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July 22, 2011

Dr. Burl W. Haar
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

RE: In the Matter of the Application of Prairie Rose Wind, LLC for a Large Wind Energy Conversion System Site Permit for the 200 MW Prairie Rose Wind Farm in Rock and Pipestone Counties. (Docket No. IP-6843/WS-10-425)

Dear Dr. Haar:

Attached are the Comments and Recommendations of the Energy Facility Permitting (EFP) staff in the question: “Should the Commission grant a site permit to Prairie Rose Wind, LLC for the 200 MW Prairie Rose Wind Farm?”

The Petition was filed on May 13, 2010 by:

Christina K. Brusven (# 388226)
FREDRIKSON & BYRON, P.A.
200 South Sixth Street, Suite 4000
Minneapolis, MN 55402

EFP staff recommends granting a site permit with conditions as attached and is available to answer any questions the Commission may have.

Sincerely,

A handwritten signature in black ink, appearing to read 'David E. Birkholz', written in a cursive style.

David E. Birkholz
State Permit Manager

Attachments

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BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

**COMMENTS AND RECOMMENDATIONS OF THE
MINNESOTA DEPARTMENT OF COMMERCE
ENERGY FACILITY PERMITTING STAFF**

DOCKET NO. IP-6843/WS-10-425

Meeting Date: August 4, 2011Agenda Item _____

Company: Prairie Rose Wind, LLC
Docket No. IP-6843/WS-10-425
In the Matter of the Application of Prairie Rose Wind, LLC for a Site Permit for a
200 Megawatt Large Wind Energy Conversion System in Rock and Pipestone
Counties

Issue(s): Should the Commission grant a site permit to Prairie Rose Wind, LLC for the 200
MW Prairie Rose Wind Farm

EFP Staff: David E. Birkholz651-296-2878

Relevant Documents

Site Permit Application for a Large Wind Energy Conversion System May 13, 2010
DNR Comment letter on the Draft Site Permit August 17, 2010
Mn/DOT Comment Letter on the Draft Site Permit August 17, 2010
Geronimo Wind Energy Burrowing Owl Survey Report August 26, 2010
Geronimo Wind Energy Summary of Wildlife Evaluations September 30, 2010
Request for a Change in Project Size February 11, 2011
ALJ Summary of Public Testimony and Comments March 3, 2011
DNR Comment Letter on the Revised Draft Site Permit May 27, 2011

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The enclosed materials are the work papers of the Energy Facility Permitting staff (EFP). They are intended for use by the Public Utilities Commission and are based on information already in the record unless otherwise noted.

Documents Attached

1. Proposed Findings of Fact, Conclusions of Law, and Order
2. Proposed Exhibit List
3. Proposed Site Permit with Layout Maps

See eDocket filings (10-425) at <https://www.edockets.state.mn.us/EFiling/search.jsp>, or the Commission website at: <http://www.energyfacilities.puc.state.mn.us/Docket.html?Id=28286> for project related documents.

Statement of the Issues

Should the Commission grant a site permit to Prairie Rose Wind, LLC for the 200 MW Prairie Rose Wind Farm?

Introduction and Background

Prairie Rose Wind, LLC has submitted a site permit application to construct the 101 MW Prairie Rose Wind Farm in Rock and Pipestone counties. Prairie Rose Wind, LLC is a wholly owned subsidiary of Geronimo Wind Energy.

Project Location

The proposed site is located west of Hardwick and south and east of Jasper in Rock and Pipestone counties. The project is proposed to be constructed in Denver, Rose Dell and Spring Water townships in Rock County and Elmer and Eden townships in Pipestone County (see attached maps). The Project Boundary encompasses approximately 35,335 acres, of which approximately 14,000 acres are under site control.

Project Description

The project for which a permit is being requested includes the following:

1. A wind turbine layout consisting of up to 124 turbines, depending on turbine specifications; the application describes the possible use of General Electric 1.6 MW or Vestas 1.8 MW wind turbines;
2. Associated facilities, including gravel access roads, an electrical collection system, permanent meteorological towers, one step-up substation, a Sonic (SODAR) or Light (LIDAR) Detection and Ranging unit and an O&M building.

The project has an associated 24-mile 115 kV transmission system, with up to seven miles in Minnesota, which would connect to the Split Rock Substation near Brandon, South Dakota (see IP-6838/TL-10-134). An application for an HVTL route permit was filed on March 10, 2011, and accepted by the Commission on April 15, 2011.

The Applicant's goal is to complete the construction of the project and achieve commercial operation between the third calendar quarter of 2011 and the first calendar quarter of 2012.

Regulatory Process and Procedures

Commission review of an LWECS application entails two separate processes: the Certificate of Need (CN) and the site permit. Pursuant to Minn. Rule 7854.0500, subp. 2A, the Commission shall not issue a site permit for which a CN is required until the CN has been issued by the Commission. The following provides an overview of the CN and site permit processes to date.

Certificate of Need Process

A CN is required for the Prairie Rose Wind Farm because, as a 200 MW LWECS, it qualifies as a "large energy facility" as defined by Minnesota Statutes section 216B.2421, subdivision 2(1). The Applicant applied for a CN (IP-6838/CN-10-80) on May 13, 2010. The Commission accepted written comments on the merits of the proposed project, particularly whether there are any contested issues of fact with respect to the representations made in the Application. Initial comments were accepted through Friday, September 17, 2010, and replies were accepted through Friday, October 15, 2010.

