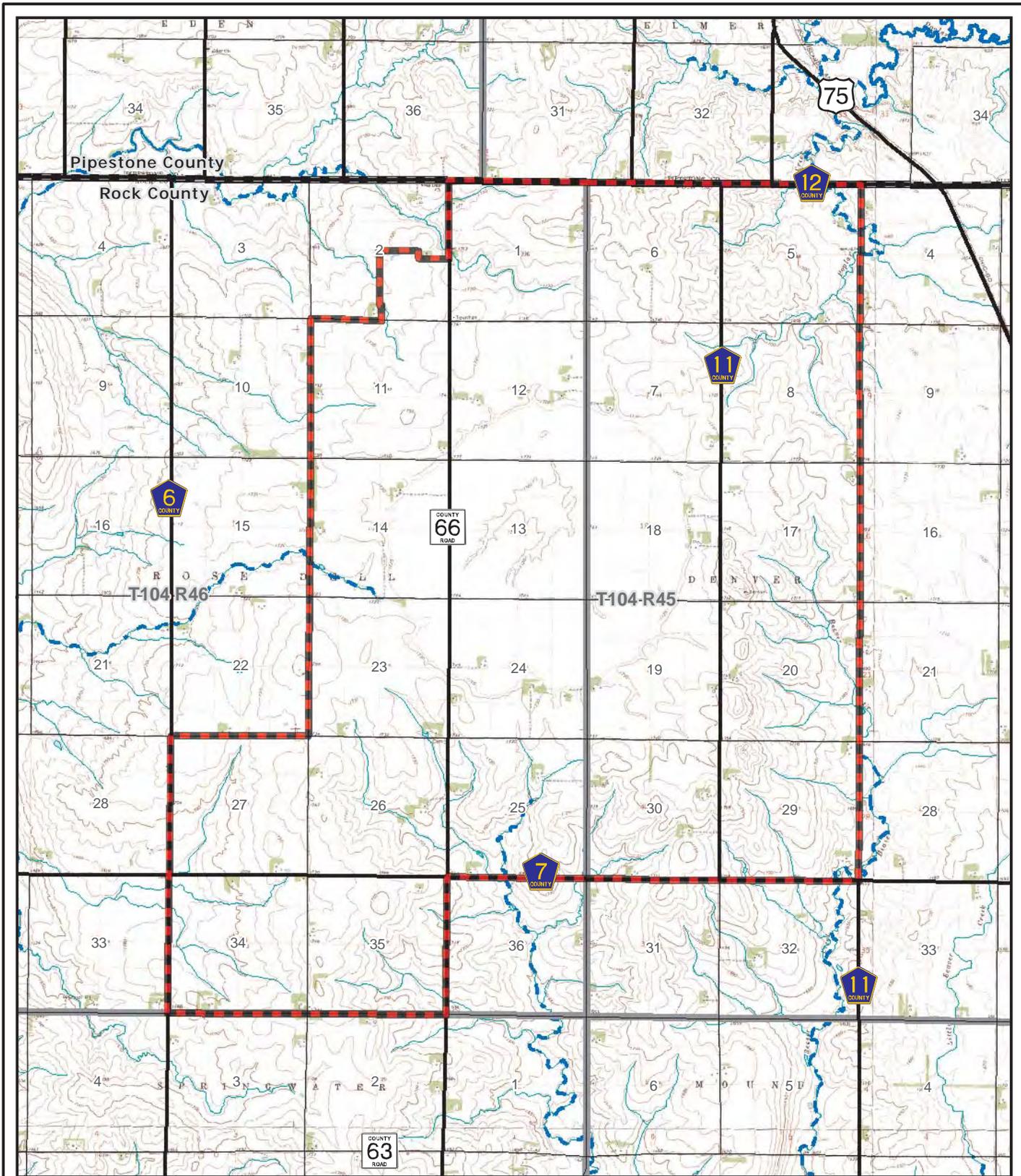
**HDR Engineering, Inc.**



Stephen Sabatke  
Archaeologist

cc: David Birkholz Minnesota Department of Commerce  
Patrick Smith Geronimo Environmental Specialist  
Michael S. DeRuyter HDR Environmental Scientist  
Kelly Gragg-Johnson SHPO Review and Compliance Associate

Enclosures: Project Location Map



**Legend**

-  Project Boundary
-  Stream (Perennial)
-  Stream (Intermittent)
-  Other PWI
-  24k Streams



Figure 1. Project Location Map  
Prairie Rose Wind Farm  
Geronimo Wind Energy  
Rock County, MN

March 10, 2010

Mr. Dave Studenski  
U.S. Army Corps of Engineers  
Attn: OP-R  
1114 South Oak Street  
La Crescent, MN 55947-1338

RE: Prairie Rose Wind Farm and 115 kV Transmission Line in  
Rock and Pipestone Counties, MN.

Dear Mr. Studenski:

Geronimo Wind Energy LLC (Geronimo) sent you a letter in contacted you in August 2009, requesting USACE comments in regard to the proposed Prairie Rose Wind Project in Rock County, Minnesota.

Recently, the project boundary has changed and now includes additional sections adjacent to the previous project boundary (Figure 1-2) in Rock and Pipestone Counties. The project nameplate capacity will be 101 MW. In addition, Geronimo is proposing to construct a 115 kV High Voltage Transmission Line (HVTL) which would run between the project substation, located within the wind farm project boundary, and Xcel Energy's Split Rock Substation, located near Brandon, SD. The proposed route would run parallel to Rock County Highway 7 and Rose Dell Township Road 72 (Figure 1-1). This spring, Geronimo will submit a Site Permit Application for a Large Wind Energy Conversion System and a Route Permit Application for a HVTL to the Minnesota Public Utilities Commission (PUC).

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads, and an underground and/or aboveground 34.5 kV collector system. Although final turbine locations, access roads, and electrical connections have not been determined at this time, the tables below identify Township sections potentially affected by the project:

**Table 1 – Original Sections within the Project Boundary**

| Township Name | Township | Range | Sections                |
|---------------|----------|-------|-------------------------|
| Denver        | 104N     | 45W   | 7, 18, 19, 30           |
| Rose Dell     | 104N     | 46W   | 11-16, 21-27, 34 and 35 |

**Table 2 – Updated Sections within the Project Boundary**

| County    | Township Name | Township | Range | Sections                                  |
|-----------|---------------|----------|-------|-------------------------------------------|
| Rock      | Rose Dell     | 104N     | 46W   | 1-2, 28, 33                               |
| Rock      | Denver        | 104N     | 45W   | 2-6, 8-10, 15-17, 20-22, 27-29, and 31-34 |
| Rock      | Springwater   | 103N     | 46W   | 1-4, 9-12                                 |
| Pipestone | Elmer         | 105N     | 45W   | 20, 29-30, 31-34                          |
| Pipestone | Eden          | 105N     | 46W   | 36                                        |

**Table 3 – Proposed Transmission Line Corridor**

| Township Name | Township | Range | Sections       |
|---------------|----------|-------|----------------|
| Rose Dell     | 104N     | 46W   | 27-34          |
| Rose Dell     | 104N     | 47W   | 25, 26, 35, 36 |

We welcome any comments the U.S. Army Corps of Engineers may have at this time or throughout the permit application process. Table 1 identifies the original sections within the Project boundary, Table 2 identifies updated sections within the expanded Project boundary, and Table 3 identifies sections adjacent to the proposed transmission line. In particular, HDR requests you review the sections located in Rose Dell, Denver, Springwater, Elmer, and Eden townships, identified in Tables 1, 2, and 3 for any comments on the new expansion areas.

Geronimo received a letter marked 2009-03763-DAS on August 27, 2009. Geronimo has committed to conducting preconstruction surveys this spring to identify the presence of wetlands and wet features (including Topeka shiner habitat), which will be considered during final micrositing of project facilities.

Prairie Rose Wind Project  
U.S. Army Corps of Engineers  
March 10, 2010

Enclosed are maps detailing the location and project boundary of the Prairie Rose Wind Farm and 115 kV Transmission Line. If you require further information or have questions regarding this matter, please call me at (763) 591-5479.

Sincerely,

A handwritten signature in black ink that reads "Mike DeRuyter". The signature is written in a cursive style with a long horizontal stroke extending to the right.

Mike DeRuyter  
Environmental Scientist

Enclosures:

Figure 1-1 - Project Location Map (Transmission Line)

Figure 1-2 – Project Location Map (Wind Farm)

Cc: Patrick Smith, Geronimo Wind Energy, LLC

March 10, 2010

Mr. Kevin Mixon  
Regional Environmental Assessment Ecologist  
Minnesota Department of Natural Resources  
Division of Ecological Resources Region 4  
261 Highway 15 South  
New Ulm, MN 56073-8915

RE: Prairie Rose Wind Farm and 115 kV Transmission Line in  
Rock and Pipestone Counties, MN.

Dear Mr. Mixon:

Geronimo Wind Energy LLC (Geronimo) contacted you in July 2009, requesting MNDNR comments in regards to the proposed Prairie Rose Wind Project in Rock County, Minnesota.

Recently, the project boundary has changed and now includes additional sections adjacent to the previous project boundary (Figure 1-2) in Rock and Pipestone Counties. The project nameplate capacity will be 101 MW. In addition, Geronimo is proposing to construct a 115 kV High Voltage Transmission Line (HVTL) which would run between the project substation, located within the wind farm project boundary, and Xcel Energy's Split Rock Substation, located near Brandon, SD. The proposed route would run parallel to Rock County Highway 7 and Rose Dell Township Road 72 (Figure 1-1). This spring, Geronimo will submit a Site Permit Application for a Large Wind Energy Conversion System and a Route Permit Application for a HVTL to the Minnesota Public Utilities Commission (PUC).

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads, and an underground and/or aboveground 34.5 kV collector system. Although final turbine locations, access roads, and electrical connections have not been determined at this time, the tables below identify Township sections potentially affected by the project:

**Table 1 – Original Sections within the Project Boundary**

| Township Name | Township | Range | Sections                |
|---------------|----------|-------|-------------------------|
| Denver        | 104N     | 45W   | 7, 18, 19, 30           |
| Rose Dell     | 104N     | 46W   | 11-16, 21-27, 34 and 35 |

**Table 2 – Updated Sections within the Project Boundary**

| County    | Township Name | Township | Range | Sections                                  |
|-----------|---------------|----------|-------|-------------------------------------------|
| Rock      | Rose Dell     | 104N     | 46W   | 1-2, 28, 33                               |
| Rock      | Denver        | 104N     | 45W   | 2-6, 8-10, 15-17, 20-22, 27-29, and 31-34 |
| Rock      | Springwater   | 103N     | 46W   | 1-4, 9-12                                 |
| Pipestone | Elmer         | 105N     | 45W   | 20, 29-30, 31-34                          |
| Pipestone | Eden          | 105N     | 46W   | 36                                        |

**Table 3 – Proposed Transmission Line Corridor**

| Township Name | Township | Range | Sections       |
|---------------|----------|-------|----------------|
| Rose Dell     | 104N     | 46W   | 27-34          |
| Rose Dell     | 104N     | 47W   | 25, 26, 35, 36 |

We welcome any comments the Minnesota Department of Natural Resources may have at this time or throughout the permit application process. Table 1 identifies the original sections within the Project boundary, Table 2 identifies updated sections within the expanded Project boundary, and Table 3 identifies sections adjacent to the proposed transmission line. In particular, HDR requests you review the sections located in Rose Dell, Denver, Springwater, Elmer, and Eden townships, identified in Tables 1, 2, and 3 for any comments on the new expansion areas.

Geronimo received a letter from you dated August 3, 2009. Geronimo has committed to conducting preconstruction surveys this spring to identify the presence of wetlands and wet features (including Topeka shiner habitat), native prairie, and bedrock outcrops, which will be considered during final micro-siting of project facilities.

Enclosed are maps detailing the location and project boundary of the Prairie Rose Wind Farm and 115 kV Transmission Line. If you require further information or have questions regarding this matter, please call me at (763) 591-5479.

Prairie Rose Wind Project  
Minnesota Department of Natural Resources  
March 10, 2010

Sincerely,

A handwritten signature in black ink that reads "Mike DeRuyter". The signature is written in a cursive style with a long horizontal stroke extending to the right.

Mike DeRuyter  
Environmental Scientist

Enclosures:

Figure 1-1 - Project Location Map (Transmission Line)

Figure 1-2 – Project Location Map (Wind Farm)

Cc: Patrick Smith, Geronimo Wind Energy, LLC

March 10, 2010

Ms. Elise M. Doucette  
Minnesota Pollution Control Agency  
Environmental Review Division  
520 Lafayette Road North  
St. Paul, MN 55155-4194

RE: Prairie Rose Wind Farm and 115 kV Transmission Line in Rock and  
Pipestone Counties, MN.

Dear Ms. Doucette:

Geronimo Wind Energy LLC (Geronimo) recently received comments from you in a letter dated February 16, 2010, regarding the Certificate of Need Notice Plan for the Prairie Rose 115 kV transmission line in Rock County, Minnesota. The proposed transmission line is in support of Geronimo's proposed Prairie Rose Wind Farm in Rock and Pipestone Counties, Minnesota.

The project nameplate capacity will be 101 MW. The 115 kV High Voltage Transmission Line (HVTL) that would run between the project substation, located within the wind farm project boundary, and Xcel Energy's Split Rock Substation, located near Brandon, SD. The proposed route would run parallel to Rock County Highway 7 and Rose Dell Township Road 72 (Figure 1-1). This spring, Geronimo will submit a Site Permit Application for a Large Wind Energy Conversion System and a Route Permit Application for a HVTL to the Minnesota Public Utilities Commission (PUC).

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads, and an underground and/or aboveground 34.5 kV collector system. Although final turbine locations, access roads, and electrical connections have not been determined at this time, the tables below identify Township sections potentially affected by the project:

**Table 1 –Sections within the Project Boundary**

| County    | Township Name | Township | Range | Sections                                  |
|-----------|---------------|----------|-------|-------------------------------------------|
| Rock      | Rose Dell     | 104N     | 46W   | 1-2, 11-16, 21-28, and 33-35              |
| Rock      | Denver        | 104N     | 45W   | 2-7, 8-10, 15-19, 20-22, 27-30, and 31-34 |
| Rock      | Springwater   | 103N     | 46W   | 1-4, 9-12                                 |
| Pipestone | Elmer         | 105N     | 45W   | 20, 29-30, 31-34                          |
| Pipestone | Eden          | 105N     | 46W   | 36                                        |

**Table 2 – Proposed Transmission Line Corridor**

| Township Name | Township | Range | Sections       |
|---------------|----------|-------|----------------|
| Rose Dell     | 104N     | 46W   | 27-34          |
| Rose Dell     | 104N     | 47W   | 25, 26, 35, 36 |

We welcome any comments the Minnesota Pollution Control Agency may have at this time or throughout the permit application process. Table 1 identifies the sections within the Project boundary and Table 2 identifies sections adjacent to the proposed transmission line.

Enclosed are maps detailing the location and project boundary of the Prairie Rose Wind Farm and 115 kV Transmission Line. If you require further information or have questions regarding this matter, please call me at (763) 591-5479.

Sincerely,



Mike DeRuyter  
 Environmental Scientist

Enclosures:

Figure 1-1 - Project Location Map (Transmission Line)

Figure 1-2 – Project Location Map (Wind Farm)

Cc: Patrick Smith, Geronimo Wind Energy, LLC

March 10, 2010

Ms. Lisa Joyal  
Minnesota Department of Natural Resources  
Natural Heritage Program  
500 Lafayette Road  
St. Paul, MN 55155-4025

RE: Prairie Rose Wind Farm and 115 kV Transmission Line in  
Rock and Pipestone Counties, MN.

Dear Ms. Joyal:

Geronimo Wind Energy LLC (Geronimo) contacted you in October 2008, requesting a search of the Natural Heritage Information Service (NHIS) database and DNR comments in regards to the proposed Prairie Rose Wind Project in Rock County, Minnesota.

Recently, the project boundary has changed and now includes additional sections adjacent to the previous project boundary (Figure 1-2) in Rock and Pipestone counties. The project nameplate capacity will be 101 MW. In addition, Geronimo is proposing to construct a 115 kV High Voltage Transmission Line (HVTL) which would run between the project substation, located within the wind farm project boundary, and Xcel Energy's Split Rock Substation, located near Brandon, South Dakota. The proposed route would run parallel to Rock County Highway 7 and Rose Dell Township Road 72 (Figure 1-1). This spring, Geronimo will submit a Site Permit Application for a Large Wind Energy Conversion System and a Route Permit Application for an HVTL to the Minnesota Public Utilities Commission (PUC).

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads and an underground and/or aboveground 34.5 kV collector system. Although final turbine locations, access roads, and electrical connections have not been determined at this time, the tables below identify Township sections potentially affected by the project:

**Table 1 – Original Sections within the Project Boundary**

| Township Name | Township | Range | Sections                |
|---------------|----------|-------|-------------------------|
| Denver        | 104N     | 45W   | 7, 18, 19, 30           |
| Rose Dell     | 104N     | 46W   | 11-16, 21-27, 34 and 35 |

**Table 2 – Updated Sections within the Project Boundary**

| County    | Township Name | Township | Range | Sections                                  |
|-----------|---------------|----------|-------|-------------------------------------------|
| Rock      | Rose Dell     | 104N     | 46W   | 1-2, 28, 33                               |
| Rock      | Denver        | 104N     | 45W   | 2-6, 8-10, 15-17, 20-22, 27-29, and 31-34 |
| Rock      | Springwater   | 103N     | 46W   | 1-4, 9-12                                 |
| Pipestone | Elmer         | 105N     | 45W   | 20, 29-30, 31-34                          |
| Pipestone | Eden          | 105N     | 46W   | 36                                        |

**Table 3 – Proposed Transmission Line Corridor**

| Township Name | Township | Range | Sections       |
|---------------|----------|-------|----------------|
| Rose Dell     | 104N     | 46W   | 27-34          |
| Rose Dell     | 104N     | 47W   | 25, 26, 35, 36 |

We welcome any comments the Minnesota Department of Natural Resources may have at this time or throughout the permit application process, and request a revised search of the NHIS database. Table 1 identifies the original sections within the Project boundary, Table 2 identifies updated sections within the expanded Project boundary, and Table 3 identifies sections adjacent to the proposed transmission line. In particular, HDR requests you review the sections located in Rose Dell, Denver, Springwater, Elmer, and Eden townships, identified in Tables 1, 2, and 3, for NHIS data in the new expansion areas.

Geronimo received NHIS response # ERDB 20090193 on November 14, 2008, which detailed the known occurrences of rare species in the vicinity of the project, as well as Minnesota County Biological Survey Sites of Biodiversity Significance in the original project boundary. In addition, the attached e-mail correspondence includes follow-up conversations between Geronimo and the DNR after the NHIS response was received. Geronimo has committed to conducting preconstruction surveys this spring to identify the presence of native prairie and bedrock outcrops, which will be considered during final micro-siting of project facilities.

Prairie Rose Wind Project  
Minnesota Department of Natural Resources  
March 10, 2010

Enclosed are maps detailing the location and project boundary of the Prairie Rose Wind Farm and 115 kV Transmission Line. If you require further information or have questions regarding this matter, please call me at (763) 591-5479.

Sincerely,

A handwritten signature in black ink that reads "Mike DeRuyter". The signature is written in a cursive, flowing style with a long horizontal stroke extending to the right.

Mike DeRuyter  
Environmental Scientist

Enclosures:

Figure 1-1 - Project Location Map (Transmission Line)

Figure 1-2 – Project Location Map (Wind Farm)

Copy of e-mail correspondence

Cc: Patrick Smith, Geronimo Wind Energy, LLC

March 22, 2010

David Birkholz  
Minnesota Department of Commerce  
85 7<sup>th</sup> Place East, Suite 500  
St. Paul, MN 55155

**RE: Project Notice; Revised Prairie Rose Wind Farm Boundary and  
Transmission Line Rock and Pipestone Counties, Minnesota**

Dear David:

As described in a letter HDR sent you on August 4, 2009, Geronimo Wind Energy (Geronimo) is developing the 101 MW Prairie Rose Wind Farm in Rock County, Minnesota. In that letter Geronimo defined the original Prairie Rose Wind Farm boundary as encompassing an approximately 22-square mile study area. This letter is being sent to you because the project boundary has recently been expanded, and an associated transmission line corridor has been identified for the proposed Project. The Project now includes a 55-square-mile study area in Rock and Pipestone counties as well as a 6-mile 115 kV transmission line in Rock County (please note the T-line will extend an additional 19 miles into South Dakota). Geronimo contracted with HDR Engineering, Inc. (HDR) to provide environmental and permitting services for the Project. HDR is currently creating an archaeological work plan for the layout of the Project area. On behalf of Geronimo, HDR would like to coordinate with your office to review existing data and discuss potential cultural resource issues for this revised planning effort. Detailed discussion of specific cultural resource issues will occur as project plans, the survey process, and the report process become clear.

As a response to the original August 4, 2009, letter, SHPO sent a letter to HDR on September 9, 2009 (SHPO number 2009-3187). The SHPO response letter indicated that SHPO views their responsibilities to this project as pursuant to the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act. In addition, the letter indicated that an archaeological resource survey should be conducted in the project area and acknowledges that at this time no federal regulations (such as Section 106 of the National Historic Preservation Act of 1966 and 36CFR800) have been triggered.

The Wind Project Boundary is in the northwestern part of Rock County and southwestern part of Pipestone County. Sections included within the expanded wind farm project boundary and transmission line corridor are shown in **Table 1** and **Table 2**, respectively, and on the enclosed map. Information concerning the proposed number and location of turbines, access roads, underground cabling alignments, substation footprints, and operation/maintenance buildings has not been determined.