As part of the CN process, public notices were issued and EFP staff conducted a public scoping and information meeting in Jasper on July 27, 2010. A Scoping Decision was issued by the DOC Deputy Commissioner on August 20, 2010. Staff released an Environmental Report (ER) evaluating the human and environmental impacts of the proposed project on November 15, 2011. A public hearing for the CN was held by the Office of Administrative Hearings in Jasper on December 28, 2010.

Site Permit Process

A site permit from the Commission is required to construct an LWECS, which is any combination of wind turbines and associated facilities with the capacity to generate five megawatts or more of electricity. The Minnesota Wind Siting Act is found at Minnesota Statutes Chapter 216F. The rules to implement the permitting requirements for LWECS are in Minn. Rule 7854. Prairie Rose Wind, LLC filed a site permit application for the wind farm with the Commission on May 13, 2010. The Commission issued a Draft Permit with its October 28, 2010, Order. A public meeting on the Draft Permit was held in conjunction with the CN public hearing on December 28, 2010.

Request for Size Change

On February 11, 2011, the Applicant requested a change in project size from 101 MW to 200 MW, siting "recent changes in market conditions and available turbine technology have created opportunities for Prairie Rose to expand its current project to up to 200 MW in the 2011-2012 timeframe." The proposed change requires some alterations to the general project as described by Prairie Rose in its Site Permit and CN applications. The size change request addressed a number of these changes and the impact of the changes on the environmental analysis in the original applications. A public comment period on the Certificate of Need was open through June 30, 2011.

The Commission issued a revised Draft Site Permit on March 28, 2011, with a comment period open through May 27, 2011.

Standard for Permit Issuance

The test for issuing a site permit for an LWECS is to determine whether a project is compatible with environmental preservation, sustainable development, and the efficient use of resources. Pursuant to Minnesota Statute 216F.02, certain sections of Minnesota Statutes 216E (Minnesota Power Plant Siting Act) apply to siting LWECS, including 216E.03, subdivision 7 (considerations in designating sites and routes). Minnesota Statutes section 216F.04 (d) allows the Commission to place conditions in LWECS permits.

EFP Staff Analysis

EFP staff addresses oral and written comments below in addition to the proposed findings.

Minnesota Department of Transportation (Mn/DOT)

In comments on the draft site permit, Mn/DOT stated, “Any wind farm construction work, including delivery or storage of structures, materials or equipment that may affect Mn/DOT right-of-way is of concern such that Mn/DOT should be involved in planning and coordinating such activities. The site permit should include language specifying that the Permittee shall obtain all relevant permits from road authorities relating to the transport of oversize materials and equipment related to the project over public roads, as well as installation of facilities that may be proposed to occupy portions of public road rights-of-way.”¹

EFP Response: The Permit provides that the Permittee must make satisfactory arrangements with the appropriate state, county, or township governmental body having jurisdiction over roads to be used for construction of the Project for maintenance and repair of roads that will be subject to extra wear and tear due to transportation of equipment and Project components.² The permit also states, “The Permittee shall be responsible for acquiring any other federal, state, or local permits or authorizations that may be required to construct and operate a LWECS within the authorized site.”³

Minnesota Department of Natural Resources (DNR)

DNR provided comments especially regarding the need to survey for the endangered burrowing owl and to avoid impact to native prairie areas.^{4 5}

Burrowing Owls: The DNR requested the Applicant work with them to develop a protocol and survey for evidence of burrowing owls or potential habitat. DNR also requested the permit explicitly include requirements for further survey of burrowing owls at potential areas of disturbance.

¹ Minnesota Department of Transportation letter from Stacy Kotch, August 17, 2010

² Site Permit Section 7.8.1

³ Site Permit Section 10.5

⁴ Minnesota Department of Natural Resources letter from Jamie Schrenzel, August 17, 2010

⁵ Minnesota Department of Natural Resources letter from Jamie Schrenzel, May 27, 2011

EFP Response: The applicants surveyed for burrowing owls in 2010, without finding evidence of the owls.⁶ The Applicants worked with DNR on survey protocols for 2011. The protocols are designed to expand the areas surveyed with any expansion of the Project, so the request for size change did not require a change in the protocol.

Native Prairie: The DNR made comments throughout the proceeding to avoid impact to native prairie areas and areas of high biological significance. They have additionally cautioned for attention to this issue not only in turbine and facilities siting, but also during construction.

EFP Response: The draft site permit included a special condition that avoids all native prairies and rock outcroppings by siting project infrastructure in upland cropped areas, and in particular avoids all “Sites of Biodiversity Significance” ranked “Outstanding,” “High,” or “Medium,” and to the extent practicable, sites ranked as “Low” or “Below.”⁷ Additionally, the draft site permit has been edited to include language that, “Construction activities, as defined in Minnesota Statutes section 216E.01, shall not impact native prairie unless addressed in a Prairie Protection and Management Plan.”⁸

Project Area Residents

Over the course of project comment periods, very few residents offered oral or written comments. The issues that were raised by the public include impacts of setbacks, EMF, noise and shadow flicker.

EFP Response: These issues are addressed in the Findings of Fact. Finding 24 addresses setbacks, Findings 58-60 address EMF, Findings 44–47 address noise and Findings 48–51 address shadow flicker.

Based on the record of this proceeding, EFP staff concludes that the Prairie Rose Wind Farm meets the procedural requirements and the considerations and standards for issuance of a site permit identified in Minnesota Statutes and Rules. The Site Permit Application and the record have been reviewed pursuant to the requirements of Minnesota Statutes chapter 216F and Minnesota Rules chapter 7854.

In accordance with Minnesota Rule 7854.0500, subp. 2, the Commission may not issue a site permit for an LWECs that requires a certificate of need until an applicant obtains a certificate of need from the Commission.