**Table 1. Prairie Rose Wind Project Boundary  
 Legal Descriptions**

| County    | Township | Range | Section            |
|-----------|----------|-------|--------------------|
| Pipestone | 105      | 46    | 36                 |
| Pipestone | 105      | 45    | 20, 29-34          |
| Rock      | 104      | 46    | 1, 2, 11-14, 21-36 |
| Rock      | 104      | 45    | 2-10, 15-22, 27-34 |
| Rock      | 103      | 46    | 1-4, 9-12          |

**Table 2. Prairie Rose Transmission Line  
 Legal Descriptions**

| County | Township | Range | Section        |
|--------|----------|-------|----------------|
| Rock   | 104      | 47    | 25, 26, 35, 36 |
| Rock   | 104      | 46    | 27-34          |

***Wind Project Boundary***

HDR understands that at this time, the Wind Project Boundary does not involve a federal undertaking and is therefore not subject to federal historic preservation regulations or guidance. The Wind Project Boundary is, however, subject to regulations associated with:

- The Minnesota Wind Siting Act (Minnesota Statutes Chapter 216F)
- The Minnesota Administrative Rules Chapter 7836 Wind Siting
- The Minnesota Department of Commerce, Energy Facility, Permitting, Siting, and Routing Department’s PUC LWECS Site permit
- Minnesota Statute Chapter 138.661-138.699 (Minnesota Historic Sites Act)
- The Minnesota Pollution Control Agency’s (PCA) National Pollutant Discharge Elimination System (NPDES) Permit No: MN R100001 (Appendix A, Part G. Discharges Affecting Historic Places Or Archeological Sites)

***Transmission Line***

In addition, HDR understands that at this time, the transmission line does not involve a federal undertaking and is therefore not subject to federal historic preservation regulations or guidance. However, HDR believes that the associated transmission line is subject to regulations associated with:

- The Minnesota Administrative Rules Chapter 7850, Site or Route Permit; Power Plant or Line
- 2009 Minnesota Statutes 216E.04 Alternative Review of Applications
- The Minnesota Historic Sites Act (MS 138.661-138.669)
- The Minnesota Field Archaeology Act (MS 138.31-138.42)
- The Minnesota Private Cemeteries Act (MS 307.08)

HDR understands that additional coordination with your office may be needed pursuant to these regulations and guidance.

HDR has completed the following tasks:

- Reviewed cultural resource site forms and surveys in the revised project area to establish the known properties in the project vicinity
- Reviewed Government Land Office maps for additional information
- Created Geographic Information System maps to analyze the project area

To date, seven archaeological resources, 13 historic facility resources, and seven previous cultural resource reports have been reviewed and found to correspond with the study area. Zero archaeological resources and three historic facility resources are located within either the Wind Farm Boundary or transmission line corridor. In addition, one of these resources, a bridge (RK-RSD-002), is listed on the NRHP. This bridge was reportedly built in 1907 and is a reinforced-concrete, low-rise, filled-spandrel, barrel-vault arch, with very slightly flared wing-wall abutments. Geronimo will consider this resource in its Project plans, Project construction, and facility operation. The information gathered to date tells us that if an archaeology resource is found it will probably be small, with only a slight chance of there being an archaeological resource of substantial size. In addition, based on the information we have gathered to date, any additional historic facilities found will probably be of a similar quality as those already identified and could be associated with the late 19<sup>th</sup> to early 20<sup>th</sup> centuries. HDR believes additional resources of these types and nature can be found in the Project area.

Additional information may be needed; if so, HDR will coordinate with your staff.

We look forward to discussing the Project and our data collection efforts with you or your staff. If you have any questions or comments please contact me at (763) 278-5992 or by e-mail at [stephen.sabatke@hdrinc.com](mailto:stephen.sabatke@hdrinc.com).

Sincerely,

**HDR Engineering, Inc.**



Stephen Sabatke  
Archaeologist

cc: Scott Anfinson, State Archaeologist  
Kelly Gragg-Johnson, SHPO Review and Compliance Associate  
Michael DeRuyter, HDR Environmental Scientist  
Patrick Smith, Geronimo Director of Environmental Planning

Enclosures: Project Location and Transmission Line Maps

March 22, 2010

Kelly Gragg-Johnson  
Review and Compliance Associate  
Minnesota Historical Society  
345 Kellogg Boulevard West  
Saint Paul, Minnesota 55102

**RE: Project Notice; Revised Prairie Rose Wind Farm Boundary and  
Transmission Line Rock and Pipestone Counties, Minnesota**

Dear Kelly:

As described in a letter HDR sent you on August 4, 2009, Geronimo Wind Energy (Geronimo) is developing the 101 MW Prairie Rose Wind Farm in Rock County, Minnesota. In that letter Geronimo defined the original Prairie Rose Wind Farm boundary as encompassing an approximately 22-square mile study area. This letter is being sent to you because the project boundary has recently been expanded, and an associated transmission line corridor has been identified for the proposed Project. The Project now includes a 55-square-mile study area in Rock and Pipestone counties as well as a 6-mile 115 kV transmission line in Rock County (please note the T-line will extend an additional 19 miles into South Dakota). Geronimo contracted with HDR Engineering, Inc. (HDR) to provide environmental and permitting services for the Project. HDR is currently creating an archaeological work plan for the layout of the Project area. On behalf of Geronimo, HDR would like to coordinate with your office to review existing data and discuss potential cultural resource issues for this revised planning effort. Detailed discussion of specific cultural resource issues will occur as project plans, the survey process, and the report process become clear.

As a response to the original August 4, 2009, letter, SHPO sent a letter to HDR on September 9, 2009 (SHPO number 2009-3187). The SHPO response letter indicated that SHPO views their responsibilities to this project as pursuant to the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act. In addition, the letter indicated that an archaeological resource survey should be conducted in the project area and acknowledges that at this time no federal regulations (such as Section 106 of the National Historic Preservation Act of 1966 and 36CFR800) have been triggered.

The Wind Project Boundary is in the northwestern part of Rock County and southwestern part of Pipestone County. Sections included within the expanded wind farm project boundary and transmission line corridor are shown in **Table 1** and **Table 2**, respectively, and on the enclosed map. Information concerning the proposed number and location of turbines, access roads, underground cabling alignments, substation footprints, and operation/maintenance buildings has not been determined.

**Table 1. Prairie Rose Wind Project Boundary  
 Legal Descriptions**

| County    | Township | Range | Section            |
|-----------|----------|-------|--------------------|
| Pipestone | 105      | 46    | 36                 |
| Pipestone | 105      | 45    | 20, 29-34          |
| Rock      | 104      | 46    | 1, 2, 11-14, 21-36 |
| Rock      | 104      | 45    | 2-10, 15-22, 27-34 |
| Rock      | 103      | 46    | 1-4, 9-12          |

**Table 2. Prairie Rose Transmission Line  
 Legal Descriptions**

| County | Township | Range | Section        |
|--------|----------|-------|----------------|
| Rock   | 104      | 47    | 25, 26, 35, 36 |
| Rock   | 104      | 46    | 27-34          |

***Wind Project Boundary***

HDR understands that at this time, the Wind Project Boundary does not involve a federal undertaking and is therefore not subject to federal historic preservation regulations or guidance. The Wind Project Boundary is, however, subject to regulations associated with:

- The Minnesota Wind Siting Act (Minnesota Statutes Chapter 216F)
- The Minnesota Administrative Rules Chapter 7836 Wind Siting
- The Minnesota Department of Commerce, Energy Facility, Permitting, Siting, and Routing Department’s PUC LWECS Site permit
- Minnesota Statute Chapter 138.661-138.699 (Minnesota Historic Sites Act)
- The Minnesota Pollution Control Agency’s (PCA) National Pollutant Discharge Elimination System (NPDES) Permit No: MN R100001 (Appendix A, Part G. Discharges Affecting Historic Places Or Archeological Sites)

***Transmission Line***

In addition, HDR understands that at this time, the transmission line does not involve a federal undertaking and is therefore not subject to federal historic preservation regulations or guidance. However, HDR believes that the associated transmission line is subject to regulations associated with:

- The Minnesota Administrative Rules Chapter 7850, Site or Route Permit; Power Plant or Line
- 2009 Minnesota Statutes 216E.04 Alternative Review of Applications
- The Minnesota Historic Sites Act (MS 138.661-138.669)
- The Minnesota Field Archaeology Act (MS 138.31-138.42)
- The Minnesota Private Cemeteries Act (MS 307.08)

HDR understands that additional coordination with your office may be needed pursuant to these regulations and guidance.

HDR has completed the following tasks:

- Reviewed cultural resource site forms and surveys in the revised project area to establish the known properties in the project vicinity
- Reviewed Government Land Office maps for additional information
- Created Geographic Information System maps to analyze the project area

To date, seven archaeological resources, 13 historic facility resources, and seven previous cultural resource reports have been reviewed and found to correspond with the study area. Zero archaeological resources and three historic facility resources are located within either the Wind Farm Boundary or transmission line corridor. In addition, one of these resources, a bridge (RK-RSD-002), is listed on the NRHP. This bridge was reportedly built in 1907 and is a reinforced-concrete, low-rise, filled-spandrel, barrel-vault arch, with very slightly flared wing-wall abutments. Geronimo will consider this resource in its Project plans, Project construction, and facility operation. The information gathered to date tells us that if an archaeology resource is found it will probably be small, with only a slight chance of there being an archaeological resource of substantial size. In addition, based on the information we have gathered to date, any additional historic facilities found will probably be of a similar quality as those already identified and could be associated with the late 19<sup>th</sup> to early 20<sup>th</sup> centuries. HDR believes additional resources of these types and nature can be found in the Project area.

Additional information may be needed; if so, HDR will coordinate with your staff.

We look forward to discussing the Project and our data collection efforts with you or your staff. If you have any questions or comments please contact me at (763) 278-5992 or by e-mail at [stephen.sabatke@hdrinc.com](mailto:stephen.sabatke@hdrinc.com).

Sincerely,

**HDR Engineering, Inc.**



Stephen Sabatke  
Archaeologist

cc: Scott Anfinson State Archaeologist  
David Birkholz, Minnesota Department of Commerce  
Michael DeRuyter, HDR Environmental Scientist  
Patrick Smith, Geronimo Director of Environmental Planning

Enclosures: Project Location and Transmission Line Maps

March 22, 2010

Scott Anfinson  
State Archaeologist  
Minnesota Office of the State Archaeologist  
Fort Snelling History Center  
Saint Paul, Minnesota 55111

**RE: Project Notice; Revised Prairie Rose Wind Farm Boundary and  
Transmission Line Rock and Pipestone Counties, Minnesota**

Dear Scott:

As described in a letter HDR sent you on August 4, 2009, Geronimo Wind Energy (Geronimo) is developing the 101 MW Prairie Rose Wind Farm in Rock County, Minnesota. In that letter Geronimo defined the original Prairie Rose Wind Farm boundary as encompassing an approximately 22-square mile study area. This letter is being sent to you because the project boundary has recently been expanded, and an associated transmission line corridor has been identified for the proposed Project. The Project now includes a 55-square-mile study area in Rock and Pipestone counties as well as a 6-mile 115 kV transmission line in Rock County (please note the T-line will extend an additional 19 miles into South Dakota). Geronimo contracted with HDR Engineering, Inc. (HDR) to provide environmental and permitting services for the Project. HDR is currently creating an archaeological work plan for the layout of the Project area. On behalf of Geronimo, HDR would like to coordinate with your office to review existing data and discuss potential cultural resource issues for this revised planning effort. Detailed discussion of specific cultural resource issues will occur as project plans, the survey process, and the report process become clear.

As a response to the original August 4, 2009, letter, SHPO sent a letter to HDR on September 9, 2009 (SHPO number 2009-3187). The SHPO response letter indicated that SHPO views their responsibilities to this project as pursuant to the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act. In addition, the letter indicated that an archaeological resource survey should be conducted in the project area and acknowledges that at this time no federal regulations (such as Section 106 of the National Historic Preservation Act of 1966 and 36CFR800) have been triggered.

The Wind Project Boundary is in the northwestern part of Rock County and southwestern part of Pipestone County. Sections included within the expanded wind farm project boundary and transmission line corridor are shown in **Table 1** and **Table 2**, respectively, and on the enclosed map. Information concerning the proposed number and location of turbines, access roads, underground cabling alignments, substation footprints, and operation/maintenance buildings has not been determined.

**Table 1. Prairie Rose Wind Project Boundary  
 Legal Descriptions**

| County    | Township | Range | Section            |
|-----------|----------|-------|--------------------|
| Pipestone | 105      | 46    | 36                 |
| Pipestone | 105      | 45    | 20, 29-34          |
| Rock      | 104      | 46    | 1, 2, 11-14, 21-36 |
| Rock      | 104      | 45    | 2-10, 15-22, 27-34 |
| Rock      | 103      | 46    | 1-4, 9-12          |

**Table 2. Prairie Rose Transmission Line  
 Legal Descriptions**

| County | Township | Range | Section        |
|--------|----------|-------|----------------|
| Rock   | 104      | 47    | 25, 26, 35, 36 |
| Rock   | 104      | 46    | 27-34          |

***Wind Project Boundary***

HDR understands that at this time, the Wind Project Boundary does not involve a federal undertaking and is therefore not subject to federal historic preservation regulations or guidance. The Wind Project Boundary is, however, subject to regulations associated with:

- The Minnesota Wind Siting Act (Minnesota Statutes Chapter 216F)
- The Minnesota Administrative Rules Chapter 7836 Wind Siting
- The Minnesota Department of Commerce, Energy Facility, Permitting, Siting, and Routing Department’s PUC LWECS Site permit
- Minnesota Statute Chapter 138.661-138.699 (Minnesota Historic Sites Act)
- The Minnesota Pollution Control Agency’s (PCA) National Pollutant Discharge Elimination System (NPDES) Permit No: MN R100001 (Appendix A, Part G. Discharges Affecting Historic Places Or Archeological Sites)

***Transmission Line***

In addition, HDR understands that at this time, the transmission line does not involve a federal undertaking and is therefore not subject to federal historic preservation regulations or guidance. However, HDR believes that the associated transmission line is subject to regulations associated with:

- The Minnesota Administrative Rules Chapter 7850, Site or Route Permit; Power Plant or Line
- 2009 Minnesota Statutes 216E.04 Alternative Review of Applications
- The Minnesota Historic Sites Act (MS 138.661-138.669)
- The Minnesota Field Archaeology Act (MS 138.31-138.42)
- The Minnesota Private Cemeteries Act (MS 307.08)

HDR understands that additional coordination with your office may be needed pursuant to these regulations and guidance.

HDR has completed the following tasks:

- Reviewed cultural resource site forms and surveys in the revised project area to establish the known properties in the project vicinity
- Reviewed Government Land Office maps for additional information
- Created Geographic Information System maps to analyze the project area

To date, seven archaeological resources, 13 historic facility resources, and seven previous cultural resource reports have been reviewed and found to correspond with the study area. Zero archaeological resources and three historic facility resources are located within either the Wind Farm Boundary or transmission line corridor. In addition, one of these resources, a bridge (RK-RSD-002), is listed on the NRHP. This bridge was reportedly built in 1907 and is a reinforced-concrete, low-rise, filled-spandrel, barrel-vault arch, with very slightly flared wing-wall abutments. Geronimo will consider this resource in its Project plans, Project construction, and facility operation. The information gathered to date tells us that if an archaeology resource is found it will probably be small, with only a slight chance of there being an archaeological resource of substantial size. In addition, based on the information we have gathered to date, any additional historic facilities found will probably be of a similar quality as those already identified and could be associated with the late 19<sup>th</sup> to early 20<sup>th</sup> centuries. HDR believes additional resources of these types and nature can be found in the Project area.

Additional information may be needed; if so, HDR will coordinate with your staff.

We look forward to discussing the Project and our data collection efforts with you or your staff. If you have any questions or comments please contact me at (763) 278-5992 or by e-mail at [stephen.sabatke@hdrinc.com](mailto:stephen.sabatke@hdrinc.com).

Sincerely,

**HDR Engineering, Inc.**



Stephen Sabatke  
Archaeologist

cc: David Birkholz Minnesota Department of Commerce  
Kelly Gragg-Johnson SHPO Review and Compliance Associate  
Michael DeRuyter HDR Environmental Scientist  
Patrick Smith Geronimo Director of Environmental Planning

Enclosures: Project Location and Transmission Line Maps

March 10, 2010

Mr. Richard Davis  
U.S. Fish and Wildlife Service  
Twin Cities Field Office  
4101 American Boulevard East  
Bloomington, MN 55425

RE: Prairie Rose Wind Farm and 115 kV Transmission Line in  
Rock and Pipestone Counties, MN.

Dear Mr. Davis:

Geronimo Wind Energy LLC (Geronimo) contacted you in July 2009, requesting USFWS comments in regards to the proposed Prairie Rose Wind Project in Rock County, Minnesota.

Recently, the project boundary has changed and now includes additional sections adjacent to the previous project boundary (Figure 1-2) in Rock and Pipestone Counties. The project nameplate capacity will be 101 MW. In addition, Geronimo is proposing to construct a 115 kilovolt (kV) High Voltage Transmission Line (HVTL) which would run between the project substation, located within the wind farm project boundary, and Xcel Energy's Split Rock Substation, located near Brandon, SD. The proposed route would run parallel to Rock County Highway 7 and Rose Dell Township Road 72 (Figure 1-1). This spring, Geronimo will submit a Site Permit Application for a Large Wind Energy Conversion System and a Route Permit Application for a HVTL to the Minnesota Public Utilities Commission (PUC).

Typically, wind facility construction includes erecting wind turbines and constructing associated facilities such as gravel access roads, and an underground and/or aboveground 34.5 kV collector system. Although final turbine locations, access roads, and electrical connections have not been determined at this time, the tables below identify Township sections potentially affected by the project:

**Table 1 – Original Sections within the Project Boundary**

| Township Name | Township | Range | Sections                |
|---------------|----------|-------|-------------------------|
| Denver        | 104N     | 45W   | 7, 18, 19, 30           |
| Rose Dell     | 104N     | 46W   | 11-16, 21-27, 34 and 35 |

**Table 2 – Updated Sections within the Project Boundary**

| County    | Township Name | Township | Range | Sections                                  |
|-----------|---------------|----------|-------|-------------------------------------------|
| Rock      | Rose Dell     | 104N     | 46W   | 1-2, 28, 33                               |
| Rock      | Denver        | 104N     | 45W   | 2-6, 8-10, 15-17, 20-22, 27-29, and 31-34 |
| Rock      | Springwater   | 103N     | 46W   | 1-4, 9-12                                 |
| Pipestone | Elmer         | 105N     | 45W   | 20, 29-30, 31-34                          |
| Pipestone | Eden          | 105N     | 46W   | 36                                        |

**Table 3 – Proposed Transmission Line Corridor**

| Township Name | Township | Range | Sections       |
|---------------|----------|-------|----------------|
| Rose Dell     | 104N     | 46W   | 27-34          |
| Rose Dell     | 104N     | 47W   | 25, 26, 35, 36 |

We welcome any comments the U.S. Fish and Wildlife Service may have at this time or throughout the permit application process. Table 1 identifies the original sections within the Project boundary, Table 2 identifies updated sections within the expanded Project boundary, and Table 3 identifies sections adjacent to the proposed transmission line. In particular, HDR requests you review the sections located in Rose Dell, Denver, Springwater, Elmer, and Eden townships, identified in Tables 1, 2, and 3 for any comments on the new expansion areas.

Geronimo received a letter marked FWS TAILS #32410-2009-FA-0117 on October 2, 2009. Geronimo has committed to conducting preconstruction surveys this spring to identify the presence of wetlands and wet features (including Topeka shiner habitat), native prairie, and bedrock outcrops, which will be considered during final micrositing of project facilities.

Prairie Rose Wind Project  
U.S. Fish and Wildlife Services  
March 10, 2010

Enclosed are maps detailing the location and project boundary of the Prairie Rose Wind Farm and 115 kV Transmission Line. If you require further information or have questions regarding this matter, please call me at (763) 591-5479.

Sincerely,

A handwritten signature in black ink that reads "Mike DeRuyter". The signature is written in a cursive style with a long horizontal stroke extending to the right.

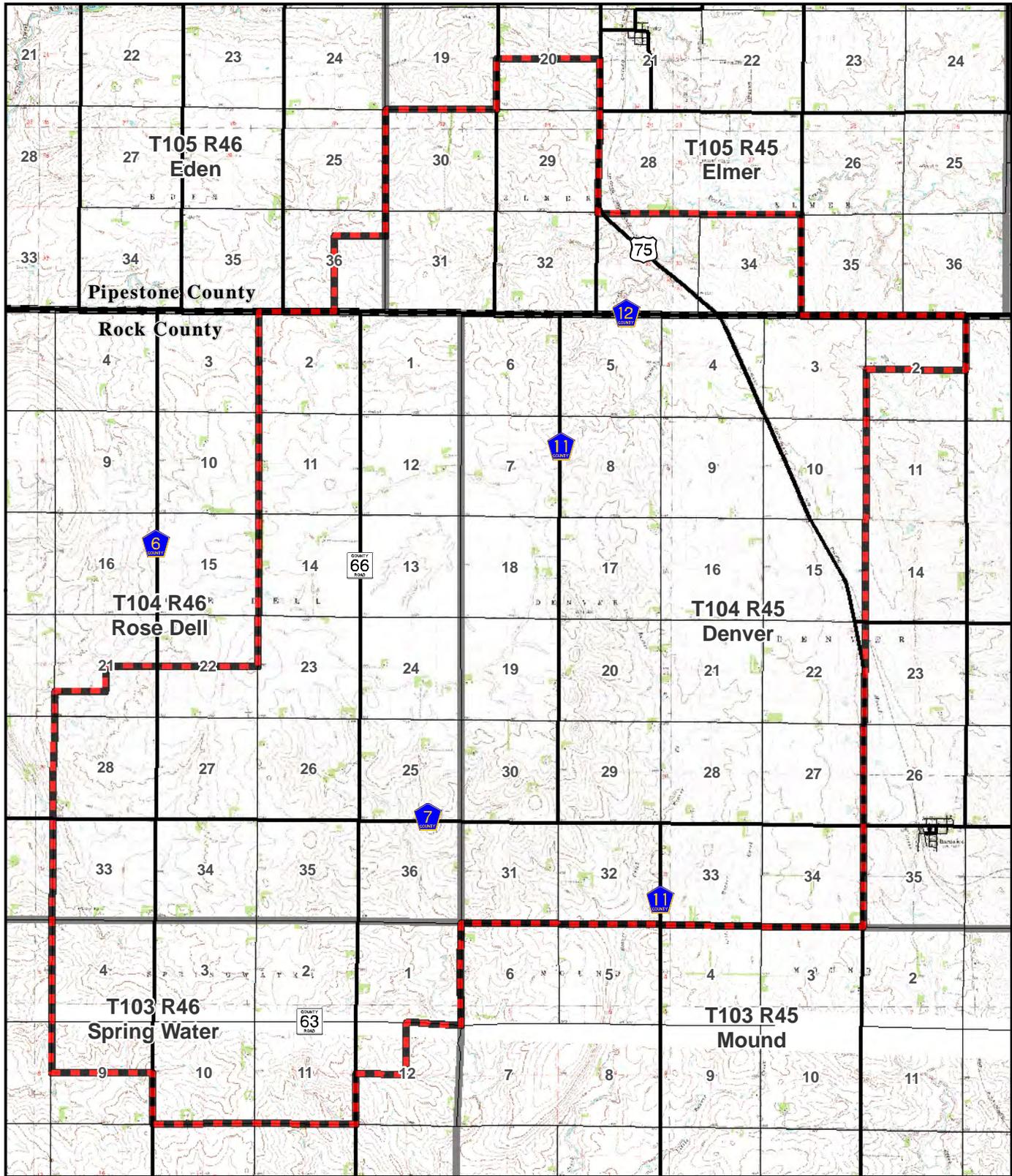
Mike DeRuyter  
Environmental Scientist

Enclosures:

Figure 1-1 - Project Location Map (Transmission Line)

Figure 1-2 – Project Location Map (Wind Farm)

Cc: Patrick Smith, Geronimo Wind Energy, LLC

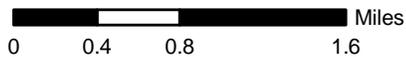
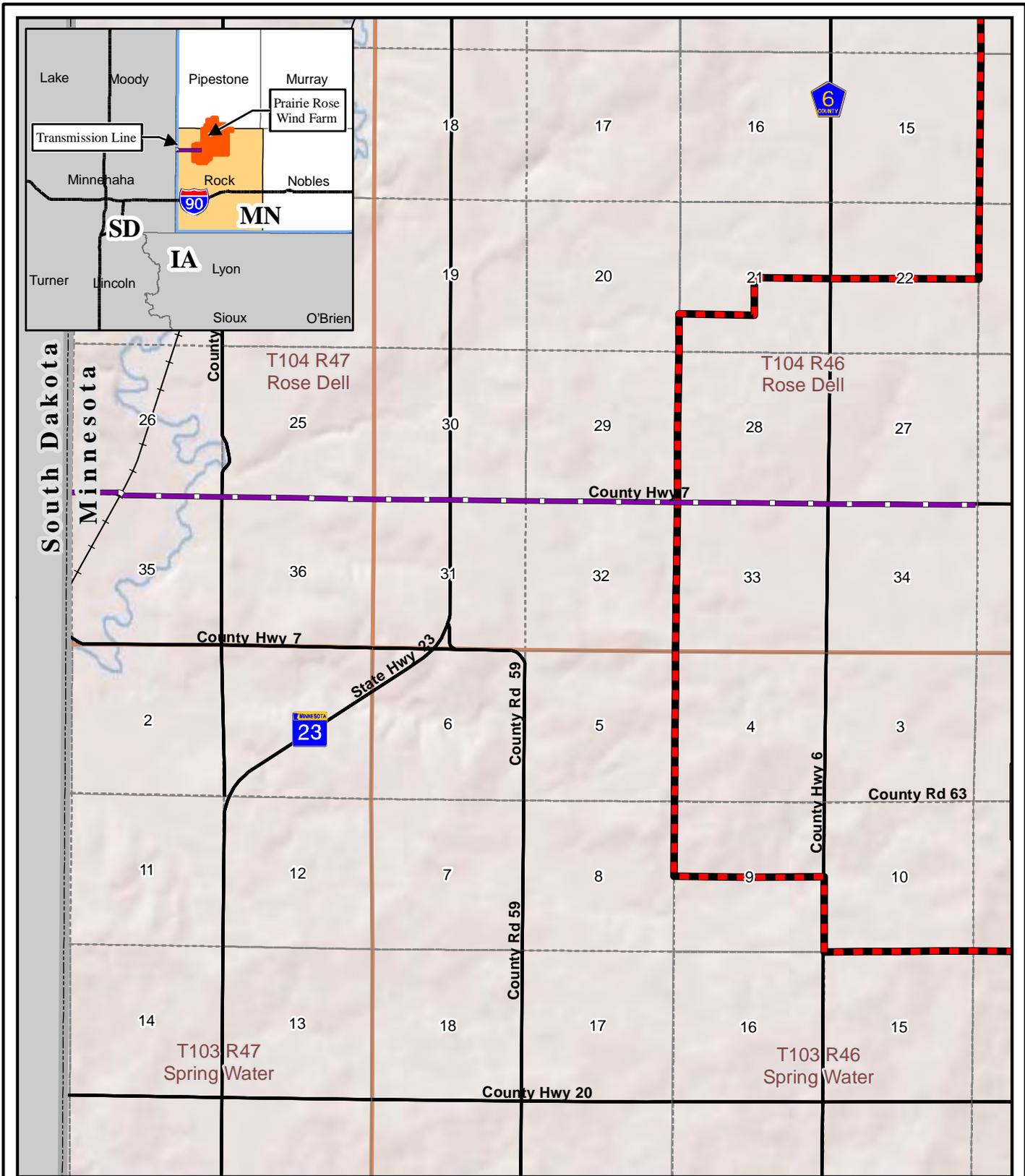


**Legend**

- Project Boundary
- County Boundary

Figure 1-2 Project Location Map  
Prairie Rose Wind Project  
Geronimo Wind Energy  
Rock County, MN

Map Document: (\\nspe-gis-file\GISProj\Geronimo\112145\_Prairie\_Rose\map\_docs\mxd\TLine\Fig-1\_Project\city\Map.mxd) 2/25/2010 3:26:17 PM



Legend

- Prairie Rose Wind Project
- Transmisison Line

Figure 1-1. Project Vicinity Map  
Prairie Rose Wind Project  
Geronimo Wind Energy  
Rock County, MN



**DEPARTMENT OF THE ARMY**

St. Paul District, Corps of Engineers  
190 Fifth Street East  
St. Paul, MN 55101-1638

August 27, 2009

RECEIVED  
AUG 31 2009  
HDR Engineering, Inc.

Operations  
Regulatory (2009-03763-DAS)

Mr. Mike DeRuyter  
HDR Engineering, Inc.  
701 Xenia Avenue South, Suite 600  
Minneapolis, Minnesota 55416

Dear Mr. DeRuyter:

This letter responds to your request for comments about a project of Geronimo Wind Energy, LLC to construct a wind facility consisting of wind turbines, access roads, underground collector system, and overhead transmission lines. The project site is in Sec. 5-8, 17-20, and 29-30, T. 104N, R. 45W, and in Sec. 1-2, 11-147, 23-27, and 34-35, T. 104N, R. 46W, Rock County, Minnesota.

The placement of aerial lines that cross-navigable waters of the U.S. requires authorization under Section 10 of the Rivers and Harbors Act.

Underground utility lines through waters of the U.S., including wetlands, as well as navigable waters of the U. S. are regulated under Section 404 of the Clean Water Act if there is a discharge of dredged or fill material. Any discharge would require authorization by a general permit or letter of permission.

Underground lines installed by vibratory plow and directional bore method through waters of the U.S., including wetlands, do not involve a discharge and a permit is not required. However, if installation of connecting points requires excavation and backfill in waters of the U.S., including wetlands, a permit would be required.

The placement of poles, overhead wiring, and/or buried wiring at upland locations is not within the jurisdiction of the Corps of Engineers, provided the work does not involve the placement of dredged or fill material into any water body or wetland.

Temporary placement of fill material into any water body or wetland for purposes such as bypass roads, temporary stream crossings, cofferdam construction, or storage sites may require a Department of the Army permit.

If any of the proposed projects would involve the placement of fill material, either permanent or temporary, please notify our office.

Without detailed construction plans, we cannot provide specific comments regarding the effects that the proposed activity would have on watercourse flood stages. It has been our experience that underground and overhead utility construction has negligible effects on flood stages, provided excess construction material is removed from the floodplain and additional care is taken not to disturb its hydraulic characteristics.

You may also need city, county, or State permits for the project. You should contact the appropriate agencies for their permit requirements. If the project includes the placement of dredged or fill material in a Federal regulated water body, we will notify the responsible State agency for water quality (401) certification.

Special conditions to protect a Federally endangered fish, the Topeka Shiner (*Notropis topeka*), apply **in Minnesota's Big Sioux and Rock River Watersheds in LINCOLN, PIPESTONE, MURRAY, ROCK AND NOBLES COUNTIES**. These conditions apply to all regulated activities that are conducted in streams and in side channels, cut-off channels, oxbows, and wetlands that are at least periodically connected to streams in Minnesota's Big Sioux and Rock River Watersheds. On a case-by-case basis the Corps and/or U.S. Fish and Wildlife Service (USFWS) may determine that these conditions do not apply to certain areas within these watersheds where Topeka shiners may not occur; however, the Topeka Shiner occurs throughout most of these two watersheds. **Therefore, persons proposing work in water or wetland areas in these watersheds should contact the Corps' Regulatory Project Manager for the project area to determine if these conditions apply to their project.**

On a case-by-case basis the Corps in consultation with the U.S. Fish and Wildlife Service may determine that some or all of these special conditions do not apply for Federal actions where the Federal agency or its designated non-federal representative has successfully concluded consultation with the USFWS under the authority of section 7(a)(2) of the Endangered Species Act; or for Non-Federal actions, if the USFWS has granted the applicant an incidental take permit under the authority of section 10(a)(1)(B) of the Endangered Species Act.

You should also contact the State Historical Preservation Officer (SHPO) to determine if there are any known historic or archeological sites in the area or if any cultural resource survey would be required.

If you have any questions, contact Dave Studenski in our La Crescent Field office at (507) 895-2064. In any correspondence or inquiries, please refer to the Regulatory number shown above.

Sincerely,



*fr* Tamera E. Cameron  
Chief, Regulatory Branch



# Minnesota Department of Natural Resources

Division of Ecological Resources – Reg. 4

261 Hwy 15 South

New Ulm, MN 56073-8915

Phone: (507) 359-6073 Fax: (507) 359-6018 E-mail: [kevin.mixon@dnr.state.mn.us](mailto:kevin.mixon@dnr.state.mn.us)

August 3, 2009

Mr. Patrick Smith  
Geronimo Wind Energy  
5050 Lincoln Drive, #420  
Edina, MN 55436

In re: Prairie Rose Wind Farm  
Preliminary Review  
Rock County, MN

Dear Mr. Smith:

The Minnesota Department of Natural Resources (DNR) has received information concerning the above referenced wind project located in Rock County, MN. The DNR is providing the following comments as a mechanism to collaboratively work together to identify potential natural resource issues that should be considered during project development.

The project area contains numerous areas enrolled in the Conservation Reserve Program (CRP) that could potentially be affected by this project. The Farm Service Agency located in the county(s) where the project is occurring should be contacted (<http://www.fsa.usda.gov/FSA/stateoffapp?mystate=mn&area=home&subject=landing&topic=landing>) in order to coordinate potential issues involving these properties.

Further coordination with Lisa Joyal, Natural Heritage Review Coordinator, is required in order to resolve any outstanding issues from her letter dated November 14, 2008. Please contact Lisa Joyal (651-259-5109) to resolve any outstanding issues prior to submitting information for the Site Application from the Public Utilities Commission.

Potential wetland impacts could involve the Wetland Conservation Act (WCA). Potential wetland impact(s) may require a boundary delineation and potential mitigation. If wetland impacts may occur you should contact the Board of Water and Soil Resources ([www.bwsr.state.mn.us](http://www.bwsr.state.mn.us)).

Additional project considerations include utilities and roads that could cross or impact waters, streams, or wetlands. Discharge of fill or dredge material in waters of the U.S. are regulated under Section 404 of the Clean Water Act and may require a permit from the U.S. Army Corp of Engineers.

The recommended minimum setback from wetlands and perennial streams (non-Public Waters) is 600 feet (FWS Circular 39 Type III, IV, and V). This is consistent with numerous county wind ordinances and conditional use permits. The setback is designed to reduce potential avian avoidance of the wetland and its associated habitat and to reduce avian and bat mortality.

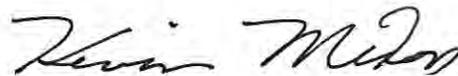
The DNR recommends 2 years of post-construction mortality studies using the Minnesota Protocols to Monitor Bat & Bird Mortality at Large Wind Energy Conversion Systems (attached). The studies are needed due to the lack of information on mortality to birds and bats in southern Minnesota from operating wind farms. In addition, technological advances in the operation and size of turbines along with updated mortality study methods further justify the need for mortality surveys. The information requested is outlined in the Post-Construction Report Guidelines (attached).

This review constitutes an office review only and is not a substitute for reviewing potential turbine placement in the field. The DNR will provide a second review of the project that is site specific to the proposed tower locations, transmission lines, and access roads. The DNR may request a site visit when potential turbine locations are determined.

Minnesota Administrative Rules 7836.0500, Subpart 7, requires the applicant to analyze potential environmental impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided. Groundwater resources, surface waters, wetlands, vegetation, wildlife, rare and unique natural resources, etc. are included. In order to address the potential environmental impacts the applicant should resolve all outstanding issues with the DNR prior to applying for the Site Application Permit from the Public Utilities Commission.

The DNR looks forward to working in a positive and collaborative manner on this project to ensure that sustainable energy sources are developed while protecting Minnesota's natural resources. Please contact me directly at 507-359-6073 if you have any questions.

Very truly yours,



Kevin Mixon  
Regional Environmental Assessment Ecologist  
Division of Ecological Services

Mr. Patrick Smith

-3-

August 3, 2009

Cc: Mark Matuska, DNR  
Lisa Joyal, DNR  
John Schladweiler, DNR  
Ken Varland, DNR  
Wendy Krueger, DNR  
Randall Doneen, DNR  
Bob Hobart, DNR  
Lisa Gelvin-Innvaer, DNR  
Ben Schaefer, DNR  
Rich Davis, U.S. FWS  
Matt Langan, PUC

# **Protocols to Monitor Bat & Bird Mortality at Large Wind Energy Conversion Systems**

**Minnesota Department of Natural Resources  
Ecological Resources  
July 15, 2009**

## Post-Construction Mortality Monitoring

### I. Duration and Frequency of Monitoring:

All mortality monitoring should be conducted 5 days per week for the period between April 1 and November 15 for 2 complete years following construction, unless other mortality information is available and the Minnesota Department of Natural Resources (DNR) can justify a reduced monitoring effort. In order to handle and possess carcasses you will need a DNR salvage permit from Wildlife Research (612-713-5438) and a U.S. Fish & Wildlife Service Migratory Bird Permit (612-713-5438).

### II. Number of Turbines to Monitor:

The number of turbines monitored will follow the guidelines below as per “Standard Mortality Transect Survey”, and will include validation procedures to correct bias. Validation procedures include carcass removal trials and searcher efficiency. Monitored turbines shall be identified in consultation between the parties. Twenty percent of the turbines will be searched (minimum of 10 and maximum of 25). A different set of turbines should be monitored in the second year.

### III. Mortality Monitoring Procedures

Carcass removal and searcher efficiency trials will be performed, and the duration, frequency and number of turbines to monitor are the same. The search area should be cleared of all carcasses prior to April 1 and the initiation of data collection. The carcasses should be identified and reported separately from the data collected from April 1-November 15 and should not be used in the mortality estimates.

At each turbine to be monitored, a rectangular plot that is 100 meters by 100 meters will be centered on the base of the turbine. Although evidence suggests that > 80% of the bat fatalities fall within ½ the maximum distance of turbine height to ground (Erickson 2003a,b) search areas vary and often do not allow surveys to consistently extend to this distance. Therefore, the searchable area underneath turbines will be delineated and mapped, and estimates of mortality will be produced. Maps are to be constructed illustrating all turbine locations, a designated numbering system for turbines, 100 meter plot, boundaries of survey areas, and searchable areas (broken down into visibility classes and transect numbering for standard transect surveys).

- 1) Each turbine should be searched for 1 person hour (1 person – 1 hour, 2 person-1/2 hour) starting on transects running past the base of the turbine and working outward. Times spent surveying each turbine should be recorded daily and remain consistent. Mortality monitoring should commence at sunrise and the surveys completed for all turbines within 8 hours.
- 2) All information gathered (i.e. specimen location, species, transect, etc.) should be entered on data sheets provided. Any mortality that occurs to state listed endangered or threatened species should be reported to the DNR within 24 hours.

- 3) Any large mortality events (>20 total animals) or mortality of any eagle, or threatened or endangered species that occur outside of the survey periods are to be reported to the DNR Regional Environmental Assessment Ecologist within 24 hours.
- 4) Separate data sheets will be used for each survey date. All carcasses are to be picked up and bagged upon discovery. They are to be identified, handled, and labeled properly with the date, turbine number, transect number, and unique specimen number. The specimen should be frozen for use in the carcass removal and searcher efficiency trials.
- 5) All specimens located should have an azimuth **from** tower and distance to turbine, and be recorded on the data sheet. It is appropriate to use a numbered flag for each specimen and record distance and azimuth upon completion of transect searches, so long as flags are removed after each day/turbine.
- 6) A summary report of this monitoring, including all data sheets and maps are to be submitted by January 1 of each year to the DNR Regional Environmental Assessment Ecologist.

#### Standard Mortality Transect Surveys:

The basis for the methods to be followed for this procedure are set forth by Erickson 2003a, 2003b, Bats and Wind Energy Cooperative 2005 final report, and Kerns and Kerlinger 2004. Areas defined for surveys should be mapped and depict not only prominent structures and area, but in addition to previous studies, label search areas into 1 of 4 visibility classes. All visibility classes represented should be included in the map and proportion of each noted in report. Each visibility class will be equally tested with a minimum of 200 trials using carcasses resulting from mortality at the site. If enough carcasses have not been recovered contact the DNR on how to proceed.

Visibility Classes: Each turbine will have the vegetation in the searchable area defined into one of the following 4 classes and mapped for submission.

Class 1 (easy): Bare ground 90% or greater; all ground cover sparse and 6 inches or less in height (i.e. gravel pad or dirt road).

Class 2 (moderate): Bare ground 25% or greater; all ground cover 6 inches or less in height and mostly sparse.

Class 3 (difficult): Bare ground 25% or less; 25% or less of ground cover over 12 inches in height.

Class 4 (very difficult): Little or no bare ground; more than 25% of ground cover over 12 inches in height.

- 1) Following the establishment of searchable areas, the breakdown of this area into visibility classes, and mapping of each turbine, transects should be established at no greater than 6 meters apart and marked every 10 meters.
- 2) Each transect will be walked with  $\frac{1}{2}$  of the distance between transects equal to the distance on each side to be examined by the searcher.
- 3) As transects are searched, carcasses should be bagged and labeled properly (date, turbine number, transect number, carcass number) and a numbered flag placed in their place. At completion of each turbine, the distance and bearing from each turbine should be recorded and then all flags removed.

- 4) Searches will be abandoned if severe weather is present, and continue if it clears. The time spent searching at all turbines will be recorded and should be consistent.

#### IV. Validation Guidelines

Performing carcass removal by scavenger and searcher efficiency are the standard methods performed together to correct for bias in data collection. Below are accepted techniques to perform this correction.

##### Carcass Removal Trials

Because there are numerous variables that may make every turbine unique, we suggest placing an equal number of carcasses per turbine to be monitored for removal by scavengers. Additionally, all 4 visibility classes should have a sample size equal to the percentage of that visibility class (ex. 60% of search area of Class 1 gets 60% of the carcasses placed). A random bearing and distance from the turbine should be selected to determine placement of the carcass. For these trials, carcasses must be placed within the surveyed area underneath turbines after sunset and under darkness, and monitored for removal every 24 hours. The carcasses should be left in place for a 14 day trial length. Ideally, the total number of bird and bat carcasses used should be representative of the actual size and species of killed animals, with no less than 50 specimens monitored per year. These trials should be performed periodically throughout the season to account for varying conditions. Before placement, each carcass must be uniquely marked in a manner that does not cause additional attraction and have its location recorded. Records shall include the turbine number, a brief description of immediate vegetation that may impede visibility, classification using one of the 4 visibility classes described above, and length of time before removal.