EFP staff has prepared for Commission consideration proposed Findings of Fact, Conclusions of Law and Order, an Exhibit List, and a proposed Site Permit for the 200 MW Prairie Rose Wind Farm.

⁶ Geronimo Wind Energy Burrowing Owl Survey Report, August 26, 2010

⁷ Site Permit, Section 13.1

⁸ Site Permit, Section 4.7

Proposed Findings of Fact

The attached proposed Findings address the procedural aspects the process followed, describe the Project, and address the environmental and other considerations of the Project. The proposed Findings of Fact reflect some findings that were also made for other LWECS projects. The site considerations addressed in the proposed Findings of Fact (such as human settlement, public health and safety, noise, recreational resources, community benefits, effects on land based economies, archaeological and historical resources, wildlife, and surface water) track the factors described in the Commission's rules for other types of power plants that are pertinent to wind projects.

Exhibit List

EFP staff has prepared and attached an exhibit list of documents that are part of the record in this permit proceeding. See attached document in Commissioner's packet.

Proposed Site Permit

The EFP Staff has prepared a site permit for the Commission's consideration. See the attached document in the Commissioner's packet. The conditions in this proposed Site Permit are consistent with conditions included in other LWECS site permits issued by the Commission. The proposed site permit is different from the draft site permit issued by the Commission. The site permit was modified to add conditions consistent with the findings for this Project.

Commission Decision Options**A. Prairie Rose Wind Farm Findings of Fact and Conclusions**

1. Adopt the attached Findings of Fact, Conclusions of Law and Order proposed for the 200 MW Prairie Rose Wind Farm and associated facilities in Rock and Pipestone counties.
2. Amend the Findings of Fact and Conclusions of Law as deemed appropriate.
3. Make some other decision deemed more appropriate.

B. LWECS Site Permit for the 200 MW Prairie Rose Wind Farm

1. Issue the proposed LWECS Site Permit for the Prairie Rose Wind Farm to Prairie Rose Wind, LLC.
2. Amend the proposed LWECS Site Permit as deemed appropriate.
3. Deny the LWECS Site Permit.
4. Make some other decision deemed more appropriate.

EFP Staff Recommendation: Staff recommends options A1 and B1.

**STATE OF MINNESOTA
PUBLIC UTILITIES COMMISSION**

Ellen Anderson
Phyllis Reha
David Boyd
J. Dennis O'Brien
Betsy Wergin

Chair
Vice Chair
Commissioner
Commissioner
Commissioner

In the Matter of the Application of
Prairie Rose Wind, LLC for a Site Permit
for a 200 Megawatt
Large Wind Energy Conversion
System in Rock and Pipestone Counties

ISSUE DATE: August __, 2011

DOCKET NO. IP-6843/WS-10-425

**FINDINGS OF FACT, CONCLUSIONS
OF LAW AND ORDER, ISSUING A
SITE PERMIT TO PRAIRIE ROSE
WIND, LLC FOR THE PRAIRIE
ROSE WIND FARM**

The above-entitled matter came before the Minnesota Public Utilities Commission (Commission) on July 14, 2011, pursuant to an application submitted by Prairie Rose Wind, LLC (Applicant or Prairie Rose) for a site permit to construct, operate, maintain, and manage the Prairie Rose Wind Farm (Project), a 200 Megawatt (MW) nameplate capacity Large Wind Energy Conversion System (LWECS), including associated facilities, in Rock and Pipestone counties.

All of the proposed wind turbines and associated facilities will be located in Rock and Pipestone counties. Associated facilities will include pad mounted step-up transformers for each wind turbine, access roads, an electrical collection and feeder system, an operations and maintenance building, and two permanent meteorological towers. The energy from the proposed 200 MW Project will be delivered to the grid from one project substation along Co 7 via a new 115 kV transmission line, which is being reviewed in Commission Docket No. IP-6838/TL-10-134. The interconnection to the grid will ultimately occur at the Split Rock Substation near Brandon, South Dakota.

STATEMENT OF ISSUE

Should the Applicant be granted a site permit under Minnesota Statutes section 216F.04 to construct a 200 MW Large Wind Energy Conversion System in Rock and Pipestone counties?

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Based upon the record created in this proceeding, the Public Utilities Commission makes the following:

FINDINGS OF FACT

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Background and Procedure

1. On May 13, 2010, Prairie Rose Wind, LLC (Prairie Rose) filed an application with the Public Utilities Commission for up to 101 megawatts of nameplate wind power generating capacity identified as the Prairie Rose Wind Farm in Rock and Pipestone counties.¹
2. Prairie Rose Wind, LLC is a wholly owned subsidiary of Geronimo Wind Energy.²
3. Department of Commerce Energy Facility Permitting (EFP) staff reviewed and recommended that the application complied with the application requirements of Minnesota Rule 7854.0500 provided that the Applicant file revised maps containing supplemental information.³
4. On June 22, 2010, a Commission Order was issued accepting the application for the Prairie Rose Wind Farm providing that the Applicant submit the revised application maps containing the information requested by EFP.⁴
5. On June 23, 2010, the Applicant submitted the revised application maps.⁵
6. On July 2, 2010, the Applicant distributed copies of the site permit application to government agencies and landowners within the Project area.⁶ The application distribution met the requirements of Minnesota Rule 7854.0600, subpart 3. County officials and all township boards and city councils within the project area were served.
7. On July 7, 2010, EFP staff issued a notice of application acceptance and opportunity to comment on the permit application and issues to consider in the development of a draft site permit.⁷ The published notice provided: a) description of the proposed project; b) deadline for public comments on the application; c) description of the site permit review process; and d) identification of the public advisor. The notice published met the requirements of Minnesota Rule 7854.0600, subpart 2.
8. The application acceptance notice was published in the *Pipestone County Star* and the *Rock County Star Herald* on July 15, 2010.⁸
9. Approximately 80 people attended a public meeting on July 27, 2010, in Jasper, Minnesota, held in conjunction with the Environmental Report Scoping Meeting. An oral record of the meeting was posted on eDockets.⁹

¹ Exhibit 1, Site Permit Application, May 13, 2010

² Exhibit 1 at 1-5

³ Exhibit 2 at 5

⁴ Exhibit 2

⁵ Exhibit 3

⁶ Exhibit 4

⁷ Exhibit 5a

⁸ Exhibit 5b

⁹ Exhibit 6

10. Public comments on the site permit application and issues to consider in the development of a draft site permit were accepted until August 17, 2010. EFP staff received ten comments, including comments from the Applicant, the Department of Natural Resources and the Department of Transportation.¹⁰
11. On October 13, 2010, EFP staff recommended that a draft site permit be issued and distributed for public comment. On October 28, 2010, a Commission Order made a preliminary determination that a draft site permit may be issued.¹¹
12. On December 14, 2010, EFP staff issued a notice of public hearing and availability of the draft site permit.¹² The notice met the requirements of Minnesota Rule 7854.0900, subpart 1. Notice was sent to interested persons and government agencies as required by Minnesota Rule 7854.0900, subpart 2.
13. Published notice of the public hearing and availability of the draft site permit appeared in the *Pipestone County Star* and the *Rock County Star Herald* on December 16, 2010,¹³ and in the *EQB Monitor* on December 27, 2010,¹⁴ as required by Minnesota Rule 7854.0900, subpart 2. The deadline for submitting comments on the draft site permit was January 27, 2011.
14. A public hearing was held on the evening of December 28, 2010, in Jasper, Minnesota, presided over by Administrative Law Judge (ALJ) Richard Luis from the Office of Administrative Hearings. Approximately seven people attended the public hearing with one person offering comment.¹⁵
15. On February 11, 2011, the Applicant filed a request for a change in project size from 101 MW to 200 MW within the same project boundary.¹⁶
16. On March 3, 2011, Administrative Law Judge Luis filed his “Summary of Public Testimony and Comments.”¹⁷ The ALJ summarized written comments from the Minnesota Department of Natural Resources (DNR) and a number of people who commented on the transmission line.¹⁸
17. On March 17, 2011, EFP staff recommended that a revised draft site permit be issued and distributed for public comment. On March 28, 2011, the Commission Order issued a revised draft site permit for an up to 200 MW Prairie Rose Wind Farm.¹⁹

¹⁰ Exhibit 6

¹¹ Exhibit 9

¹² Exhibit 10a

¹³ Exhibit 10b

¹⁴ Exhibit 10c

¹⁵ Exhibit 12 at 3,4

¹⁶ Exhibit 11, Request for Change in Project Size, February 11, 2011

¹⁷ Exhibit 12

¹⁸ *Id.* at 7

¹⁹ Exhibit 13

18. On April 14, 2010, EFP staff mailed notice of the availability of the revised draft site permit²⁰ and also published notice in the EQB Monitor.²¹ The notice was sent as required by Minnesota Rule 7854.0900, subpart 2. A comment period was open through May 27, 2011.
19. A comment letter was received from the DNR on the revised draft site permit on May 27, 2011, detailing its interest in prairie protection.²²

Certificate of Need

20. The Applicant is seeking a Certificate of Need (Docket no. CN-10-80) under Minnesota Statute 216B.243 because the Project is a large energy facility as defined by Minnesota Statute 216B.2421.²³

Original Project Description

21. The original proposed Project is a Large Wind Energy Conversion System (LWECS), as defined in the Wind Siting Act, Minnesota Statutes Chapter 216F. The Project is located in Rock and Pipestone counties. The Project was up to 101 megawatts (MW) in nameplate capacity, consisting of up to 67 wind energy generators. Prairie Rose had not made a final selection of wind turbine generators for the Project and proposed to permit the Project for a range of wind turbines sized from 1.5 to 2.3 MW. The application used three turbines to span the spectrum of typical turbine models in the 1.5 to 2.3 MW range (General Electric (GE) 1.5 SLE MW, the Vestas V90 1.8 MW, and the Siemens 101 SWT 2.3 MW turbine models). The range of turbines Prairie Rose Wind is considering for the Project spans the energy production range of 1.5 MW to 2.3 MW. The GE 1.5 MW Turbine is representative of the 1.5 MW class, the Vestas 1.8 MW machine is representative of the 1.8 MW class, and the Siemens 2.3 MW Turbine is representative of the 2.3 MW class.²⁴ Regardless of the turbine selected, the hub heights would be 80 m (263 ft) and the RD would range from 77 to 101 m (252 to 331 ft).²⁵
22. Associated Project facilities include gravel access roads, a step-up substation, a wind electrical collection system, an Operations and Maintenance (O&M) building, permanent meteorological towers, and a Sonic Detection and Ranging (SODAR) unit or Light Detection and Ranging (LIDAR) unit.²⁶ The O&M building will be permitted through Rock County or the township where the facility is ultimately located.²⁷
23. In addition to the Prairie Rose Wind Farm, Prairie Rose proposes, via its wholly owned subsidiary Prairie Rose Transmission LLC, to develop an approximately 24-mile, 115 kilovolt (kV) transmission line to connect the project to the Split Rock Substation near

²⁰ Exhibit 14a

²¹ Exhibit 14b

²² Exhibit 15

²³ Exhibit 1 at 1-4

²⁴ *Id.* at 1-1

²⁵ *Id.* at 2-1

²⁶ *Id.* at 1-1

²⁷ *Id.* at 4-9

Brandon, South Dakota.²⁸ The Minnesota portion of the line will be a 5.5-7 mile transmission line to be permitted through the Commission (Docket no. TL-10-134.)