##### V. Searcher Efficiency Trials

To produce the best estimates of mortality, a high number of searcher efficiency trials will be performed. A minimum of 200 individual trials will be performed to test searchers. The carcasses will be toe clipped to identify and number them. Carcasses missed by searchers will be picked up after their survey, frozen and be used again. The habitat surrounding turbines may vary considerably and searcher efficiency appears highly correlated to visibility and habitat types. Therefore, the search area defined for each turbine surveyed will be divided into the 4 visibility classes (illustrated on map). The distribution of carcasses is based on the percentage of each visibility class and will be placed at a random azimuth and distance. Each turbine monitored by searchers should be examined, with an equal number of carcasses placed at each turbine.

Testing should occur sporadically throughout monitoring periods and searchers should not be made aware they are being tested. An effort should be made to test searchers equally during both inclement and good weather, with weather conditions recorded. Carcasses placed should be representative of the percentage and number of species found during the mortality monitoring, and should replicate the manner in which the majority of bats are found in that visibility class (i.e. crawled under vegetation). An effort to maximize the number of carcasses placed is best, with no less than 200 per year.

Minnesota Department of Natural Resources  
Ecological Resources  
Regional Office Environmental Assessment Ecologist

LARGE WIND ENERGY CONVERSION SYSTEM  
POST-CONSTRUCTION BIRD AND BAT MORTALITY SURVEY REPORT

Project Name: \_\_\_\_\_  
PROJECT LOCATION: \_\_\_\_\_

Company/  
Organization/  
Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_ Fax: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_

E-Mail: \_\_\_\_\_

Project Supervisor Name: \_\_\_\_\_

Supervisor Contact: Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

E-Mail: \_\_\_\_\_

If this is contracted work, provide the name & address of the individual/organization work is being performed for:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## Description of Wind Turbine Searched for Carcasses

Project Name: \_\_\_\_\_ Turbine Number: \_\_\_\_\_

1. Diameter of Blade Span: \_\_\_\_\_ m                      Number of Blades: \_\_\_\_\_

2. Blade Height Above Ground- Max.: \_\_\_\_\_ m;    Min.: \_\_\_\_\_ m

3. Surface Area of Search Plot: \_\_\_\_\_ m<sup>2</sup>

4. Attach a map of each turbine with 100 meter plot, search boundaries, location and numbering of transects, and vegetation classification on a separate sheet.

5. Attach a spread sheet with weather data collected at 60-minute intervals. Data should include wind speed, temperature, precipitation, cloud ceiling height, etc.

6. General Habitat Description and Topography within 100 m of Turbine:  
(Use Anderson Classification System)

7. General Habitat Description and Topography >100m from Turbine:  
(Use Anderson Classification System)





# MINNESOTA DEPARTMENT OF NATURAL RESOURCES

## POST-CONSTRUCTION REPORT GUIDELINES

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- Below is an outlined guide of what we are looking for in the annual and final post-construction reports.
  - Some general guidelines include:
    - Explain all methods used in detail.
    - Provide all equations and methods used for all calculations
    - Provide average, range, confidence intervals,  $p$  values, and other statistics where applicable.
    - Provide raw data as Appendices or as accompanying files on a CD.
  - For final reports, include all years of study reporting on each individual year, as well as overall results and trends, detailing any similarities and/or difference between years of study.
  - All reports are due January 1 following that years data collection. Reports need to be sent to the Regional Environmental Assessment Ecologist for the projects location and to the Natural Heritage Review Coordinator.
- 

### 1. Executive Summary

### 2. Introduction

- a. Description of project area
  - i. Map of site including turbine locations, roads, transmission lines, substation, etc.
  - ii. Distribution, number and size of turbines (height, MW, etc.)
  - iii. Location of project (state, county, township, etc.)
  - iv. Any other general information
- b. Habitat/landcover
  - i. Landcover types – map and percentages of each
  - ii. Critical or unique habitats identified
- c. Wind speed
  - i. Overall wind speed and direction (wind rose)
  - ii. Prevailing winds from which direction and what times of the year

### 3. Methods

- a. Carcass searches
  - i. Turbines & search area
    1. No. turbines searched
    2. How turbines selected
    3. Dates of survey
    4. Time of day searched
    5. Maps of each turbine's search plot delineating vegetation classes and habitat
    6. Table showing searchable area in each vegetation class for each turbine
  - ii. Search methods
  - iii. Incidental kills – how documented

- b. Mortality Patterns
  - i. Temporal patterns - seasonal
  - ii. Spatial patterns - distance from turbine
  - iii. Weather and generation associations - how collected and analyzed
    - 1. Temperature
    - 2. Wind speed
    - 3. Other variables (MW, rotor sweep zone, etc.)
  - iv. Age, species, and gender
- c. Mortality estimates and adjustment– methods used showing all equations used (see last page of guidelines for mortality equations)
  - i. Searcher efficiency trials & scavenger removal trials
    - 1. Searcher efficiency methods
    - 2. Scavenger removal methods
    - 3. Searcher efficiency and scavenging removal corrections (SESR) – methods and equations used
  - ii. Searchable area corrections
- d. Mortality and habitat (landcover) correlations

#### 4. Results

- a. Carcass searches
  - i. Overall data
    - 1. Summary of search effort
      - a. Average time each turbine searched
      - b. # days surveys conducted
      - c. Explanation why any days and/or turbines were not surveyed
    - 2. Bird carcasses
      - a. Total No. found
      - b. Breakdown by turbine
      - c. Breakdown by species
      - d. Breakdown by date, month, etc.
      - e. Alive, injured, sent to rehab, etc.
    - 3. Bat carcasses
      - a. Total No. found
      - b. Breakdown by turbine
      - c. Breakdown by species
      - d. Breakdown by date, month, etc.
      - e. Alive, injured, sent to rehab, etc.
    - 4. Maps showing carcass location at each search turbine, broken down in 10 m increments; any trends?
  - ii. Temporal patterns - Seasonal distribution of mortality
    - 1. Day
    - 2. Week
    - 3. Month
  - iii. Spatial patterns
    - 1. Distance from turbines
    - 2. Direction from turbine (showing N, S, E, W)

- iv. Weather and generation associations
  - 1. Temperature
  - 2. Wind speed
  - 3. Other variables (MW, rotor sweep zone, etc.)
- v. Age, species, and gender
  - 1. Males vs. females
  - 2. Species
  - 3. Adults vs. juveniles
- b. Mortality estimates and adjustments (see pages 6- 8 for guidance)
  - i. Searcher efficiency trials & scavenger removal trials
    - 1. Searcher efficiency
      - a. Overall searcher efficiency average and range
      - b. Individual searcher average and range
      - c. No. trials and searcher efficiency broken down by bat carcasses, bird carcasses, vegetation class, and date of trial
      - d. Fresh vs. frozen, intact vs. broken, colored vs. dull (birds), etc. and effects on searcher efficiency if any
    - 2. Carcass removal
      - a. Overall average No. days before carcass removal and range
      - b. Average and range of all bat carcass removal trials and all bird carcass removal trials
      - c. No. trials broken down by bat species and bird species
      - d. No. trials and mean carcass removal broken down by bats carcasses, bird carcasses, vegetation class, and date of trial
      - e. Fresh vs. frozen, intact vs. broken, colored vs. dull (birds), etc. and effects on carcass removal time if any
      - f. Carcass removal by vegetation class
    - 3. Searcher efficiency and scavenging removal (SESR) Corrections
  - ii. Searchable area corrections
  - iii. Mortality estimates and adjustments
    - 1. Bats
      - a. Total estimated No. of bats killed at site
      - b. Bats/turbine/year include confidence interval
      - c. Bats/MW/year include confidence interval
      - d. Bats/ft<sup>2</sup> of rotor area/year include confidence interval
    - 2. Birds
      - a. Total estimated No. of birds killed at site
      - b. Birds/turbine/year include confidence interval
      - c. Birds/MW/year include confidence interval
      - d. Birds/ft<sup>2</sup> of rotor area/year include confidence interval
    - 3. Turbines with greatest/least kills
    - 4. Other trends?
- c. Correlation of mortality and Weather data
  - i. Temperature
  - ii. Wind speed
  - iii. Other variables
- d. Note any other trends observed

## 5. Discussion

- a. Avian mortality
- b. Bat mortality
- c. Implications of results
- d. Suggestions for improvements to protocol
- e. Any recommended adjustments for this site for next year's surveys
- f. If final report, discuss entire study (both years)

## 6. References

## 7. Data sheets

- a. Mortality datasheets
  - i. Cover
  - ii. GPS location of all wind turbines
  - iii. Description of wind turbine searched for carcass (using Anderson Level III land cover codes)
  - iv. Daily Search Summary
  - v. Carcass Data Sheet
- b. Searcher efficiency data
- c. Carcass removal data

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**Mortality Estimate:** Please use at least these methods to determine mortality; other methods are welcome and encouraged as long as they are done in addition to the below method.

To estimate the time that carcasses persisted in the study plots, the average time that a carcass was present in scavenger removal trials,  $t$ , was calculated. Because trials were halted after X days, the data are right-censored, and this was compensated for by estimating the mean time to removal using a maximum likelihood estimator for  $t$  using the following formula:

$$\bar{t} = \frac{\sum_{i=1}^s t_i}{s - s_c}$$

where  $s$  = the number of test carcasses used in search trials,  $s_c$  = the number of test carcasses that remained in the study area at the end of the 14-day removal trial, and  $t_i$  = the number of days carcass  $i$  remains in the search area. The probability that a carcass would be detected by searchers ( $p$ ) was assessed through searcher efficiency trials. The estimate of  $p$  was calculated as the number of trial carcasses found by searchers divided by the total number of successful trials (excluding trials where the carcasses were not found by searchers and were also not found later that day by testers; these carcasses were assumed to be scavenged).

Erickson et al.'s (2004) mortality estimator calculates a per-turbine annual fatality rate ( $m$ ) as:

$$m = \frac{\bar{c}}{\hat{\pi}}$$

where  $c$  is the mean number of carcasses observed per turbine, and  $\hat{\pi}$  adjusts for both carcass removal and observer detection under the assumption that carcass removal times ( $t_i$ ) follow an exponential distribution:

$$\hat{\pi} = \frac{\bar{t} \cdot p}{I} \cdot \left[ \frac{e^{\frac{I}{t}} - 1}{e^{\frac{I}{t}} - 1 + p} \right]$$

This searcher-efficiency, scavenger-removal (SESR) corrected estimate was calculated separately for each turbine, using the averaged figures of  $t$  and  $p$ . Because searches were conducted daily,  $I$  (the search interval) = 1.

Individual SESR-adjusted mortality figures for each turbine were adjusted for searchable area using two different methods. Finally, the estimated total annual mortalities for the searched turbines were summed and adjusted for the proportion of turbines searched. The final result is an estimate of the total mortality.

A confidence interval for the corrected estimate of total mortality is determined by bootstrapping the trials of carcass persistence and efficiency.

### **Bootstrapping Guidance:**

The statistic whose confidence limits we are interested in calculating is the total fatality at a site. You have sampled a subset of turbines at the site and should have three different data sets that need to be combined in order to calculate fatality: Searcher efficiency (SE) trial data, carcass persistence (CP) trial data, and the actual casualty data. Your SE and CP trials should be able to estimate different parameters for different size classes of birds and bats and perhaps different seasons. It is critical that you have an adequate sample size to estimate each parameter. It is critical to remember the parameter that we are interested in bootstrapping is the fatality. We do not have a closed form estimate of its variance, so we need to bootstrap it. We cannot bootstrap the SE separately from the CP then apply them once to estimate fatality. We need to bootstrap sample each of these at each iteration. Because this process involves three bootstrap samples, there is no canned software that will carry this out but an experienced programmer should be able to calculate this in R or C or C++ or SAS. Please do not even think about doing it in Excel.



Mr. Lester E. Polisky  
COMSEARCH  
Senior Principal Engineer  
19700 Janelia Farms Blvd.  
Ashburn, VA 21147

SEP 22 2009

Re: Prairie Rose Wind Energy Project, in Rock County, MN

Dear Mr. Polisky:

In response to your request dated July 31, 2009, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC) the plans for the Prairie Rose Wind Energy Project, in Rock County, Minnesota.

After a 45 day period of review, only the Department of Commerce (DOC) identified any concerns regarding blockage of their radio frequency transmissions.

The proposed Prairie Rose Wind Energy Project in Rock County, MN will be located between approximately 17 and 28 nautical miles northeast of the Sioux Falls, SD Weather Surveillance Radar-1988 Doppler (WSR-88D). DOC estimates the proposed wind farm (towers and turbines) will be in the radar line of sight of the Sioux Falls WSR-88D. The Sioux Falls WSR-88D will see the wind farm on a daily basis. The towers and turbine blades will cause interference consisting of reflectivity clutter and anomalous Doppler returns at and downstream from the facility, possibly causing some beam blockage/attenuation and shadow effects. The wind farm will likely have some meteorological and hydrological impacts on the Sioux Falls WSR-88D in the azimuths impacted by the wind farm due to the returns from the rotating blades that the WSR-88D clutter filter will not be able to eliminate. WSR-88D weather radar data that is contaminated by wind turbine clutter (WTC) can cause impacts to all users including government, emergency managers, television broadcasters, private industry, researchers, and the public. Impacts to the key government agencies, the Departments of Commerce, Transportation, and Defense, could be particularly detrimental because they have the potential to impair the agencies' capability and efficiency in their respective public service/public safety roles. For example, the wind farm could have an impact on the Bismarck Weather Forecast Office severe weather warning operations near and potentially downrange of the wind farm.

We would be willing to assist the developer in exploring siting or operational curtailment options that would reduce the impact on the WSR-88D and weather radar data users. Please forward the attached report to the developer along with the NTIA's response.

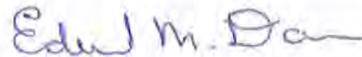
POC:  
Dominic Bosco  
1325 East West Hwy  
Building: SSMC2  
Silver Spring, MD 20910-3283  
Phone: 301-713-1841 x123

Please find enclosed the aforementioned report from the Department of Commerce (DOC) representative.

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

Thank you for the opportunity to review these proposals.

Sincerely,



Edward M. Davison  
Deputy Associate Administrator  
Office of Spectrum Management

Enclosure

# Prairie Rose Wind Energy Project Impacts

## MODERATE IMPACT: FOLLOW-UP REQUESTED

### Sioux Falls WSR-88D Impacts Overview

The Prairie Rose Wind Energy Project in Rock County, MN will likely have **MODERATE** meteorological and hydrological impacts to the Sioux Falls, SD WSR-88D. The Radar Operations Center requests further coordination with the developers to discuss impacts and mitigations; developers can contact us at [Wind.Energy.Matters@noaa.gov](mailto:Wind.Energy.Matters@noaa.gov).

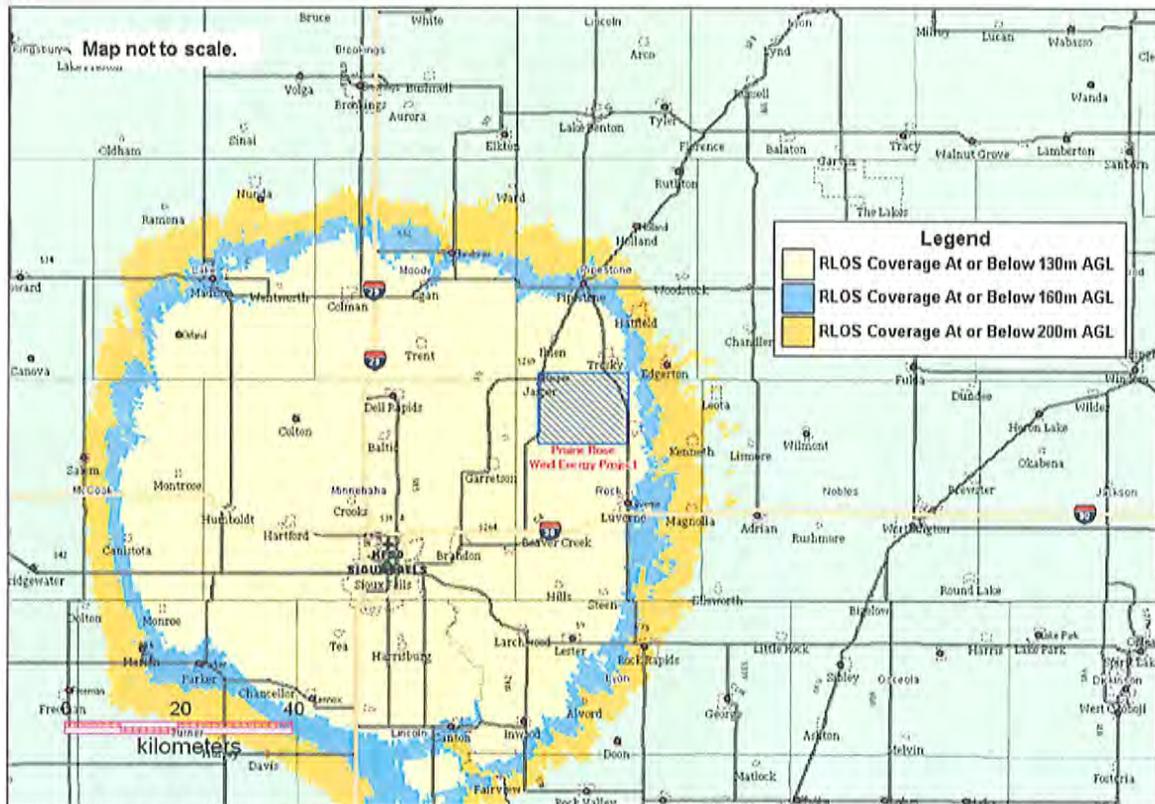


Figure 1: Sioux Falls radar map showing potential wind farm turbine locations.

### Prairie Rose Wind Energy Project Statistics

The wind farm proposal is located between approximately 17 and 28 nm northeast of the Sioux Falls WSR-88D with an approximate area of 47,660 acres. The turbines are expected to be 428 feet (Low configuration is 394 feet) in height with blades that are 331 feet (Low configuration is 262 feet) in diameter. At the 0.5° elevation cut, 99 percent of all proposed turbine locations (figure 1) will protrude into the main beam (radar line of sight, RLOS) and will be visible on a daily basis from approximately 40-67° (to the northeast).

### Impact Risk Matrix

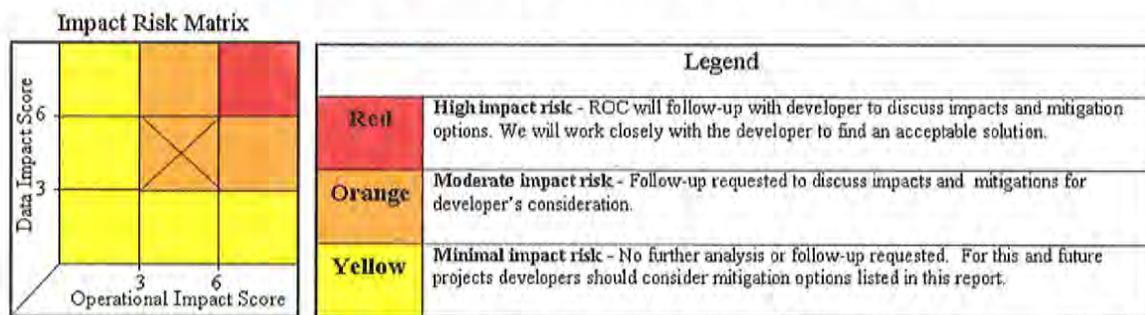
An objective risk matrix (figure 2) estimates the potential meteorological and hydrological impacts from a wind farm. The radar *data impact score* is affected by the number of impacted elevation angles, azimuthal extent of wind turbine clutter (WTC), number of turbines, and near and far ranges of a wind farm. For example, turbines located closer to the radar, impacting more elevation scan angles, etc. would receive a higher impact score. The *operational impact score* is a climatology-based estimate of severe weather warning (Severe Thunderstorms, Tornadoes, and

Flash Floods) hours that can be expected for a wind farm region (and affected regions beyond the wind farm if the wind farm is within 18km).

**Matrix Score**

The data impact index score for the Prairie Rose Wind Energy Project on the Sioux Falls WSR-88D is 3.9 (Low configuration is 3.7). The operational impact score is 5.4. Therefore, the risk matrix indicates the wind farm will likely have moderate impacts to the radar (orange), chiefly due to the following:

- *Nearly all turbines penetrate 1<sup>st</sup> scanning elevation angle*
- *Some data contamination will extend beyond wind farm due to multipath effect*
- *Azimuthal extent is about 27 degrees*
- *Severe weather warning climatology is moderate in affected counties*



**Figure 2: Impact Risk Matrix for the Prairie Rose Wind Energy Project.**

**Mitigation Strategies to Consider**

This wind farm proposal has been determined to be of moderate impact risk. WTC will be visible on the radar on a daily basis. Developers should, when feasible, consider mitigation options for this and future wind farm projects.

Here is a list of things a developer can do to reduce the adverse impact of WTC on weather radar data and NWS operations.

- Avoid locating wind turbines in the RLOS of a NEXRAD
- Reduce the number of turbines in the RLOS
- Reduce the amount of blade penetration into the RLOS
- Reduce the azimuthal extent of the turbines with respect to the radar
- Curtail turbine operations briefly during exceptional severe weather events via forecaster request
- Share real-time wind and precipitation data from the wind farm with the local NWS Weather Forecast Office

**Report date: 8 September 2009**

Please visit the Radar Operations Center Wind Farm Interaction Web Page at [http://www.roc.noaa.gov/windfarm/windfarm\\_index.asp](http://www.roc.noaa.gov/windfarm/windfarm_index.asp) for more information on impacts and mitigation strategies. The NEXRAD Radar Operations Center would be willing to help developers explore siting or operational curtailment options to reduce the impact on the WSR-88D and weather radar data users.