24. Prairie Rose incorporates a 1,000-foot setback from residences as well as the distance necessary to meet Minnesota Pollution Control Nighttime Noise Limit of 50 dBA. A 250-foot setback from all public road and trail right-of-way has been incorporated. All turbines will be located 5 RD from the edge of the leased area along prevailing wind direction (generally the northern and southern edge) and 3 RD from the edge of the leased area along non-prevailing direction (generally the eastern and western edge) to accommodate for disruption of the normal wind flow and protect the wind rights of non-participating landowners. Similarly, internal turbine spacing will follow a general rule of 5 RD in predominant wind direction (generally north-south) and 3 RD in non-prevailing direction (generally east-west) with no more than 20 percent of the project turbines closer than the prescribed setback.²⁹
25. At the base of each turbine a step-up transformer will be installed to raise the voltage to power collection line voltage of 34.5 kV. Generally, the electrical lines will be buried in trenches and run to the edge of the farm field. At the public road at the edge of the farm field, the power collection lines will either rise from underground to aboveground lines (if shallow bedrock, sensitive environmental conditions, or conflicts with underground utility infrastructure are encountered) or continue as underground lines. The collection lines will occasionally require an above ground junction box when the collection lines from separate spools need to be spliced together. The collector lines will deliver energy to the 115 kV step-up Prairie Rose Substation.³⁰
26. The Applicant anticipated that the Project would begin commercial operation between the third calendar quarter of 2011 and the first calendar quarter of 2012.³¹ The estimated Project installed capital costs were estimated between \$197 and \$205 million.³²

Revised Project Description

27. On February 11, 2011, Prairie Rose requested a change in project size to 200 MW. With this modification, the Prairie Rose Wind Farm would consist of between 110 and 124 wind turbine generators depending on the model used. Prairie Rose is currently planning to use either the GE 1.6 MW turbine with an 82.5 meter rotor diameter or the Vestas V100 1.8 MW turbine with a 100 meter rotor diameter.³³
28. The location of the Prairie Rose Wind Farm will not change. The analysis Prairie Rose performed in its site permit application examined the same geographic area as currently proposed in the supplemental filing.³⁴

²⁸ *Id.* at 1-1

²⁹ *Id.* at 2-2

³⁰ *Id.* at 4-3

³¹ *Id.* at 4-10

³² *Id.* at 3-6

³³ Exhibit 11 at 1

³⁴ *Id.* at 3

29. With the increase in size and change in turbine technology, the Prairie Rose Wind Farm will operate with an annual average net capacity factor of 42.6 percent to 45.7 percent. This capacity factor will result in the generation of 746,352 megawatt hours (MWh) to 800,664 MWh on an average year. Estimates provided in the Prairie Rose site permit and CN applications were 40 percent to 45 percent, or 341,640 MWh to 394,200 MWh. The updated energy production estimate is an increase of annual energy produced of between 103 percent and 118 percent or between 404,712 MWh and 406,464 MWh greater than originally identified.³⁵
30. Prairie Rose now anticipates construction occurring in third or fourth quarter 2011 and continuing for the following three quarters in order to complete the full 200 MW project before the end of 2012.³⁶ Prairie Rose estimates that the total installed capital costs of the 200 MW Project to be between \$330 million and \$350 million.³⁷

Site Location, Characteristics, and Topography

31. The proposed Project will be located west of Hardwick and south and east of Jasper in southwestern Minnesota in Rock and Pipestone counties, as below.³⁸

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

32. The Project site encompasses approximately 35,335 acres, which is primarily agricultural land.³⁹ Prairie Rose now has over 27,300 acres under lease in the project area with over 200 participating landowners.⁴⁰
33. The Project is located in an area that is entirely rural with an agricultural-based economy. Corn and soybeans are the predominant crops in Pipestone and Rock counties. Rock and Pipestone counties are also producers of livestock, mostly hogs and feeder cattle. The landscape in the Project area is relatively flat with gently rolling hills. Elevations in the Project area range from 1,615 to 1,791 ft above sea level.⁴¹
34. The Project is located within a lightly populated rural area, on the border of Rock and Pipestone counties, with densities ranging from 8 (Rose Dell, Denver, and Springwater townships) to 13 people per square mile in Eden and Elmer townships.⁴²

³⁵ *Id.* at 3-4
³⁶ *Id.* at 4
³⁷ *Id.*
³⁸ Exhibit 1 at 1-2
³⁹ *Id.* at 1-2
⁴⁰ Exhibit 11 at 3
⁴¹ Exhibit 1 at 5-1
⁴² *Id.*

Wind Resource Considerations

35. In the vicinity of the project area, the mean annual wind speed at an elevation of 80 m is mapped as 8.0 m/s to 8.4 m/s, which is among the highest in the state. Prairie Rose Meteorological Tower locations are expected to have an average annual wind speed of 8.24 m/s with a potential variation of 4 to 5 percent or +/- 0.329 to 0.412 m/s.⁴³ Regionally, the prevailing wind directions are generally south and northwest. The north and northwest winds typically occur in winter.
36. Wind turbines are sited to have good exposure to winds from all directions with emphasis on exposure to the prevailing wind directions while considering site topography, natural resource features, setbacks, and wind resources. The turbines are typically oriented west-southwest to north-northeast, which is roughly perpendicular to the prevailing southerly and northwest winds. Turbine placement, aside from other resource features where setbacks or wind access buffers are required, will be designed to provide sufficient spacing between the turbines to minimize internal wake losses. Given the prevalence for southerly and northerly winds, the spacing is widest in the north-south direction. Greater or lesser spacing between the turbines or turbine strings may be used in areas where the terrain dictates the spacing. Sufficient spacing between the turbines is utilized to minimize wake losses when the winds are blowing parallel to the turbines. Wake loss occurs when a turbine is spaced too close downwind of another turbine, and therefore, produces less energy and is less cost-effective. Section 4.10 of the site permit addresses turbine spacing.

Wind Rights and Easement/Lease Agreements

37. In order to build a wind facility, a developer needs to secure leases or easement agreements to ensure access to the site for construction and operation of a proposed project. These lease or easement agreements also prohibit landowners from any activities that might interfere with the execution of the proposed Project. Land and wind rights will need to encompass the proposed LWECs, including all associated facilities such as access roads, meteorological towers, and electrical collection system.
38. The Applicant has executed easement agreements that grant Prairie Rose the necessary wind rights for the construction and operation of the Project. Within the approximate 35,335 acres site, the Applicant has easement agreements for approximately 27,300 acres, which provides for the required land for turbines and associated facilities. Section 10.1 of the site permit requires the Applicant to demonstrate it has obtained the wind rights necessary to construct and operate the Project at least 10 business days before the pre-construction meeting.

⁴³ *Id.* at 3-1

Site Considerations

39. Minnesota Statutes chapter 216F and Minnesota Rules chapter 7854 apply to the siting of LWECs. The rules require an applicant to provide a substantial amount of information to allow the Commission to determine the potential environmental and human impacts of the proposed project and whether the project is compatible with environmental preservation, sustainable development, and the efficient use of resources.⁴⁴ Pursuant to Minnesota Statutes section 216F.02, certain sections in Minnesota Statutes chapter 216E (Minnesota Power Plant Siting Act) apply to siting LWECs, including section 216E.03, subdivision 7 (considerations in designating sites and routes). The analysis of the environmental impacts required by Minnesota Rule 7854.0500, subpart 7, satisfies the environmental review requirements; no environmental assessment worksheet or environmental impact statement is required for a proposed LWEC project.⁴⁵ Therefore, environmental review is based on the application and the record. The following analysis addresses the relevant criteria that are to be applied to a LWEC project.

Human Settlement

40. The site is in an area of relatively low population density, which is characteristic of rural areas throughout southwestern Minnesota. There are no incorporated towns within the project boundary. The towns of Trotsky with a population of 110 and Hardwick with a population of 205 are adjacent the project area. Jasper with a population of 564, Edgerton with a population of 1,033 and Ihlen with a population of 107 are all within three miles of the Project area boundary.⁴⁶
41. The Applicant has committed to a setback of 1,000 feet to all residences, regardless of whether that landowner is participating in the Project.⁴⁷ Section 4.2 of the site permit incorporates this setback. Prairie Rose will also be required to set back its turbines a minimum of five rotor diameters (between 1,350 feet and 1,640 feet, depending on turbine selection) on prevailing wind direction from non-participating landowners' property lines and three rotor diameters (between 810 feet and 984 feet, depending on turbine selection) on non-prevailing wind direction, which can be found in section 4.1 of the site permit.
42. Prairie Rose's proposed Project design must comply with the Minnesota Pollution Control Agency (PCA) noise standards pursuant to Minnesota Rules Chapter 7030. As a result, the impact of the proposed Project on human settlement and public health and safety will be minimal. Sections 4.2 and 4.4 of the site permit contain conditions for setbacks from residences and roads. The proposed wind turbine layout will meet or exceed those requirements.
43. There will be no displacement of existing residences or structures in siting the wind turbines and associated facilities.