RECEIVED  
SEP 11 2009  
HDR Engineering, Inc.

September 9, 2009

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

RE: Geronimo Wind Energy's Prairie Rose Wind Project  
Rock County  
SHPO Number: 2009-3187

Dear Mr. Sabatke:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

Due to the nature of the proposed project, we recommend that an archaeological survey be completed. The survey must meet the requirements of the Secretary of the Interior's Standards for Identification and Evaluation, and should include an evaluation of National Register eligibility for any properties that are identified. For your information, we have enclosed a list of consultants who have expressed an interest in undertaking such surveys.

If the project area can be documented as previously disturbed or previously surveyed, we will re-evaluate the need for survey. Previously disturbed areas are those where the naturally occurring post-glacial soils and sediments have been recently removed. Any previous survey work must meet contemporary standards.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36CFR800, procedures of the Advisory Council on Historic Preservation for the protection of historic properties. If this project is considered for federal assistance, or requires a federal license or permit, it should be submitted to our office with reference to the appropriate federal agency.

If you have any questions on our review of this project, please contact me at (651) 259-3456.

Sincerely,



Dennis A. Gimmestad  
Government Programs and Compliance Officer

Enclosure: List of Consultants



Minnesota  
Historical Society

STATE HISTORIC PRESERVATION OFFICE

April 12, 2010

Mr. Stephen Sabatke  
HDR Engineering  
701 Xenia Ave. S, Suite 600  
Minneapolis, MN 55416

RE: Prairie Rose Wind Farm boundary expansion and transmission line  
Rock and Pipestone Counties  
SHPO Number: 2009-3187

Dear Mr. Sabatke:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

We initially reviewed this project on 9 September 2009, recommending that an archaeological survey be conducted. We have now received notice (your letter dated 22 March 2010) that the project boundary has been expanded and an associated transmission line has been added to the project scope. We still recommend that a survey be conducted for this project as now proposed.

If the project area can be documented as previously disturbed or previously surveyed, we will re-evaluate the need for survey. Previously disturbed areas are those where the naturally occurring post-glacial soils and sediments have been recently removed. Any previous survey work must meet contemporary standards.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36CFR800, procedures of the Advisory Council on Historic Preservation for the protection of historic properties. If this project is considered for federal assistance, or requires a federal license or permit, it should be submitted to our office with reference to the appropriate federal agency.

If you have any questions on our review of this project, please contact our Compliance Section at (651) 259-3455.

Sincerely,

Mary Ann Heidemann, Manager  
Government Programs and Compliance



United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Twin Cities Field Office  
4101 American Blvd E.  
Bloomington, Minnesota 55425-1665

RECEIVED

OCT - 5 2009

HDR Engineering, Inc.

October 2, 2009

Patrick Smith  
Geronimo Wind Energy  
5050 Lincoln Dr #420  
Edina, MN 55436

Re: Prairie Rose Wind Farm Review, Rock County, Minnesota  
FWS TAILS #32410-2009-FA-0117

Dear Mr. Smith:

This is in response to your July 21, 2009, request for our review of the proposed Prairie Rose Wind Farm in Rock County, Minnesota. The proposed project includes the installation of wind turbines, and associated infrastructure including roads, transmission lines, and staging areas. The macro-siting project boundary sent to our office covers a total area of approximately 14,185 acres located in all or parts of sections 1, 2, 11-13, 23-27, 34, and 35, Township 104 North, Range 46 West, and sections 5-8, 17-20, 29, and 30, Township 104 North, Range 45 West, Rock County, Minnesota.

Representatives from the U.S. Fish and Wildlife Service (Service), Geronimo Wind Energy, HDR, and the Minnesota Department of Natural Resources (DNR) participated in a meeting/conference call on July 21, 2009, to discuss the project proposal, wildlife survey recommendations, setback recommendation, and Topeka shiner-related issues.

The following comments are being provided pursuant to the Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act, and Fish and Wildlife Act of 1956. This information is being provided to assist you in making an informed decision regarding wildlife issues, site selection, project design, and compliance with applicable laws.

The Service has been in contact with the DNR as they have developed recommended survey protocols and site evaluations that will satisfy both state and federal wildlife statutes, and this letter describes these measures, in part. We appreciate your early coordination with both the Service and the DNR, and recommend continued collaboration on this project to ensure wildlife and habitat issues are fully and appropriately addressed.

The Fish and Wildlife Service supports the development of wind power as an alternative energy source. However, wind farms can have negative impacts on wildlife and their habitats if not sited and designed with potential wildlife and habitat impacts in mind. Selection of the best sites for turbine placement is enhanced by ruling out sites with known, high concentrations of birds and/or bats passing within the rotor-swept area of the turbines or where the effects of habitat fragmentation will be detrimental. In support of wind power generation as a wildlife-friendly, renewable source of power, development sites with comparatively low bird, bat and other wildlife values would be preferable and would have relatively lower impacts on wildlife.

The Service recommends that impacts to streams and wetlands be avoided, and buffers surrounding these systems be preserved. Streams and wetlands provide valuable habitat for fish and wildlife resources, and the filtering capacity of wetlands helps to improve water quality. Naturally-vegetated buffers surrounding these systems are also important in preserving their wildlife-habitat and water quality-enhancement properties. Furthermore, forested riparian systems (wooded areas adjacent to streams) provide important stopover habitat for birds migrating through the region.

The proposed activities do not constitute a water-dependent activity, as described in the Section 404(b)(1) guidelines, 40 CFR 230.10. Therefore, practicable alternatives that do not impact aquatic sites are presumed to be available, unless clearly demonstrated otherwise. Therefore, before applying for a Section 404 permit, the client should closely evaluate all project alternatives that do not affect streams or wetlands, and if possible, select an alternative that avoids impacts to the aquatic resource. If water resources will be impacted, the St. Paul District of the Corps of Engineers should be contacted for possible need of a Section 404 permit.

### **Federally-listed Threatened, Endangered, and Candidate Species**

Because of the potential for wind power projects to impact federally-listed species, they are subject to the Endangered Species Act (16 U.S.C. 1531-1544) section 9 provisions governing “take,” similar to any other development project. “Take” incidental to a lawful activity may be authorized through the initiation of formal consultation, if a Federal agency is involved. If a federal agency, federal funding, or a federal permit are not involved in the project, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA may be obtained upon completion of a satisfactory habitat conservation plan for the listed species. However, there is no mechanism for authorizing incidental take after the project is constructed and operational.

The Topeka shiner (*Notropis topeka*) is a federally-endangered fish species found in Rock County. A designated Topeka shiner Critical Habitat intermittent stream extends into the southeast corner of the project boundary at sections 20 and 29, T104N, R45W. Impacts to this stream channel need to be avoided during project construction and operation. Potential impacts to this stream could include but are not limited to increased sedimentation or nutrient loading caused by increased soil erosion, reduced surface water quantity input due to access road or turbine pad construction in close proximity to the stream, and potential stream channel disturbance caused by underground transmission or utility line stream crossings. The Service must be notified if any type of site preparation, construction, or land clearing work will be

completed within 300 feet of all streams (intermittent and permanent) within or adjacent to the project area.

### **Migratory Birds**

The Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA) implements four treaties that provide for international protection of migratory birds. The MBTA prohibits taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. Bald and golden eagles are afforded additional legal protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). Unlike the Endangered Species Act, neither the MBTA nor its implementing regulations at 50 CFR Part 21, provide for permitting of “incidental take” of migratory birds.

Monitoring should be conducted to assess the daily movement patterns of any species of raptor or ground nesting grassland birds whose nest is located within the proposed project site or within two miles of the proposed project site. During the incubation and rearing stage, the location of adult birds should be tracked for at least 4 hours twice per week until consistent activity patterns are established. These monitoring dates will be determined based upon identified species within two miles of the project boundary. Alternate monitoring strategies that assess the degree to which nesting birds utilize the proposed project site will be considered. Information collected will be used to document how frequently the birds enter the proposed project site, and this information can be utilized during micro-siting to minimize substantial risks to birds within close proximity of the project site.

The Service’s Office of Law Enforcement serves its mission to protect federal trust wildlife species in part by actively monitoring industries known to negatively impact wildlife, and assessing their compliance with Federal law. These industries include oil/gas production sites, cyanide heap/leach mining operations, industrial waste water sites, and wind power sites. There is no threshold as to the number of birds incidentally killed by wind power sites, or other industry, past which the Service will seek to initiate enforcement action. However, the Service is less likely to prioritize enforcement action against a site operator that is cooperative in seeking and implementing measures to mitigate take of protected wildlife.

### **Migratory Bird Concentration Areas and Conservation Lands**

Touch the Sky Prairie National Wildlife Refuge is located approximately two miles south of the proposed Prairie Rose Wind Farm. At this time, the Service does not have any concerns that the Prairie Rose Wind Farm project will negatively affect the Touch the Sky Prairie National Wildlife Refuge or the wildlife that utilize the Refuge.

We also recommend that no turbines be located within ¼ mile of Conservation Reserve Program, Wetland Reserve Program, or other similar federally- or state-funded restoration projects.

## Interim Service Guidelines

Research into the actual causes of bat and bird collisions with wind turbines is limited. To assist Service field staffs in review of wind farm proposals, as well as aid wind energy companies in developing best practices for siting and monitoring of wind farms, the Service published *Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines* (2003). We encourage any company/licensee proposing a new wind farm to consider the following excerpted suggestions from the guidelines in an effort to minimize impacts to migratory birds and bats.

- 1) Pre-development evaluations of potential wind farm sites to be conducted by a team of Federal and/or State agency wildlife professions with no vested interest in potential sites;
- 2) Rank potential sites by risk to wildlife;
- 3) Avoid placing turbines in documented locations of federally-listed species;
- 4) Avoid locating turbines in known bird flyways or migration pathways, or near areas of high bird concentrations (i.e., rookeries, leks, refuges, riparian corridors, etc.);
- 5) Avoid locating turbines near known bat hibernation, breeding, or maternity colonies, in migration corridors, or in flight paths between colonies and feeding areas;
- 6) Configure turbine arrays to avoid potential avian mortality where feasible. Implement storm water management practices that do not create attractions for birds, and maintain contiguous habitat for area-sensitive species;
- 7) Avoid fragmenting large, contiguous tracts of wildlife habitat;
- 8) Use tubular supports with pointed tops rather than lattice supports to minimize bird perching and nesting opportunities;
- 9) If taller turbines (top of rotor-swept area is greater than 199 feet above ground level) require lights for aviation safety, the minimum amount of lighting specified by the Federal Aviation Administration (FAA) should be used. Unless otherwise requested by the FAA, only white strobe lights should be used at night, and should be of the minimum intensity and frequency of flashes allowable. Red lights should not be used, as they appear to attract night-migrating birds at a higher rate than white lights;
- 10) Adjust tower height to reduce risk of strikes in areas of high risk for wildlife.

The full text of the guidelines is available at <http://www.fws.gov/habitatconservation/wind.pdf>. The Service believes that implementing these guidelines may help reduce mortality caused by wind turbines. We encourage you to consider these guidelines in the planning and design of the project. We particularly encourage placement of turbines away from any large wetland, stream corridor, or wooded areas, and avoiding placing turbines between nearby habitat blocks.

If this proposal is to move forward, we strongly recommend that on-the-ground surveys using radar, infrared, and/or acoustic monitoring be conducted during the peak of spring and fall bird migrations and during the breeding season over a period of several years (consistent with the Service's *Interim Guidelines, op. cit.*) to identify breeding and feeding areas and migration stopover sites. Observations made from greater than ¼ mile of target areas are likely to be insufficient to accurately assess bird use of the landscape, particularly if the observer is moving. Generalized ground research survey protocols, such as those followed in the Waterfowl Breeding Population and Habitat Survey (Smith 1995) and the North American Breeding Bird Survey (Pardieck 2001), among others, often do not accept observations made at greater than ¼ mile from the observer due in part to high probabilities of missed detections (R. Russell, personal communication). Furthermore, spring and fall raptor migration surveys may be necessary, as will surveys to document movement patterns of bald eagles that may use the project area or surrounding habitat. We request that any on-the-ground survey protocols be consistent with the Service's *Interim Guidelines* (2003), and be coordinated with this office and with the Minnesota Department of Natural Resources prior to implementation.

### **Pre-Construction Surveys**

The Service recommends that Geronimo Wind Energy and their consultants conduct rigorous assessments of bird and bat use of the area before proceeding with project design (i.e., preliminary siting of specific turbines). We strongly recommend development of a protocol for bird/bat surveys at this site. We encourage Geronimo Wind Energy to maintain consistency with other wind farm survey protocols, thus allowing us to compare results with other wind farm survey data. These comparisons will potentially provide valuable information that can be applied in future wind farm/turbine macro- and micro-siting.

In addition to on-the-ground (point or transect) surveys, we recommend that the assessments include the use of mobile, horizontally- and vertically-scanning radar to study the direction, altitude, and numbers of flying animals moving through and within the project area during the fall and spring migration of birds and bats, and the breeding period of birds in the area. We recommend that radar be employed for 24 hours a day, 7 days a week during migration, and at a minimum from dawn to dusk during the breeding period. Radar studies are providing useful information in evaluating bird and bat activity at wind generation sites in Wisconsin, Vermont, Massachusetts and other locations. The use of radar coupled with ground-truthing (surveys) can provide a more complete assessment of bird and bat use of a potential wind project area than point counts or other traditional survey methods alone. Such information could inform project design and minimize potential mortality associated with the project.

We recommend installation of two AnaBat SDI detectors per meteorological tower to be used within the project area, and recording of bat echolocation calls through November 15, 2009 and from March 15 - November 15, 2010. One AnaBat detector should be mounted at 5 meters above ground, and the other should be mounted as close to the rotor-swept area as possible. The AnaBat's sensitivity should be adjusted to detect a calibration tone at 20 meters. AnaBat units must monitor from 0.5 hour before sunset until 0.5 hour after sunrise. This will help to gauge bat

activity and to some degree, to determine bat species/guild composition within the project area during spring and fall migration and the maternity season.

### **Post Construction Surveys**

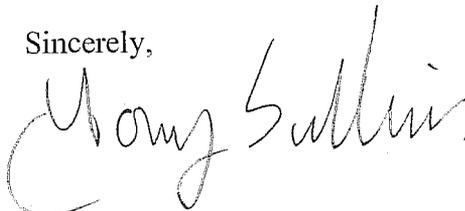
The Service recommends the project be monitored post-construction to determine impacts to migratory birds and bats. A specific post-construction monitoring plan should be prepared and reviewed by the Service and should include a scientifically robust, peer reviewed methodology of mortality surveys. Generally the Service recommends that surveys be conducted for a minimum of three years following construction to assess impacts to birds and bats. The duration of post construction surveys is project specific and will be determined based upon pre construction survey results. We also recommend that the post-construction mortality studies be conducted by an independent third party contractor with expertise in bird/bat mortality monitoring. Results of mortality surveys and other forms of monitoring should be used to adjust operations to reduce mortality if necessary and feasible, as well as improve design and siting of future wind generation facilities. **The Developer or its contractor should provide to this office each year, no later than December 31, copies of annual bird/bat mortality monitoring reports.**

### **Infrastructure Considerations**

Development of transmission infrastructure associated with wind facilities also poses risks to wildlife. These risks include potential avian mortality, particularly electrocution of raptors (hawks, eagles, kites, falcons, and owls), that could occur when they attempt to perch on uninsulated or unguarded power poles. Recently published information about which types of power line poles and associated hardware (e.g., wires, transformers and conductors) pose the greatest danger of electrocution to raptors and what modifications can be made to reduce this threat can be found on the internet at <http://www.aplic.org/>

Thank you for the opportunity to provide comments on this proposed project. Please contact me at (612) 725-3548, ext. 2201, or Rich Davis, Fish and Wildlife Biologist, at (612) 725-3548, ext. 2214, if we can be of further assistance.

Sincerely,



Tony Sullins  
Field Supervisor

cc: Michael DeRuyter, HDR Inc.  
Kevin Mixon, MN DNR



# Minnesota Department of Natural Resources

Division of Ecological Resources – Reg. 4

261 Hwy 15 South

New Ulm, MN 56073-8915

Phone: (507) 359-6073 Fax: (507) 359-6018 E-mail: [kevin.mixon@dnr.state.mn.us](mailto:kevin.mixon@dnr.state.mn.us)

April 30, 2010

Mr. Mike DeRuyter  
HDR Engineering  
701 Xenia Avenue South  
Minneapolis, MN 55416

RECEIVED  
MAY - 4 2009  
HDR Engineering, Inc.

In re: Prairie Rose Wind Farm  
Revised Project Boundary Review  
Rock County, MN

Dear Mr. DeRuyter:

The Minnesota Department of Natural Resources (DNR) has received information concerning the revised project boundary for the above referenced wind project located in Rock County, MN. This letter supplements the DNR letter dated August 3, 2009 that was based on the original project boundary. The DNR is providing the following comments as a mechanism to collaboratively work together to identify potential natural resource issues that should be considered during project development.

The DNR recommends the large Conservation Reserve Program properties be avoided and an appropriate setback be established in order to reduce potential mortality and avoidance of the habitat by avian species. Further coordination should occur with the Farm Service Agency located in the county where the project is occurring. Contact the Farm Service Agency at (<http://www.fsa.usda.gov/FSA/stateoffapp?mystate=mn&area=home&subject=landing&topic=landing>) to coordinate the locations and potential issues concerning these properties.

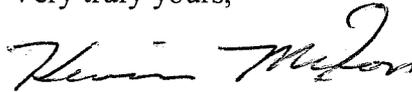
Project developers crossing (over, under, or across) any state land or public water with any utility (power lines, including feeder lines) need to secure a DNR license to cross (Minnesota Statue 84.415). Information on how to obtain a License for Utility can be found at [http://www.dnr.state.mn.us/permits/utility\\_crossing/index.html](http://www.dnr.state.mn.us/permits/utility_crossing/index.html). For information on where the Public Waters are located in your project area go to the following site and click on the Public Waters Inventory (PWI) Maps Download button: [http://www.dnr.state.mn.us/waters/watermgmt\\_section/pwi/download.html](http://www.dnr.state.mn.us/waters/watermgmt_section/pwi/download.html)

This review constitutes an office review only and is not a substitute for reviewing potential turbine placement in the field. The DNR will provide review comments that are site specific to the proposed tower locations, transmission lines, and access roads. The DNR may request a site visit or meeting when potential turbine locations are determined.

Minnesota Administrative Rules 7836.0500, Subpart 7, requires the applicant to analyze potential environmental impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided. Groundwater resources, surface waters, wetlands, vegetation, wildlife, rare and unique natural resources, etc. are included. In order to address the potential environmental impacts the applicant should resolve all outstanding issues with the DNR prior to applying for the Site Application Permit from the Public Utilities Commission. The applicant is strongly encouraged to resolve the issues outlined in the DNR Natural Heritage Information System letter dated April 28, 2010 concerning rare features and surveys.

The DNR looks forward to working in a positive and collaborative manner on this project to ensure that sustainable energy sources are developed while protecting Minnesota's natural resources. Please contact me directly at 507-359-6073 if you have any questions.

Very truly yours,



Kevin Mixon  
Regional Environmental Assessment Ecologist  
Division of Ecological Services

Cc: Lisa Joyal, DNR  
John Schladweiler, DNR  
Ken Varland, DNR  
Wendy Krueger, DNR  
Jamie Schrenzel, DNR  
Randall Doneen, DNR  
Bob Hobart, DNR  
Lisa Gelvin-Innvaer, DNR  
Ben Schaefer, DNR  
Paul Hansen, DNR  
Rich Davis, U.S. FWS



# Minnesota Department of Natural Resources

Division of Ecological Resources, Box 25

500 Lafayette Road

St. Paul, Minnesota 55155-4025

Phone: (651) 259-5109 E-mail: lisa.joyal@state.mn.us

April 30, 2010

**Correspondence # ERDB 20090193-0003**

Mike DeRuyter  
HDR Engineering, Inc.  
701 Xenia Avenue South, Suite 600  
Minneapolis, MN 55416

RE: Natural Heritage information in the vicinity of the proposed Prairie Rose Wind Farm

| County    | Township (N) | Range (W) | Section(s)         |
|-----------|--------------|-----------|--------------------|
| Rock      | 104          | 47        | 25, 26, 35, 36     |
|           | 104          | 46        | 1, 2, 11-14, 21-36 |
|           | 104          | 45        | 2-10, 15-22, 27-34 |
|           | 103          | 46        | 1-4, 9-12          |
| Pipestone | 105          | 45        | 20, 29-34          |
|           | 105          | 46        | 36                 |

Dear Mr. DeRuyter,

As requested, the Minnesota Natural Heritage Information System has been queried to determine if any rare species or other significant natural features are known to occur within an approximate one-mile radius of the revised project boundary. Because the changes to the project boundary are substantial, this letter replaces the previous Natural Heritage letter dated November 14, 2008. The query results identify several rare features that have been documented within the search area (for details, see the enclosed database reports; please visit the Rare Species Guide at <http://www.dnr.state.mn.us/rsg/index.html> for more information on the biology, habitat use, and conservation measures of these rare species). Please address the following issues in the Public Utilities Commission (PUC) Site Permit Application for this project:

- Blanding’s turtles (*Emydoidea blandingii*), a state-listed threatened species, have been reported from the vicinity of the proposed project. Although we have no records from directly within the project site, turtles have been documented in Poplar Creek which extends into the project boundary and may occur in the wetlands and waterways within the project boundary. Blanding’s turtles also use upland areas up to and over a mile distant from wetlands and streams. Uplands are used for nesting, basking, periods of dormancy, and traveling between wetlands. Because of the tendency to travel long distances over land, Blanding’s turtles regularly travel across roads and are therefore susceptible to collisions with vehicles. Any added mortality can have a large impact to populations of Blanding’s turtles, as these turtles have a low reproduction rate that depends upon a high survival rate to maintain population levels. Other factors contributing to the decline of this species include wetland drainage and degradation, and the development of upland habitat.

For your information, I have attached a Blanding’s turtle fact sheet that describes the habitat use and life history of this species. The fact sheet also provides two lists of recommendations for avoiding and minimizing impacts to this rare turtle. **Please refer to the first list of recommendations for your project.** These include specific recommendations regarding wetlands, utilities, and vegetation management that will pertain to this project. If greater protection for turtles is desired, the second list of additional recommendations can also be implemented. For further assistance regarding the Blanding’s turtle, please contact Lisa Gelvin-Innvaer, DNR Regional Nongame Specialist, at 507-359-6033.

The attached flyer should be given to all contractors working in the area. If Blanding's turtles are encountered on site, please remember that state law and rules prohibit the destruction of threatened or endangered species, except under certain prescribed conditions. If turtles are in imminent danger they should be moved by hand out of harm's way, otherwise they should be left undisturbed. Please report observations of Blanding's turtles in the project area to Lisa Gelvin-Innvaer.

- The streams within the project boundary are either federally designated as critical habitat for the Topeka shiner (*Notropis topeka*), a federally-listed endangered and state-listed special concern species, or flow into waterways that are federally designated as such. The plains topminnow (*Fundulus sciadicus*), a state-listed species of special concern, has also been documented in these streams. These two species are adversely impacted by actions that alter stream hydrology or decrease water quality. To minimize potential impacts, please see the enclosed recommendations for working in Topeka shiner habitat.
- Burrowing owls (*Speotyto cunicularia*), a state-listed endangered species, have nested in pastures within the project boundary in the past, and in 2007 this species successfully nested in a soybean field less than five miles from the project boundary. Burrowing owls typically use open, grazed pastures or native prairies populated by burrowing mammals. Given the extreme rarity of this species, the existence of suitable habitat within the project boundary, the proximity of a recent nest, and the potential risk of this species for collisions with wind turbines (see <http://www.energy.ca.gov/2008publications/CEC-500-2008-080/CEC-500-2008-080.PDF>), we recommend that a pre-construction survey for burrowing owls be conducted to determine if they are currently using the area and, if so, to assist in the placement of the turbines (the USFWS recommends a ¼ mile buffer from burrowing owl territories; see [http://www.fws.gov/wyominges/Pages/Species/Species\\_SpeciesConcern/Raptors.html](http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/Raptors.html)). Please contact me before any survey work is initiated, as we will need to discuss potential surveyors, survey protocol, and other requirements.

Other rare grassland birds have also been documented in the area: the short-eared owl (*Asio flammeus*; this record is not on the enclosed reports), a state-listed bird of special concern, and the upland sandpiper (*Bartramia longicauda*), a Species in Greatest Conservation Need as identified in Minnesota's Comprehensive Wildlife Conservation Strategy (<http://www.dnr.state.mn.us/cwcs/index.html>). Wind farms can affect birds due to collision mortality, displacement due to disturbance, habitat fragmentation, and habitat loss. Potential impacts to grassland birds are a significant concern because many of these species are declining in number nationwide. Given the potential for grassland birds in the area, the proximity of the project to Sites of Biodiversity Significance and native prairie, and the potential for wind turbines to cause avian mortality, we also encourage pre- and post-construction avian monitoring in general.

- The Minnesota County Biological Survey (MCBS) has identified several Sites of Biodiversity Significance within the project boundary. Sites of Biodiversity Significance have varying levels of native biodiversity and are ranked based on the relative significance of this biodiversity at a statewide level. Factors taken into account during the ranking process include the number of rare species documented within the site, the quality of the native plant communities in the site, the size of the site, and the context of the site within the landscape (for more information please refer to the enclosed MCBS guidelines). The Sites within the project boundary contain rare native plant communities and several state-listed plants and animals. Two of the native plant communities, Mesic Prairie and Crystalline Bedrock Outcrop: Sioux Quartzite Subtype, have a state rank of 2, which means that they are imperiled in Minnesota and are very vulnerable to

extirpation from the state. The other two communities, Basswood – Bur Oak – (Green Ash) Forest and Seepage Meadow/Carr Tussock: Sedge Meadow, have a state rank of 3 and are also vulnerable to extirpation in Minnesota. (GIS shapefiles of MCBS Sites of Biodiversity Significance and MCBS Native Plant Communities can be downloaded from the DNR Data Deli at <http://deli.dnr.state.mn.us>.) Given the rarity of these communities and the presence of state-listed plants and animals (see more detailed discussion below), we recommend avoidance of all Sites of Biodiversity Significance (except those rated ‘Below’) regardless of property ownership (please see the enclosed map). Avoidance of these areas will alleviate most of the Natural Heritage concerns addressed in this letter. A short summary of the Sites located within the project is listed below. A more detailed discussion of the different native plant communities follows this Site summary.

- The Sites of Moderate Biodiversity Significance in T104N R46W Section 2 (#85 and 86 on enclosed map), T104N R45W Section 34 (#189), T104N R46W Section 27 (#102), and T104N R46W Section 34 (#112) contain Crystalline Bedrock Outcrops and several state-listed plants.
- The Site of Moderate Biodiversity Significance (#52) in T105N R45W Sections 31 and 32 contains state-listed plants and Crystalline Bedrock Outcrop and Seepage Meadow/Carr Tussock native plant communities.
- The Site of Moderate Biodiversity Significance (#51) adjacent to Poplar Creek and its tributaries is an important buffer that likely provides habitat for Blanding’s turtles and also allows the natural meandering of streams designated as critical habitat for Topeka shiners.
- The Site of Moderate Biodiversity Significance (#110) in T104N R45W Section 32 contains Crystalline Bedrock Outcrops and a buffer around Beaver Creek which is federally designated as critical habitat for Topeka shiners.
- The Sites of High Biodiversity Significance (#10 and 212) in T104N R46W Section 28 contain over 400 acres of native prairie and abundant rock outcrops that are in excellent condition. This is one of the best outcrop areas on private land in Minnesota and numerous state-listed plants have been documented here.
- Several Sites of High Biodiversity Significance (#68, 192, 193, and 194) along ridge on the eastern edge of the project boundary contain Mesic Prairie, Crystalline Bedrock Outcrop and Seepage Meadow/Carr Tussock native plant communities. Again, several state-listed plants have been documented here.
- Routing the proposed transmission line south of Highway 7 and Township Road 72 will avoid impacting two Sites of Moderate Biodiversity Significance (#15 and 211).
- Sites ranked as Below do not meet the minimum biodiversity threshold for statewide significance. These sites, however, may have conservation value at the local level as habitat for native plants and animals, corridors for animal movements, buffers surrounding higher quality natural areas, or as areas with high potential for restoration of native habitat.

- The Crystalline Bedrock Outcrops within the project boundary contain several state-listed endangered (Wolf's spike-rush, *Eleocharis wolfii*; blackfoot quillwort, *Isoetes melanopoda*; hairy water clover, *Marsilea vestita*) and threatened (pigmyweed, *Crassula aquatica*; short-pointed umbrella-sedge, *Cyperus acuminatus*; mud plantain, *Heteranthera limosa*; slender plantain, *Plantago elongata*) plant species. These rare species are part of the distinctive flora that exists in bedrock outcrop communities. This flora consists of many species of vascular plants, mosses, and lichens that occur in no other habitat in Minnesota. Rock outcrop communities are small features that are embedded in a matrix of prairie, savanna, woodland, forest, or marsh vegetation. They are perhaps more usefully considered as an assemblage of several plant communities including a bare rock community composed mostly of lichens, a crevice and thin soil community with specialized vascular plants, a deeper soil community with prairie or woodland species, and a rainwater pool community supporting aquatic plants. The outcrops within the project area are a rare subtype of bedrock outcrop that has been documented on quartzite at scattered locations in Rock, Pipestone, and Cottonwood counties.

Given the rarity of these communities and the presence of state-listed threatened and endangered plants, **bedrock outcrop communities within the project area will need to be avoided.** Minnesota's endangered species law (*Minnesota Statutes*, section 84.0895) and associated rules (*Minnesota Rules*, part 6212.1800 to 6212.2300 and 6134) prohibit the taking of threatened or endangered species without a permit. Please note that issuance of permits is discretionary, negotiations can take several months, and the applicant must document that there are no feasible alternatives to the taking.

In addition, please note that Crystalline Bedrock Outcrop native plant communities (of which jurisdictional wetlands are a part) qualify as "Rare Natural Communities" under the Minnesota Wetland Conservation Act. Minnesota Rules 8420.0548, Subp. 3 states that a wetland replacement plan for activities that modify a rare natural community must be denied if the local government unit determines that the proposed activities will permanently adversely affect the natural community. If you have any questions regarding this, please contact Doug Norris, the DNR Wetlands Program Coordinator, at 651-259-5125.

- As noted above, the project area contains several native prairie remnants. In the mid-1800s, eighteen million acres of prairie covered Minnesota. Given that more than 99% of Minnesota's prairies have been destroyed and more than one-third of Minnesota's endangered, threatened, and special concern species are now dependent on the remaining small fragments of Minnesota's prairie ecosystem, we feel that all prairie remnants merit protection. We also recommend that turbines and other infrastructure be distant enough from native prairies as to allow for prairie management, such as prescribed burning.
  - Western prairie fringed orchids (*Platanthera praeclara*), a federally-listed threatened and state-listed endangered plant species, have been documented within a prairie remnant just outside of the project area. Western prairie fringed orchids usually occur in remnant native prairies and sedge meadows, but have also been observed at disturbed sites.
  - The phlox moth (*Schinia indiana*), a state-listed species of special concern, has been documented in nearby prairie remnants.
  - As mentioned above, several rare grassland birds have the potential to use the native prairie remnants within the project boundary.

Given the rarity of this native plant community, the potential for state-listed species to occur within it, and the presence of the bedrock communities embedded within the prairies, disturbance within prairie remnants should be avoided. **Please contact me if avoidance of prairie remnants is not feasible**, as animal and botanical surveys will likely be required. We will need to discuss potential contractors, survey protocol, and other requirements before any survey work is initiated.

If applicable, please send me a copy of the native prairie protection and management plan (Section III.C.6. of the Site Permit). The plan should include measures to avoid impacts to native prairie and measures to mitigate for impacts if unavoidable.

- MCBS has also identified two Seepage Meadow/Carr Tussock native plant communities in the project boundary within Sites of Biodiversity Significance. These native plant communities may provide habitat for the western prairie fringed orchid and may qualify as “Rare Natural Communities” under the Minnesota Wetland Conservation Act. **Please contact me if avoidance of these wetlands is not feasible**, as botanical surveys will likely be required.
- Minnesota’s endangered species law (*Minnesota Statutes*, section 84.0895) and associated rules (*Minnesota Rules*, part 6212.1800 to 6212.2300 and 6134) prohibit the taking of threatened or endangered species without a permit. If it is determined that the project or requisite surveys will impact any species listed as either endangered or threatened, you will need to contact Rich Baker, Minnesota Endangered Species Coordinator, at 651-259-5073 to discuss the endangered species permitting process.
- The PUC Site Permit Application should clearly document the potential impacts to the above rare features, and identify any avoidance or mitigation measures (e.g., fact sheet recommendations) that will be implemented.
- Please send me a copy of the Preconstruction Biological Preservation Survey (Section III.D.1. of the Site Permit) required by the PUC.
- Given the presence of federally-listed species (western prairie fringed orchid and Topeka shiner) within and near the project area, I recommend that you contact the U.S. Fish & Wildlife Service, at 612 725-3548, to discuss all applicable federal regulations.
- Further guidance on wind farm siting can be found at [http://www.fws.gov/midwest/Eco\\_Serv/wind/index.htm](http://www.fws.gov/midwest/Eco_Serv/wind/index.htm).

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota’s rare natural features, is maintained by the Division of Ecological Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota’s rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area.

The enclosed results include an Index Report and a Detailed Report of records in the Rare Features Database, the main database of the NHIS. To control the release of specific location information, which might result in the destruction of a rare feature, both reports are copyrighted.

The Index Report provides rare feature locations only to the nearest section, and may be reprinted, unaltered, in an environmental review document (e.g., EAW or EIS), municipal natural resource plan, or

report compiled by your company for the project listed above. If you wish to reproduce the index report for any other purpose, please contact me to request written permission. **The Detailed Report is for your personal use only as it may include specific location information that is considered nonpublic data under *Minnesota Statutes*, section 84.0872, subd. 2. If you wish to reprint or publish the Detailed Report for any purpose, please contact me to request written permission.**

This letter does not constitute review or approval by the Department of Natural Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. Additional rare features for which we have no data may be present in the project area, or there may be other natural resource concerns associated with the proposed project. For these concerns, please contact your DNR Regional Environmental Assessment Ecologist, Kevin Mixon, at 507-359-6073. Please be aware that additional site assessments or review may be required.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources. An invoice will be mailed to you under separate cover.

Sincerely,



Lisa Joyal  
Natural Heritage Review Coordinator

enc. Rare Features Database: Index Report  
Rare Features Database: Detail Report  
Rare Features Database Reports: An Explanation of Fields  
Blanding's Turtle Fact Sheet and Flyer  
USFWS Topeka Shiner Recommendations  
MCBS Guidelines  
Map

cc: Jamie Schrenzel, DNR  
Doug Norris, DNR  
Rich Baker, DNR  
Fred Harris, DNR  
Kevin Mixon, DNR  
Lisa Gelvin-Innvaer, DNR  
Richard Davis, USFWS  
Phil Delphey, USFWS

Printed April 2010  
Data valid for one year

Minnesota Natural Heritage Information System  
Index Report of records within 1 mile radius of:  
ERDB #20090193-0003 - Prairie Rose Wind Farm  
Multiple TRS  
Pipestone and Rock Counties

**Rare Features Database:**

| Element Name and Occurrence Number                                                                                                       | Federal Status | MN Status | State Rank | Global Rank | Last Observed Date                                  | EO ID # |
|------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|------------|-------------|-----------------------------------------------------|---------|
| <b>Vertebrate Animal</b>                                                                                                                 |                |           |            |             |                                                     |         |
| <u>Bartramia longicauda</u> (Upland Sandpiper) #221<br>T103N R45W S7 ; Rock County                                                       |                | NON       | S4B        | G5          | 1989-06-05                                          | 9749    |
| <u>Emydoidea blandingii</u> (Blanding's Turtle) #1064<br>T105N R45W S35, T105N R45W S25 ; Pipestone County                               |                | THR       | S2         | G4          | 1996-07-25                                          | 34467   |
| <u>Fundulus sciadicus</u> (Plains Topminnow) #19<br>T105N R45W S26, T105N R45W S27 ; Pipestone County                                    |                | SPC       | S3         | G4          | 2006-07-18                                          | 33481   |
| <u>Fundulus sciadicus</u> (Plains Topminnow) #26<br>T105N R45W S33 ; Pipestone County                                                    |                | SPC       | S3         | G4          | 2007-05-24                                          | 35215   |
| <u>Notropis topeka</u> (Topeka Shiner) #41<br>T105N R45W S26, T105N R44W S31, T105N R45W S36, T105N R45W S27, T [...] ; Pipestone County | LE             | SPC       | S3         | G3          | 2008-05-(28-30 ) or<br>2008-06-(25-26)<br>Pipestone | 22341   |
| <u>Notropis topeka</u> (Topeka Shiner) #53<br>T104N R46W S30, T104N R46W S19 ; Rock County                                               | LE             | SPC       | S3         | G3          | 2006-05-17                                          | 23297   |
| <u>Notropis topeka</u> (Topeka Shiner) #54<br>T103N R47W S2, T103N R47W S1, T103N R47W S3 ; Rock County                                  | LE             | SPC       | S3         | G3          | 2006-07-12                                          | 23296   |
| <u>Notropis topeka</u> (Topeka Shiner) #67<br>T104N R45W S32, T103N R45W S5 ; Rock County                                                | LE             | SPC       | S3         | G3          | 1999-08-17                                          | 25644   |
| <u>Notropis topeka</u> (Topeka Shiner) #68<br>T105N R45W S33 ; Pipestone County                                                          | LE             | SPC       | S3         | G3          | 2007-05-(21 or<br>22 or 23)                         | 25643   |
| <u>Notropis topeka</u> (Topeka Shiner) #69<br>T105N R45W S16, T105N R45W S21 ; Pipestone County                                          | LE             | SPC       | S3         | G3          | 1999-08-17                                          | 25642   |
| <u>Notropis topeka</u> (Topeka Shiner) #80<br>T104N R46W S5, T105N R46W S35, T104N R46W S3 ; Pipestone, Rock County                      | LE             | SPC       | S3         | G3          | 2007-05-(21 or<br>22 or 23)                         | 25714   |
| <u>Speotyto cunicularia</u> (Burrowing Owl) #4<br>T104N R45W S9 ; Rock County                                                            |                | END       | S1B,SNRM   | G4          | 1983-08-19                                          | 1448    |
| <u>Speotyto cunicularia</u> (Burrowing Owl) #18<br>T103N R45W S19, T103N R45W S7 ; Rock County                                           |                | END       | S1B,SNRM   | G4          | 1990                                                | 8681    |

Printed April 2010  
Data valid for one year

Minnesota Natural Heritage Information System  
Index Report of records within 1 mile radius of:  
ERDB #20090193-0003 - Prairie Rose Wind Farm  
Multiple TRS  
Pipestone and Rock Counties

**Rare Features Database:**

| Element Name and Occurrence Number                                                                                                           | Federal Status | MN Status | State Rank | Global Rank | Last Observed Date | EO ID # |
|----------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|------------|-------------|--------------------|---------|
| <b>Vertebrate Animal</b>                                                                                                                     |                |           |            |             |                    |         |
| <u>Speotyto cunicularia</u> (Burrowing Owl) #31<br>T105N R45W S30, T105N R45W S18, T105N R45W S16, T105N R45W S20, T [...]; Pipestone County |                | END       | S1B,SNRM   | G4          | 1988               | 29617   |
| <b>Invertebrate Animal</b>                                                                                                                   |                |           |            |             |                    |         |
| <u>Lasmigona compressa</u> (Creek Heelsplitter) #284<br>T104N R47W S26; Rock County                                                          |                | SPC       | S3         | G5          | 1999-09-PRE        | 33754   |
| <u>Oarisma powesheik</u> (Powersheik Skipper) #7<br>T104N R45W S15, T104N R45W S23, T104N R45W S22, T104N R45W S14; Rock County              |                | SPC       | S3         | G2G3        | 1967-07-10         | 2677    |
| <u>Schinia indiana</u> (Phlox Moth) #6<br>T104N R46W S16; Rock County                                                                        |                | SPC       | S3         | G2G4        | 2007-06-19         | 34716   |
| <b>Vascular Plant</b>                                                                                                                        |                |           |            |             |                    |         |
| <u>Bacopa rotundifolia</u> (Water-hyssop) #22<br>T105N R45W S32; Pipestone County                                                            |                | SPC       | S3         | G5          | 2006-09-29         | 33942   |
| <u>Bacopa rotundifolia</u> (Water-hyssop) #23<br>T103N R45W S5; Rock County                                                                  |                | SPC       | S3         | G5          | 2007-06-27         | 34615   |
| <u>Buchloe dactyloides</u> (Buffalo Grass) #24<br>T105N R46W S23, T105N R46W S22, T105N R46W S24; Pipestone County                           |                | SPC       | S3         | G4G5        | 2008-06-04         | 33941   |
| <u>Buchloe dactyloides</u> (Buffalo Grass) #27<br>T104N R46W S20, T104N R46W S34, T104N R46W S27, T104N R46W S28, T [...]; Rock County       |                | SPC       | S3         | G4G5        | 2008-06-06         | 33967   |
| <u>Buchloe dactyloides</u> (Buffalo Grass) #28<br>T103N R45W S18, T103N R45W S8, T103N R45W S7, T103N R45W S5; Rock County                   |                | SPC       | S3         | G4G5        | 2007-06-27         | 33968   |
| <u>Buchloe dactyloides</u> (Buffalo Grass) #31<br>T104N R46W S2; Rock County                                                                 |                | SPC       | S3         | G4G5        | 2008-05-22         | 34613   |
| <u>Buchloe dactyloides</u> (Buffalo Grass) #32<br>T104N R45W S10, T104N R45W S26; Rock County                                                |                | SPC       | S3         | G4G5        | 2008-06-05         | 34620   |
| <u>Buchloe dactyloides</u> (Buffalo Grass) #35<br>T103N R45W S2, T104N R45W S34; Rock County                                                 |                | SPC       | S3         | G4G5        | 2008-06-05         | 35220   |