⁴⁴ Minn. Stat. § 216F.03 and Minn. R. 7854.0500

⁴⁵ Minn. R. 7854.0500, subp. 7

⁴⁶ Exhibit 1 at 5-1

⁴⁷ *Id.* at 2-2

Noise

44. Based on Applicant's review of ambient noise levels measured in rural settings with high quality wind resources, typical noise levels range from 30 dBA to 60 dBA on an hourly equivalent sound pressure level (Leq) basis. Typical existing ambient noise levels in rural areas are dominated by agriculture-related activities, existing wind conditions, local fauna, and proximity to other noise sources. Applicants's review of 24-hour noise monitoring data collected from other wind farm projects demonstrates that the difference between outdoor, ambient C-weighted and A-weighted noise levels exceeds 10 dB for an average of 15 hours per day in rural communities where the wind resource is suitable for wind energy development.⁴⁸
45. Noise impacts to nearby residents and other potentially affected parties will be factored into the turbine micro-siting process. The Applicant must demonstrate the Project can meet the noise standard pursuant to Minnesota Statutes chapter 7030 (site permit, sections 5.1 and 6.6). Noise levels have been predicted by a noise modeling program and will be verified per Section 5.1 to be compliant with the PCA Daytime and Nighttime L₁₀ and L₅₀ Limits as stated in Minnesota Rule 7030.0040. These standards describe the limiting levels of sound established on the basis of present knowledge for the preservation of public health and welfare. These standards are consistent with speech, sleep, annoyance, and hearing conversation requirements for receivers within areas grouped according to land activities by the Noise Area Classification (NAC) system established in Minnesota Rule 7030.0050. The NAC-1 was chosen for receivers in the Project area since this classification includes farm houses as household units. The nighttime L₅₀ limit of 50 dBA is the most applicable stringent state limit.
46. According to the manufacturers' noise data, sound power levels measured at a 10 meter height for an 80 meter hub height is 108 dBA for the GE turbine and 107 dBA for the Vestas turbine. The Applicant applied a 2 dB margin of error to the GE turbine analysis.⁴⁹ The Applicant's analysis found that the maximum project-related Leq for the GE 1.6 and Vestas V100 turbines was 45 dBA at residences in and around the project. The average project-related Leq was 36 dBA for the GE 1.6 and 35 dBA for the Vestas V100. With the greater dispersion of turbines in the reconfigure project, and therefore more residences experiencing turbine-related noise, the average project-related Leq increased over the analysis in the original application.⁵⁰
47. Prairie Rose will conduct a post-construction noise study. The noise study will determine the noise levels at different frequencies and at various distances from the turbines at various wind directions and speeds. See section 6.6 of the site permit. The purpose of the post-construction noise study is to confirm that the PCA noise standards have been met.

⁴⁸ *Id.* at 5-3

⁴⁹ Exhibit 11 at 6

⁵⁰ *Id.* at 7

Shadow Flicker

48. Shadow flicker is described as a moving shadow on the ground resulting in alternating changes in light intensity. Shadow flicker computer models simulate the path of the sun over the year and assess at regular time intervals the possible shadow flicker across a project area. The outputs of the model are useful in the design phase of a wind farm. Generally, shadow flicker usually occurs in the morning and evening hours when the sun is low in the horizon and the shadows are elongated. Shadow flicker does not occur when the turbine rotor is oriented parallel to the receptor or when the turbine is not operating. In addition, no shadow flicker will be present when the sun seen from a receptor is obscured by clouds, fog, or other obstacles already casting a shadow such as buildings and trees.
49. Shadow intensity, or how “light” or “dark” a shadow appears at a specific receptor, will vary with the distance from the turbine. Closer to a turbine, the blades will block out a larger portion of the sun’s rays and shadows will be wider and darker. Receptors located farther away from a turbine will experience much thinner and less distinct shadows since the blades will not block out as much sunlight. Shadow flicker will be greatly reduced or eliminated within a residence when buildings, trees, blinds, or curtains are located between the turbine and receptor. Shadow flicker consultants generally agree that flicker is not noticeable beyond about 10 rotor diameters from a wind turbine.⁵¹ Evidence of shadow flicker effects is hard to find, which indicates it is more of a nuisance issue. Minnesota has no published standards for shadow flicker and no examples of turbines causing photosensitivity related problems. Wisconsin is considering a shadow flicker standard of a maximum of 30 hours that would apply to non-participating residences and occupied community buildings, but those rules have not yet been formally adopted. Several jurisdictions in other countries have established guidelines for acceptable levels of shadow flicker based on certain assumptions.
50. The Applicant has provided a preliminary shadow flicker analysis. Under a conservative scenario, the GE 1.6 turbine may produce flicker at the most affected structure at just over 32 hours/year and approximately 2.5 hours/year as a project average. The Vestas V100 could produce flicker at nearly 42 hours and just over 4 hours respectively. The shadow flicker modeling included several conservative assumptions, e.g., all receptors are omni-directional (i.e., a greenhouse), and all houses will have a direct view (i.e., without trees or buildings).⁵²
51. As directed by section 6.2 of the site permit, at least ten (10) working days prior to the pre-construction meeting, the Permittee shall provide data on shadow flicker impacts on each residence of non-participating landowners and participating landowners. Information shall include the results of modeling used, assumptions made, and the

⁵¹ Environmental Health Division, Minnesota Department of Health, *Public Health Impacts of Wind Turbines*, May 22, 2009, at 14, available at <http://energyfacilities.puc.state.mn.us/documents/Public%20Health%20Impacts%20of%20Wind%20Turbines.%205.22.09%20Revised.pdf>

⁵² Exhibit 11 at 8

anticipated levels of impact from turbine shadow flicker on each residence. The Permittee shall provide documentation on its efforts to minimize shadow flicker impacts.

Visual Values

52. The installation of the Project will alter the land use and visual quality of the site. The topography in the vicinity is generally flat and the vegetation cover is uniformly low, making the high topography vulnerable to visual disruptions. Visual impacts will be most evident to people traveling north and south along U.S. Highway 75, CR 66 and CSAH 11, and east and west along CSAH 12 and CSAH 7.⁵³
53. The visual impact of the wind turbines will be reduced by the use of a neutral paint color. The only lights will be those required by the Federal Aviation Administration (site permit, section 7.18). All site permits issued by the Commission require the use of tubular towers; therefore, the turbine towers will be uniform in appearance. Blades used in the proposed Project will be white or grey. The turbines and associated facilities necessary to harvest the wind for energy are not inconsistent with existing agricultural practices.
54. Wind facilities can be perceived as a visual intrusion on the natural aesthetic value on the landscape or having their own aesthetic quality. Existing wind facilities have altered the landscape elsewhere in Minnesota from agricultural to wind plant/agricultural. This Project will modify the visual character of the area. Wind facilities already exist in Pipestone counties. Further, wind generation development is likely to continue in the area.
55. Visually, the Prairie Rose Wind Project will be similar to other LWECs projects located in the area.