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|-------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|------------|-------------|--------------------|---------|
| <b>Vascular Plant</b>                                                                                                         |                |           |            |             |                    |         |
| <u>Crassula aquatica</u> (Pigmyweed) #10<br>T104N R46W S16 ; Rock County                                                      |                | THR       | S2         | G5          | 2007-06-14         | 34600   |
| <u>Cyperus acuminatus</u> (Short-pointed Umbrella-sedge) #9<br>T104N R46W S28 ; Rock County                                   |                | THR       | S2         | G5          | 2006-09-25         | 33966   |
| <u>Cyperus acuminatus</u> (Short-pointed Umbrella-sedge) #10<br>T103N R45W S5 ; Rock County                                   |                | THR       | S2         | G5          | 2007-06-27         | 34618   |
| <u>Elatine triandra</u> (Three Stamenated Waterwort) #24<br>T104N R46W S34 ; Rock County                                      |                | NON       | SNR        | G5          | 2008-06-24         | 35226   |
| <u>Eleocharis wolfii</u> (Wolf's Spike-rush) #7<br>T103N R45W S7, T103N R45W S8 ; Rock County                                 |                | END       | S1         | G3G4        | 2007-06-26         | 33965   |
| <u>Heteranthera limosa</u> (Mud Plantain) #4<br>T103N R45W S5 ; Rock County                                                   |                | THR       | S2         | G5          | 2007-06-27         | 34616   |
| <u>Isoetes melanopoda</u> (Blackfoot Quillwort) #7<br>T104N R46W S28 ; Rock County                                            |                | END       | S1         | G5          | 2007-06-14         | 34608   |
| <u>Limosella aquatica</u> (Mudwort) #3<br>T103N R45W S8, T103N R45W S9, T103N R45W S22, T103N R45W S26, T [...] ; Rock County |                | SPC       | S3         | G5          | 2008-06-10         | 4906    |
| <u>Limosella aquatica</u> (Mudwort) #13<br>T104N R46W S28, T104N R46W S29 ; Rock County                                       |                | SPC       | S3         | G5          | 2007-06-14         | 34607   |
| <u>Limosella aquatica</u> (Mudwort) #14<br>T104N R46W S2 ; Rock County                                                        |                | SPC       | S3         | G5          | 2007-06-07         | 34611   |
| <u>Limosella aquatica</u> (Mudwort) #15<br>T103N R45W S5 ; Rock County                                                        |                | SPC       | S3         | G5          | 2007-06-27         | 34617   |
| <u>Limosella aquatica</u> (Mudwort) #19<br>T104N R46W S27, T104N R46W S34 ; Rock County                                       |                | SPC       | S3         | G5          | 2008-06-24         | 35213   |
| <u>Limosella aquatica</u> (Mudwort) #20<br>T103N R45W S2, T104N R45W S34 ; Rock County                                        |                | SPC       | S3         | G5          | 2008-06-05         | 35214   |

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|--------------------------------------------------------------------------------------------------------|----------------|-----------|------------|-------------|--------------------|---------|
| <b>Vascular Plant</b>                                                                                  |                |           |            |             |                    |         |
| <u>Limosella aquatica</u> (Mudwort) #21<br>T104N R45W S23 ; Rock County                                |                | SPC       | S3         | G5          | 2008-06-05         | 35216   |
| <u>Limosella aquatica</u> (Mudwort) #22<br>T104N R45W S3 ; Rock County                                 |                | SPC       | S3         | G5          | 2008-06-06         | 35217   |
| <u>Marsilea vestita</u> (Hairy Water Clover) #4<br>T103N R45W S7 ; Rock County                         |                | END       | S1         | G5          | 2008-06-26         | 34601   |
| <u>Marsilea vestita</u> (Hairy Water Clover) #5<br>T104N R46W S28 ; Rock County                        |                | END       | S1         | G5          | 2007-06-28         | 34604   |
| <u>Marsilea vestita</u> (Hairy Water Clover) #6<br>T104N R46W S2 ; Rock County                         |                | END       | S1         | G5          | 2007-06-07         | 34612   |
| <u>Marsilea vestita</u> (Hairy Water Clover) #7<br>T103N R45W S5 ; Rock County                         |                | END       | S1         | G5          | 2007-06-27         | 34619   |
| <u>Marsilea vestita</u> (Hairy Water Clover) #10<br>T103N R45W S2, T104N R45W S34 ; Rock County        |                | END       | S1         | G5          | 2008-06-05         | 35229   |
| <u>Myosotis verna</u> (Forget-me-not) #19<br>T104N R46W S2 ; Rock County                               |                | NON       | SNR        | G5          | 2008-05-22         | 35231   |
| <u>Myosotis verna</u> (Forget-me-not) #20<br>T104N R46W S27, T104N R46W S34 ; Rock County              |                | NON       | SNR        | G5          | 2008-05-22         | 35232   |
| <u>Myosotis verna</u> (Forget-me-not) #21<br>T104N R45W S23 ; Rock County                              |                | NON       | SNR        | G5          | 2008-06-05         | 35233   |
| <u>Myosotis verna</u> (Forget-me-not) #22<br>T104N R45W S34 ; Rock County                              |                | NON       | SNR        | G5          | 2008-06-05         | 35234   |
| <u>Plagiobothrys scouleri</u> (Meadow Popcorn-flower) #1<br>T103N R45W S8, T103N R45W S7 ; Rock County |                | NON       | SNR        | GNR         | 2008-06-25         | 34625   |
| <u>Plagiobothrys scouleri</u> (Meadow Popcorn-flower) #2<br>T104N R46W S28 ; Rock County               |                | NON       | SNR        | GNR         | 2007-06-14         | 34626   |

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|----------------------------------------------------------------------------------------------------------------|----------------|-----------|------------|-------------|--------------------|---------|
| <b>Vascular Plant</b>                                                                                          |                |           |            |             |                    |         |
| <u>Plagiobothrys scouleri</u> (Meadow Popcorn-flower) #3<br>T103N R45W S5 ; Rock County                        |                | NON       | SNR        | GNR         | 2007-06-27         | 34627   |
| <u>Plagiobothrys scouleri</u> (Meadow Popcorn-flower) #7<br>T104N R45W S23 ; Rock County                       |                | NON       | SNR        | GNR         | 2008-06-05         | 35239   |
| <u>Plagiobothrys scouleri</u> (Meadow Popcorn-flower) #8<br>T104N R45W S3 ; Rock County                        |                | NON       | SNR        | GNR         | 2008-06-06         | 35240   |
| <u>Plantago elongata</u> (Slender Plantain) #5<br>T104N R46W S20, T104N R46W S28, T104N R46W S29 ; Rock County |                | THR       | S2         | G4          | 2008-06-06         | 34605   |
| <u>Plantago elongata</u> (Slender Plantain) #6<br>T104N R46W S2 ; Rock County                                  |                | THR       | S2         | G4          | 2007-06-07         | 34614   |
| <u>Plantago elongata</u> (Slender Plantain) #9<br>T104N R46W S34 ; Rock County                                 |                | THR       | S2         | G4          | 2008-06-24         | 35243   |
| <u>Plantago elongata</u> (Slender Plantain) #10<br>T104N R45W S23, T104N R45W S10 ; Rock County                |                | THR       | S2         | G4          | 2008-06-05         | 35244   |
| <u>Plantago elongata</u> (Slender Plantain) #11<br>T104N R45W S34 ; Rock County                                |                | THR       | S2         | G4          | 2008-06-05         | 35245   |
| <u>Platanthera praeclara</u> (Western Prairie Fringed Orchid) #83<br>T104N R46W S16 ; Rock County              | LT             | END       | S1         | G3          | 2009-07-09         | 31490   |
| <u>Schedonnardus paniculatus</u> (Tumblegrass) #17<br>T104N R46W S29 ; Rock County                             |                | SPC       | S3         | G5          | 2007-06-14         | 34606   |

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Minnesota's endangered species law (Minnesota Statutes, section 84.0895) and associated rules (Minnesota Rules, part 6212.1800 to 6212.2300 and 6134) prohibit the taking of threatened or endangered species without a permit. For plants, taking includes digging or destroying. For animals, taking includes pursuing, capturing, or killing.

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**MCBS Native Plant Communities Database:**  
(records within or adjacent to project boundary)

GIS shapefiles of MCBS Sites of Biodiversity Significance and MCBS Native Plant Communities can be downloaded from the DNR Data Deli at <http://deli.dnr.state.mn.us>.

|                                                                                                                                                           | <u>MCBS NPC ID</u> | <u>Acres</u> | <u>State Rank</u> | <u>EO Rank</u> | <u>Last Observed Date</u> | <u>Comments</u>                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------|----------------|---------------------------|---------------------------------------|
| <b>Site of Biodiversity Significance #52 in County #59</b>                                                                                                |                    |              |                   |                |                           |                                       |
| <b><u>Native Plant Community</u></b>                                                                                                                      |                    |              |                   |                |                           |                                       |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T105N R45W Section 32 | 48845              | 0.09         | 2                 | C              | 2006                      |                                       |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T105N R45W Section 32 | 48847              | 0.11         | 2                 | C              | 2006                      | Disturbed by extremely heavy grazing. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T105N R45W Section 32 | 48848              | 2.13         | 2                 | C              | 2006                      | Disturbed by extremely heavy grazing. |
| Seepage Meadow/Carr Tussock: Sedge Subtype<br>Version 2.0 Classification: WMs83a1<br>Version 1.5 Classification:<br>T105N R45W Section 32                 | 48851              | 2.44         | 3                 | C              | 2006                      |                                       |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T105N R45W Section 32 | 48852              | 1.35         | 2                 | C              | 2006                      | Disturbed by extremely heavy grazing. |
| <b>Site of Biodiversity Significance #10 in County #67</b>                                                                                                |                    |              |                   |                |                           |                                       |
| <b><u>Native Plant Community</u></b>                                                                                                                      |                    |              |                   |                |                           |                                       |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                    | 49569              | 2.35         | 2                 | D              | 2007                      |                                       |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|---|----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                    | 49570 | 4.20 | 2 | D  | 2007 |                                                                                                                                                              |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                    | 49571 | 0.50 | 2 | D  | 2007 |                                                                                                                                                              |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                    | 49572 | 1.88 | 2 | D  | 2007 |                                                                                                                                                              |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                    | 49573 | 0.90 | 2 | D  | 2007 |                                                                                                                                                              |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 28 | 49574 | 3.87 | 2 | AB | 2007 |                                                                                                                                                              |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 28 | 49575 | 0.56 | 2 | C  | 2007 |                                                                                                                                                              |
| Basswood - Bur Oak - (Green Ash) Forest<br>Version 2.0 Classification: MHs38b<br>Version 1.5 Classification:<br>T104N R46W Section 28                     | 49580 | 0.72 | 3 | NR | 2007 | Open grown oaks in lightly grazed pasture.                                                                                                                   |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 29<br>T104N R46W Section 28           | 49581 | 0.54 | 2 | B  | 2007 | Pasture with good dominance by native species and good native flora. Managed with periodic light grazing. Contains abundant outcrops in excellent condition. |

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|---|----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 29<br>T104N R46W Section 28                                    | 49582 | 0.23 | 2 | B  | 2007 | Pasture with good dominance by native species and good native flora. Managed with periodic light grazing. Contains abundant outcrops in excellent condition. |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                                             | 49583 | 0.11 | 2 | NR | 2007 |                                                                                                                                                              |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                                             | 49584 | 0.46 | 2 | B  | 2007 | Pasture with good dominance by native species and good native flora. Managed with periodic light grazing. Contains abundant outcrops in excellent condition. |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                                             | 49593 | 2.08 | 2 | NR | 2007 |                                                                                                                                                              |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                                             | 49712 | 3.07 | 2 | D  | 2007 |                                                                                                                                                              |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 29<br>T104N R46W Section 28 | 49722 | 0.91 | 2 | C  | 2007 |                                                                                                                                                              |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 29<br>T104N R46W Section 28                                    | 50233 | 1.58 | 2 | NR | 2007 |                                                                                                                                                              |

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|---|----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 29<br>T104N R46W Section 28                                    | 50234 | 0.28 | 2 | NR | 2007 |                                                                                                                                                              |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 29<br>T104N R46W Section 28 | 50235 | 0.50 | 2 | C  | 2007 |                                                                                                                                                              |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 29<br>T104N R46W Section 28                                    | 50289 | 0.11 | 2 | B  | 2007 | Pasture with good dominance by native species and good native flora. Managed with periodic light grazing. Contains abundant outcrops in excellent condition. |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 29<br>T104N R46W Section 28                                    | 50290 | 0.27 | 2 | B  | 2007 | Pasture with good dominance by native species and good native flora. Managed with periodic light grazing. Contains abundant outcrops in excellent condition. |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                                             | 50291 | 0.07 | 2 | B  | 2007 | Pasture with good dominance by native species and good native flora. Managed with periodic light grazing. Contains abundant outcrops in excellent condition. |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                                             | 50292 | 0.17 | 2 | B  | 2007 | Pasture with good dominance by native species and good native flora. Managed with periodic light grazing. Contains abundant outcrops in excellent condition. |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                                             | 50293 | 0.05 | 2 | B  | 2007 | Pasture with good dominance by native species and good native flora. Managed with periodic light grazing. Contains abundant outcrops in excellent condition. |

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------|---|----|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 28                          | 50294 | 0.61   | 2 | A  | 2007 | Fairly undisturbed rock outcrops with high diversity including numerous pools.                                                                                      |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                                             | 50295 | 0.63   | 2 | B  | 2007 | Pasture with good dominance by native species and good native flora. Managed with periodic light grazing. Contains abundant outcrops in excellent condition.        |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 29<br>T104N R46W Section 28 | 50296 | 7.53   | 2 | A  | 2007 | Outstanding remnant of little-disturbed rock outcrops and prairie. Numerous ephemeral rainwater pools with high diversity of rock outcrop specialist plants. pools. |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                                             | 50316 | 0.40   | 2 | D  | 2007 |                                                                                                                                                                     |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                                             | 50317 | 0.90   | 2 | D  | 2007 |                                                                                                                                                                     |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                                             | 50318 | 1.03   | 2 | D  | 2007 |                                                                                                                                                                     |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 29<br>T104N R46W Section 28                                    | 50319 | 142.43 | 2 | D  | 2007 | Pasture dominated mostly by nonnatives but with abundant native grasses. Diversity very low.                                                                        |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 28                          | 50323 | 24.93  | 2 | AB | 2007 | Exposed outcrops in drainages within large pasture. Outstanding diversity of rock outcrop specialist plants. Within degraded prairie pasture.                       |

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**Site of Biodiversity Significance #68 in County #67**

**Native Plant Community**

|                                                                                                                                                                                    |       |      |   |    |      |                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|---|----|------|---------------------------------------------------------------------------------------------------------|
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 15                          | 49869 | 2.56 | 2 | NR | 2007 |                                                                                                         |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 15                          | 49870 | 0.56 | 2 | NR | 2007 |                                                                                                         |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 15                          | 49871 | 0.59 | 2 | NR | 2007 |                                                                                                         |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 10                                                             | 49890 | 1.59 | 2 | NR | 2007 | Heavily grazed pasture adjacent to rock outcrops. Native prairie component unknown. Needs field survey. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 10                          | 49891 | 0.96 | 2 | NR | 2007 |                                                                                                         |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 10<br>T104N R45W Section 11 | 49892 | 6.86 | 2 | NR | 2007 |                                                                                                         |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 10                          | 49909 | 2.28 | 2 | NR | 2007 |                                                                                                         |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 10                          | 49910 | 1.38 | 2 | NR | 2007 |                                                                                                         |

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|                                                                                                                                                                                                   |       |       |   |    |      |                                                                                                         |
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| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 10                                                                            | 49911 | 14.03 | 2 | NR | 2007 | Heavily grazed pasture adjacent to rock outcrops. Native prairie component unknown. Needs field survey. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 10                                         | 49912 | 0.71  | 2 | NR | 2007 |                                                                                                         |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 10                                         | 49913 | 0.80  | 2 | NR | 2007 |                                                                                                         |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 10                                         | 49914 | 1.02  | 2 | NR | 2007 |                                                                                                         |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 10<br>T104N R45W Section 11                | 49915 | 0.51  | 2 | NR | 2007 |                                                                                                         |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 10<br>T104N R45W Section 11<br>T104N R45W Section 15<br>T104N R45W Section 14 | 49916 | 9.19  | 2 | NR | 2007 | Heavily grazed pasture adjacent to rock outcrops. Native prairie component unknown. Needs field survey. |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 10<br>T104N R45W Section 11<br>T104N R45W Section 14                          | 49926 | 68.13 | 2 | NR | 2007 | Heavily grazed pasture adjacent to rock outcrops. Native prairie component unknown. Needs field survey. |

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| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 10<br>T104N R45W Section 11 | 49930 | 1.14 | 2 | NR | 2007 |                                                                          |
| <b>Site of Biodiversity Significance #85 in County #67</b>                                                                                                                         |       |      |   |    |      |                                                                          |
| <b><u>Native Plant Community</u></b>                                                                                                                                               |       |      |   |    |      |                                                                          |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 2                           | 49606 | 1.78 | 2 | BC | 2007 | Narrow zone of exposed rock along drainageway between cultivated fields. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 2                           | 49607 | 0.37 | 2 | BC | 2007 | Narrow zone of exposed rock along drainageway between cultivated fields. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 2                           | 49608 | 0.55 | 2 | C  | 2007 | Narrow zone of exposed rock along drainageway between cultivated fields. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 2                           | 49611 | 2.31 | 2 | C  | 2007 | Narrow zone of exposed rock along drainageway between cultivated fields. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 2                           | 49612 | 0.51 | 2 | C  | 2007 | Narrow zone of exposed rock along drainageway between cultivated fields. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 2                           | 49613 | 0.45 | 2 | C  | 2007 | Narrow zone of exposed rock along drainageway between cultivated fields. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 2                           | 49614 | 0.68 | 2 | C  | 2007 | Narrow zone of exposed rock along drainageway between cultivated fields. |

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| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 2      | 49689 | 0.71 | 2 | C  | 2007 | Narrow zone of exposed rock along drainageway between cultivated fields.                                                                                                                                    |
| <b>Site of Biodiversity Significance #86 in County #67</b>                                                                                                    |       |      |   |    |      |                                                                                                                                                                                                             |
| <b><u>Native Plant Community</u></b>                                                                                                                          |       |      |   |    |      |                                                                                                                                                                                                             |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 2      | 50210 | 2.26 | 2 | CD | 2008 |                                                                                                                                                                                                             |
| <b>Site of Biodiversity Significance #102 in County #67</b>                                                                                                   |       |      |   |    |      |                                                                                                                                                                                                             |
| <b><u>Native Plant Community</u></b>                                                                                                                          |       |      |   |    |      |                                                                                                                                                                                                             |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br><br>T104N R46W Section 27 | 50228 | 7.38 | 2 | AB | 2008 | Excellent plant diversity on shallow soils over bedrock and cracks. Growing in robust pillows of rock spikemoss. Site is highly drought-prone. Ephemeral pools are nearly absent. Trash piles at south end. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br><br>T104N R46W Section 27 | 50232 | 0.51 | 2 | AB | 2008 | Excellent plant diversity on shallow soils over bedrock and cracks. Growing in robust pillows of rock spikemoss. Site is highly drought-prone. Ephemeral pools are nearly absent. Trash piles at south end. |
| <b>Site of Biodiversity Significance #110 in County #67</b>                                                                                                   |       |      |   |    |      |                                                                                                                                                                                                             |
| <b><u>Native Plant Community</u></b>                                                                                                                          |       |      |   |    |      |                                                                                                                                                                                                             |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 32     | 50237 | 2.86 | 2 | NR | 2008 | Much exposed rocks in drainages within sloping pasture. Likely contains rare plants.                                                                                                                        |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 32     | 50238 | 1.17 | 2 | NR | 2008 | Much exposed rocks in drainages within sloping pasture. Likely contains rare plants.                                                                                                                        |

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| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 32 | 50242 | 3.90 | 2 | NR | 2008 | Much exposed rocks in drainages within sloping pasture. Likely contains rare plants.                                                                                      |
| <b>Site of Biodiversity Significance #112 in County #67</b>                                                                                               |       |      |   |    |      |                                                                                                                                                                           |
| <b><u>Native Plant Community</u></b>                                                                                                                      |       |      |   |    |      |                                                                                                                                                                           |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 34 | 50223 | 9.45 | 2 | BC | 2008 | Large area of exposed rocks along drainage in active pasture. Moderate diversity outcrop plants present. Many terrestrial spp missing, but many aquatic pool spp present. |
| <b>Site of Biodiversity Significance #189 in County #67</b>                                                                                               |       |      |   |    |      |                                                                                                                                                                           |
| <b><u>Native Plant Community</u></b>                                                                                                                      |       |      |   |    |      |                                                                                                                                                                           |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 34 | 50051 | 3.81 | 2 | BC | 2007 | outcrops in drainage in heavily grazed pasture; numerous excellent rainwater pools with numerous rare plants; other parts highly disturbed                                |
| <b>Site of Biodiversity Significance #192 in County #67</b>                                                                                               |       |      |   |    |      |                                                                                                                                                                           |
| <b><u>Native Plant Community</u></b>                                                                                                                      |       |      |   |    |      |                                                                                                                                                                           |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 10                                    | 49902 | 0.37 | 2 | NR | 2008 | Heavily grazed pasture on top of ridge                                                                                                                                    |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 10                                    | 49903 | 0.30 | 2 | NR | 2008 | Heavily grazed pasture on top of ridge                                                                                                                                    |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 10                                    | 49904 | 0.15 | 2 | NR | 2008 | Heavily grazed pasture on top of ridge                                                                                                                                    |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 10                                    | 49905 | 0.10 | 2 | NR | 2008 | Heavily grazed pasture on top of ridge                                                                                                                                    |

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| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br><br>T104N R45W Section 10 | 49906 | 4.62 | 2 | B  | 2008 | Abundant bedrock outcrops on top of bedrock ridge. Very good diversity of native rock specialist species in cracks and margins of rock exposures. Few ephemeral pools present. In horse pasture. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br><br>T104N R45W Section 10 | 49907 | 0.19 | 2 | B  | 2008 | Abundant bedrock outcrops on top of bedrock ridge. Very good diversity of native rock specialist species in cracks and margins of rock exposures. Few ephemeral pools present. In horse pasture. |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 10                                        | 49908 | 5.05 | 2 | NR | 2008 | Prairie pasture grazed by horses on top of ridge                                                                                                                                                 |
| <b>Site of Biodiversity Significance #193 in County #67</b>                                                                                                   |       |      |   |    |      |                                                                                                                                                                                                  |
| <b><u>Native Plant Community</u></b>                                                                                                                          |       |      |   |    |      |                                                                                                                                                                                                  |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 10     | 49931 | 0.89 | 2 | NR | 2007 |                                                                                                                                                                                                  |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 10                                        | 49932 | 1.37 | 2 | NR | 2007 | Sheep pasture                                                                                                                                                                                    |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R45W Section 10     | 49933 | 2.07 | 2 | NR | 2007 | Exposed ridges of Sioux quartzite on large ridge. Within sheep pasture.                                                                                                                          |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 10                                        | 49934 | 1.64 | 2 | NR | 2007 | Sheep pasture                                                                                                                                                                                    |
| <b>Site of Biodiversity Significance #194 in County #67</b>                                                                                                   |       |      |   |    |      |                                                                                                                                                                                                  |
| <b><u>Native Plant Community</u></b>                                                                                                                          |       |      |   |    |      |                                                                                                                                                                                                  |

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| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br><br>T104N R45W Section 3 | 49852 | 0.63 | 2 | C  | 2007 | Outcrops with moderate diversity in formerly grazed pasture at north end of large quartzite ridge. Surrounded by native prairie grasses and much brome.                                                                          |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br><br>T104N R45W Section 3 | 49853 | 1.38 | 2 | C  | 2007 | Outcrops with moderate diversity in formerly grazed pasture at north end of large quartzite ridge. Surrounded by native prairie grasses and much brome.                                                                          |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br><br>T104N R45W Section 3 | 49854 | 4.44 | 2 | B  | 2008 | Sioux quartzite outcrops with very good diversity in formerly grazed pasture. Many typical species are highly abundant. Several ephemeral pools. Native prairie grasses and forbs with heavy brome infestation between outcrops. |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br><br>T104N R45W Section 3                                    | 49855 | 5.80 | 2 | CD | 2007 | now hayed; grazed in past; dom by exotic and native prairie grass; 0 forbs                                                                                                                                                       |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br><br>T104N R45W Section 3 | 49856 | 0.69 | 2 | B  | 2008 | Sioux quartzite outcrops with very good diversity in formerly grazed pasture. Many typical species are highly abundant. Several ephemeral pools. Native prairie grasses and forbs with heavy brome infestation between outcrops. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br><br>T104N R45W Section 3 | 49857 | 0.29 | 2 | C  | 2008 |                                                                                                                                                                                                                                  |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br><br>T104N R45W Section 3                                    | 49858 | 0.66 | 2 | CD | 2007 | now hayed; grazed in past; dom by exotic and native prairie grass; 0 forbs                                                                                                                                                       |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|---|----|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R45W Section 3<br>T104N R45W Section 10            | 49859 | 20.05 | 2 | CD | 2007 | now hayed; grazed in past; dom by exotic and native prairie grass; 0 forbs                                                                                                   |
| Seepage Meadow/Carr Tussock: Sedge Subtype<br>Version 2.0 Classification: WMs83a1<br>Version 1.5 Classification:<br>T104N R45W Section 3                  | 49862 | 1.03  | 3 | NR | 2007 |                                                                                                                                                                              |
| <b>Site of Biodiversity Significance #211 in County #67</b>                                                                                               |       |       |   |    |      |                                                                                                                                                                              |
| <b>Native Plant Community</b>                                                                                                                             |       |       |   |    |      |                                                                                                                                                                              |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 29 | 49592 | 1.76  | 2 | CD | 2007 | Abundant outcrops on long ridge. Highly disturbed by heavy grazing.                                                                                                          |
| <b>Site of Biodiversity Significance #212 in County #67</b>                                                                                               |       |       |   |    |      |                                                                                                                                                                              |
| <b>Native Plant Community</b>                                                                                                                             |       |       |   |    |      |                                                                                                                                                                              |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 28 | 49576 | 1.20  | 2 | B  | 2007 | Exposed outcrops in drainages within large pasture. Good native diversity on outcrops. Degraded prairie in pasture is dominated mostly by tame grasses but has some natives. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 28 | 49577 | 1.10  | 2 | B  | 2007 | Exposed outcrops in drainages within large pasture. Good native diversity on outcrops. Degraded prairie in pasture is dominated mostly by tame grasses but has some natives. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 28 | 49578 | 0.66  | 2 | B  | 2007 | Exposed outcrops in drainages within large pasture. Good native diversity on outcrops. Degraded prairie in pasture is dominated mostly by tame grasses but has some natives. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 28 | 49579 | 1.64  | 2 | B  | 2007 | Exposed outcrops in drainages within large pasture. Good native diversity on outcrops. Degraded prairie in pasture is dominated mostly by tame grasses but has some natives. |

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| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 28 | 49726 | 0.58   | 2 | AB | 2007 | Exposed outcrops in drainages within large pasture. Good native diversity on outcrops. Degraded prairie in pasture is dominated mostly by tame grasses but has some natives. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 28 | 49727 | 3.38   | 2 | AB | 2007 | Exposed outcrops in drainages within large pasture. Good native diversity on outcrops. Degraded prairie in pasture is dominated mostly by tame grasses but has some natives. |
| Mesic Prairie (Southern)<br>Version 2.0 Classification: UPs23a<br>Version 1.5 Classification:<br>T104N R46W Section 28                                    | 49728 | 107.84 | 2 | D  | 2007 | Exposed outcrops in drainages within large pasture. Good native diversity on outcrops. Degraded prairie in pasture is dominated mostly by tame grasses but has some natives. |
| Crystalline Bedrock Outcrop (Prairie): Sioux Quartzite Sub<br>Version 2.0 Classification: ROs12a2<br>Version 1.5 Classification:<br>T104N R46W Section 28 | 50322 | 0.14   | 2 | AB | 2007 | Extension of exposed outcrops in drainageway.                                                                                                                                |



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Twin Cities Field Office  
4101 American Blvd E.  
Bloomington, Minnesota 55425-1665

April 21, 2010

Mike DeRuyter  
HDR Engineering, Inc  
701 Xenia Avenue South  
Minneapolis, Minnesota 55416

Re: Prairie Rose Wind Farm Review, Rock and Pipestone Counties, Minnesota  
FWS TAILS #32410-2009-FA-0117

Dear Mr. DeRuyter:

This is in response to your March 10, 2010, letter requesting our review of the expanded Prairie Rose Wind Farm in Rock and Pipestone Counties, Minnesota. Also requested in your letter was the review of the proposed 115 kV High Voltage Transmission Line (HVTL), which will extend for six total miles, two miles within the proposed Prairie Rose Wind Farm project boundary and four miles to the west of the proposed project boundary. The proposed project includes the installation of wind turbines, and associated infrastructure including roads, transmission lines, and staging areas. The original macro-siting project boundary sent to our office in July 2009 covered a total area of approximately 14,185 acres, and the revised project boundary sent to our office on March 10, 2010, covers a total area of approximately 35,959 acres.

The revised boundary of the Prairie Rose Wind Project is located in all or parts of sections 1, 2, 11-16, 21-28, and 33-35, Township 104 North, Range 46 West; sections 2-10, 15-22, and 27-34, Township 104 North, Range 45 West; and sections 1-4 and 9-12, Township 103 North, Range 46 West in Rock County, Minnesota. It is also located in sections 20 and 29-34, Township 105 North, Range 45 West, and section 36, Township 105 North, Range 46 West, Pipestone County, Minnesota. The proposed HVTL corridor is sections 27-34, Township 104 North, Range 46 West and sections 25, 26, 35 and 36, Township 104 North, Range 47 West, Rock County, Minnesota.

Comments and recommendations provided within this letter are made in addition to our October 2, 2009 letter, and this letter should not be viewed as a replacement to the Service's initial review and comment.

The following comments are being provided pursuant to the Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act, and Fish and

Wildlife Act of 1956. This information is being provided to assist you in making an informed decision regarding wildlife issues, site selection, project design, and compliance with applicable laws.

The Service has been in contact with the DNR as they have developed recommended survey protocols and site evaluations that will satisfy both state and federal wildlife statutes, and this letter describes these measures, in part. We appreciate your early coordination with both the Service and the DNR, and recommend continued collaboration on this project to ensure wildlife and habitat issues are fully and appropriately addressed.

The Fish and Wildlife Service supports the development of wind power as an alternative energy source. However, wind farms can have negative impacts on wildlife and their habitats if not sited and designed with potential wildlife and habitat impacts in mind. Selection of the best sites for turbine placement is enhanced by ruling out sites with known, high concentrations of birds and/or bats passing within the rotor-swept area of the turbines or where the effects of habitat fragmentation will be detrimental. In support of wind power generation as a wildlife-friendly, renewable source of power, development sites with comparatively low bird, bat and other wildlife values would be preferable and would have relatively lower impacts on wildlife.

The Service recommends that impacts to streams and wetlands be avoided, and buffers surrounding these systems be preserved. Streams and wetlands provide valuable habitat for fish and wildlife resources, and the filtering capacity of wetlands helps to improve water quality. Naturally-vegetated buffers surrounding these systems are also important in preserving their wildlife-habitat and water quality-enhancement properties. Furthermore, forested riparian systems (wooded areas adjacent to streams) provide important stopover habitat for birds migrating through the region.

The proposed activities do not constitute a water-dependent activity, as described in the Section 404(b)(1) guidelines, 40 CFR 230.10. Therefore, practicable alternatives that do not impact aquatic sites are presumed to be available, unless clearly demonstrated otherwise. Therefore, before applying for a Section 404 permit, the client should closely evaluate all project alternatives that do not affect streams or wetlands, and if possible, select an alternative that avoids impacts to the aquatic resource. If water resources will be impacted, the St. Paul District of the Corps of Engineers should be contacted for possible need of a Section 404 permit.

### **Federally-listed Threatened, Endangered, and Candidate Species**

Because of the potential for wind power projects to impact federally-listed species, they are subject to the Endangered Species Act (16 U.S.C. 1531-1544) section 9 provisions governing "take," similar to any other development project. "Take" incidental to a lawful activity may be authorized through the initiation of formal consultation, if a Federal agency is involved. If a federal agency, federal funding, or a federal permit are not involved in the project, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA may be obtained upon completion of a satisfactory habitat conservation plan for the listed species. However, there is no mechanism for authorizing incidental take after the project is constructed and operational.

The Topeka shiner (*Notropis topeka*) is a federally-endangered fish species found in Rock and Pipestone Counties. Due to the revised and expanded proposed project boundary three designated Topeka shiner Critical Habitat streams are located within the proposed project boundary. An intermittent/perennial stream (tributary to Poplar Creek) designated Critical Habitat, is within sections 32 and 33, T105N, R45W, Pipestone County. An intermittent stream (Beaver Creek) designated Critical Habitat, is within sections 20, 21, 28, 29 and 32, T104N, R45W, Rock County. An intermittent stream (tributary to Beaver Creek) designated Critical Habitat, is within section 1, T103N, R46W and section 36, T104N, R46W, Rock County.

Impacts to these designated Critical Habitat streams and all their tributaries, intermittent and perennial, must be avoided during project construction and operation. Potential impacts to these streams could include but are not limited to increased sedimentation or nutrient loading caused by increased soil erosion, reduced surface water quantity input due to access road or turbine pad construction in close proximity to the stream, stream crossing constructed for equipment mobilization, and potential stream channel disturbance caused by underground transmission or utility line crossings. The Service must be notified if any type of site preparation, construction, or land clearing work will be completed within 300 feet of all streams (intermittent and perennial) within or adjacent to the project area.

### **Migratory Birds**

The Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA) implements four treaties that provide for international protection of migratory birds. The MBTA prohibits taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. Bald and golden eagles are afforded additional legal protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). Unlike the Endangered Species Act, neither the MBTA nor its implementing regulations at 50 CFR Part 21, provide for permitting of “incidental take” of migratory birds.

Monitoring should be conducted to assess the daily movement patterns of any species of raptor whose nest (including ground or burrow nesting) is located within the proposed project site or within two miles of the proposed project site. During the incubation and rearing stage, the location of adult birds should be tracked for at least 4 hours twice per week until consistent activity patterns are established. These monitoring dates will be determined based upon identified species within two miles of the project boundary. Alternate monitoring strategies that assess the degree to which nesting birds utilize the proposed project site will be considered. Information collected will be used to document how frequently the birds enter the proposed project site, and this information can be utilized during micro-siting to minimize substantial risks to birds within close proximity of the project site.

There are large tracts of grasslands along the eastern and western edges of the proposed project boundary. The Service’s recommends additional avian surveys be completed in these areas, and the survey data should be used to determine turbine placement in a fashion that will result in the least amount of disturbance to avian species in the area.

The Service's Office of Law Enforcement serves its mission to protect federal trust wildlife species in part by actively monitoring industries known to negatively impact wildlife, and assessing their compliance with Federal law. These industries include oil/gas production sites, cyanide heap/leach mining operations, industrial waste water sites, and wind power sites. There is no threshold as to the number of birds incidentally killed by wind power sites, or other industry, past which the Service will seek to initiate enforcement action. However, the Service is less likely to prioritize enforcement action against a site operator that is cooperative in seeking and implementing measures to mitigate take of protected wildlife.

### **Migratory Bird Concentration Areas and Conservation Lands**

The Touch the Sky Prairie National Wildlife Refuge was approximately two miles south of the originally proposed Prairie Rose Wind Project boundary. Due to the revisions and expansion of the proposed boundary the project is now within a ½ mile of Touch the Sky Prairie National Wildlife Refuge. The Service strongly recommends additional avian surveys in the vicinity of Touch the Sky Prairie National Wildlife Refuge.

We also recommend that no turbines be located within ¼ mile of Conservation Reserve Program, Wetland Reserve Program, or other similar federally- or state-funded restoration projects.

### **Interim Service Guidelines**

Research into the actual causes of bat and bird collisions with wind turbines is limited. To assist Service field staffs in review of wind farm proposals, as well as aid wind energy companies in developing best practices for siting and monitoring of wind farms, the Service published *Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines* (2003). We encourage any company/licensee proposing a new wind farm to consider the following excerpted suggestions from the guidelines in an effort to minimize impacts to migratory birds and bats.

- 1) Pre-development evaluations of potential wind farm sites to be conducted by a team of Federal and/or State agency wildlife professionals with no vested interest in potential sites;
- 2) Rank potential sites by risk to wildlife;
- 3) Avoid placing turbines in documented locations of federally-listed species;
- 4) Avoid locating turbines in known bird flyways or migration pathways, or near areas of high bird concentrations (i.e., rookeries, leks, refuges, riparian corridors, etc.);
- 5) Avoid locating turbines near known bat hibernation, breeding, or maternity colonies, in migration corridors, or in flight paths between colonies and feeding areas;

- 6) Configure turbine arrays to avoid potential avian mortality where feasible. Implement storm water management practices that do not create attractions for birds, and maintain contiguous habitat for area-sensitive species;
- 7) Avoid fragmenting large, contiguous tracts of wildlife habitat;
- 8) Use tubular supports with pointed tops rather than lattice supports to minimize bird perching and nesting opportunities;
- 9) If taller turbines (top of rotor-swept area is greater than 199 feet above ground level) require lights for aviation safety, the minimum amount of lighting specified by the Federal Aviation Administration (FAA) should be used. Unless otherwise requested by the FAA, only white strobe lights should be used at night, and should be of the minimum intensity and frequency of flashes allowable. Red lights should not be used, as they appear to attract night-migrating birds at a higher rate than white lights;
- 10) Adjust tower height to reduce risk of strikes in areas of high risk for wildlife.

The full text of the guidelines is available at <http://www.fws.gov/habitatconservation/wind.pdf>. The Service believes that implementing these guidelines may help reduce mortality caused by wind turbines. We encourage you to consider these guidelines in the planning and design of the project. We particularly encourage placement of turbines away from any large wetland, stream corridor, or wooded areas, and avoiding placing turbines between nearby habitat blocks. If this proposal is to move forward, we strongly recommend that on-the-ground surveys using radar, infrared, and/or acoustic monitoring be conducted during the peak of spring and fall bird migrations and during the breeding season over a period of several years (consistent with the Service's *Interim Guidelines, op. cit.*) to identify breeding and feeding areas and migration stopover sites. Observations made from greater than ¼ mile of target areas are likely to be insufficient to accurately assess bird use of the landscape, particularly if the observer is moving. Generalized ground research survey protocols, such as those followed in the Waterfowl Breeding Population and Habitat Survey (Smith 1995) and the North American Breeding Bird Survey (Pardieck 2001), among others, often do not accept observations made at greater than ¼ mile from the observer due in part to high probabilities of missed detections (R. Russell, personal communication). Furthermore, spring and fall raptor migration surveys may be necessary, as will surveys to document movement patterns of bald eagles that may use the project area or surrounding habitat. We request that any on-the-ground survey protocols be consistent with the Service's *Interim Guidelines* (2003), and be coordinated with this office and with the Minnesota Department of Natural Resources prior to implementation.

### **Pre-construction Surveys**

The Service recommends that Geronimo Wind Energy and their consultants conduct rigorous assessments of bird and bat use of the area before proceeding with project design (i.e., preliminary siting of specific turbines). We strongly recommend development of a protocol for bird/bat surveys at this site. We encourage Geronimo Wind Energy to maintain consistency with

other wind farm survey protocols, thus allowing us to compare results with other wind farm survey data. These comparisons will potentially provide valuable information that can be applied in future wind farm/turbine macro- and micro-siting.

In addition to on-the-ground (point or transect) surveys, we recommend that the assessments include the use of mobile, horizontally- and vertically-scanning radar to study the direction, altitude, and numbers of flying animals moving through and within the project area during the fall and spring migration of birds and bats, and the breeding period of birds in the area. We recommend that radar be employed for 24 hours a day, 7 days a week during migration, and at a minimum from dawn to dusk during the breeding period. Radar studies are providing useful information in evaluating bird and bat activity at wind generation sites in Wisconsin, Vermont, Massachusetts and other locations. The use of radar coupled with ground-truthing (surveys) can provide a more complete assessment of bird and bat use of a potential wind project area than point counts or other traditional survey methods alone. Such information could inform project design and minimize potential mortality associated with the project.

We recommend installation of two AnaBat SDI detectors per meteorological tower to be used within the project area, and recording of bat echolocation calls from May 1 - November 15, 2010. One AnaBat detector should be mounted at 5 meters above ground, and the other should be mounted as close to the rotor-swept area as possible. The AnaBat's sensitivity should be adjusted to detect a calibration tone at 20 meters. AnaBat units must monitor from 0.5 hour before sunset until 0.5 hour after sunrise. This will help to gauge bat activity and to some degree, to determine bat species/guild composition within the project area during spring and fall migration and the maternity season.

### **Post-construction Surveys**

The Service recommends the project be monitored post-construction to determine impacts to migratory birds and bats. A specific post-construction monitoring plan should be prepared and reviewed by the Service and should include a scientifically robust, peer reviewed methodology of mortality surveys. Generally the Service recommends that surveys be conducted for a minimum of three years following construction to assess impacts to birds and bats. The duration of post construction surveys is project specific and will be determined based upon pre construction survey results. We also recommend that the post-construction mortality studies be conducted by an independent third party contractor with expertise in bird/bat mortality monitoring. Results of mortality surveys and other forms of monitoring should be used to adjust operations to reduce mortality if necessary and feasible, as well as improve design and siting of future wind generation facilities. **The Developer or its contractor should provide to this office each year, no later than December 31, copies of annual bird/bat mortality monitoring reports.**

### **Infrastructure Considerations**

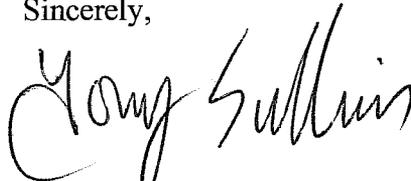
Development of transmission infrastructure associated with wind facilities also poses risks to wildlife. These risks include potential avian mortality, particularly electrocution of raptors

(hawks, eagles, kites, falcons, and owls), that could occur when they attempt to perch on uninsulated or unguarded power poles. Recently published information about which types of power line poles and associated hardware (e.g., wires, transformers and conductors) pose the greatest danger of electrocution to raptors and what modifications can be made to reduce this threat can be found on the internet at <http://www.aplic.org/>.

Although it does appear that the proposed 115 HVTL will be placed adjacent to an existing County Highway the potential for avian strike still exists. At a minimum the Service recommends that bird diverters be placed on the HVTL where it crosses the Split Rock Creek, and where the line will bisect a grassland complex in sections 28, 29, 32 and 33, T104N, R46W.

Thank you for the opportunity to provide comments on this proposed project. Please contact me at (612) 725-3548, ext. 2201, or Rich Davis, Fish and Wildlife Biologist, at (612) 725-3548, ext. 2214, if we can be of further assistance.

Sincerely,

A handwritten signature in black ink that reads "Tony Sullins". The signature is written in a cursive, flowing style.

Tony Sullins  
Field Supervisor

cc: Patrick Smith, Geronimo Wind Energy, LLC  
Kevin Mixon, MN DNR  
Barry Christenson, USFWS, Windom WMD