Public Health and Safety

56. Within 20 miles of the Project boundary, there are two airports located in Rock County, Minnesota, two airports located in Pipestone County, Minnesota, two airports located in Moody County, South Dakota, and one airport in Minnehaha County, South Dakota. The nearest airport is the private Dykstra Acreage Airport located less than a half mile from the eastern Project boundary. It is a private airport with a turf runway 2,200 ft in length. The next nearest airport is 6.5 miles away in Luverne.⁵⁴
57. Air traffic may be present near the Project for crop dusting of agricultural fields. Crop dusting is typically carried out during the day by highly maneuverable airplanes or helicopters. The installation of wind turbine towers in active croplands and installation of overhead collection lines, if needed, will create a potential for collisions with crop-dusting aircraft. However, overhead collection lines are expected to be similar to existing transmission and distribution lines (located along the edges of fields and roadways) and

⁵³ Exhibit 1 at 5-8

⁵⁴ *Id.* at 5-16

the turbines themselves would be visible from a distance and lighted according to FAA guidelines (see section 7.18 of the site permit).⁵⁵

58. Possible health concerns associated with wind turbines and transmission of electricity generally include those from electric and magnetic fields (EMF). The term EMF refers to electric and magnetic fields that are present around electrical devices. Electric fields arise from the voltage or electrical charges and magnetic fields arise from the flow of electricity or current that travels along transmission lines, power collection (feeder) lines, substation transformers, house wiring and electrical appliances. The intensity of the electric field is related to the voltage of the line and the intensity of the magnetic field is related to the current flow through the conductors. Once energized, the proposed Project will generate electromagnetic fields.
59. EMF from underground electrical collection lines dissipates very close to the line because they are installed below ground within insulated shielding. The electrical fields are negligible, and there is a small magnetic field directly above the lines that, based on engineering analysis, dissipates within 20 feet on either side of the installed cable. EMF associated with the transformers at the base of each turbine completely dissipates within 500 feet from the transformer, so the 1,000-foot turbine setback from residences will be adequate to avoid any EMF exposure to homes.⁵⁶
60. While the general consensus is that electric fields pose no risk to humans, the question of whether exposure to magnetic fields potentially can cause biological responses or even health effects continues to be the subject of research and debate. Based on the most current research on electromagnetic fields, and the distance between any turbines or collector lines and houses, the Project will have no impact to public health and safety due to EMF.⁵⁷
61. In winter months ice may accumulate on the wind turbine blades when the turbines are stopped or operating very slowly. Furthermore, the anemometer may ice up at the same time, causing the turbine to shut down during any icing event. As weather conditions change, any ice will normally drop off the blades in relatively small pieces before the turbines resume operation. This is due to flexing of the blades and the blades' smooth surface. Although turbine icing is an infrequent event, it remains important that the turbines are not sited in areas where regular human activity is expected below the turbines during the winter months. The setback requirements in Section 4 of the site permit provide further assurance that the turbines will be placed an adequate distance from residences, roads and other areas of human activity.
62. The Applicant will prepare an emergency response plan (fire protection and medical emergency plan) in consultation with the emergency responders having jurisdiction over the Project area (site permit, section 7.16). As with any large construction project, some risk of worker or public injury exists during construction. Prairie Rose and its

⁵⁵ *Id.* at 5-17

⁵⁶ *Id.* at 5-18

⁵⁷ *Id.*

construction representatives and workers will prepare and implement work plans and specifications in accordance with applicable worker safety requirements during construction of the Project. Prairie Rose will also control public access to the Project during construction and operation. Prairie Rose will provide security during construction and operation of the project, including fencing, warning signs, and locks on equipment and facilities. The Applicant will also provide landowners, interested persons and public officials and emergency responders with safety information about the project and its facilities (see site permit sections 7.15 and 7.16).

63. Each turbine will be clearly labeled to identify each unit, and a map of the site with the labeling system will be provided to local authorities as part of the emergency response plan (site permit, sections 7.17 and 7.16).

Public Services and Infrastructure

64. The proposed project is expected to have minimal effects on existing public infrastructure. The proposed Project would not generate an increase in traffic volumes or daily human activity, except for a short period of time during construction and occasionally during operation and maintenance activities. The construction contractor will repair any road damage that may occur during the construction of the Project (see site permit, section 7.8).
65. Other than short-term impacts, no significant permanent changes in road traffic patterns or volume are expected. The busiest traffic would occur when the majority of the foundation and tower assembly is taking place. Township and county officials will receive advance notice of the construction schedule at the pre-construction meeting, including the timing of the delivery of towers and turbines and arrival of the crane to erect project equipment (site permit, section 5.6). Prairie Rose will work with all parties involved to address concerns related to roadway use, and adhere to state, county, and township requirements for transportation infrastructure.
66. Access roads will be built adjacent to the towers, allowing access both during and after construction. The total length of these access roads would be 22-24 miles.⁵⁸ The roads will be approximately 4.9 m (16 ft) wide and have gravel as cover, adequate to support the size and weight of maintenance vehicles. These roads will meet state and local requirements. The specific turbine locations will determine the amount of roadway that will be constructed for this Project. In addition, there will be a 30-foot diameter gravel work area centered on the base of each turbine. Temporary disturbances during construction of the Project include crane pads at each turbine site, temporary travel roads for the cranes, temporary laydown areas around each turbine, trenching in the underground electrical collection system, and storage/stockpile area.⁵⁹
67. If access roads are installed across streams or drainage ways, the Applicant, in consultation with Minnesota Department of Natural Resources, will design, shape, and locate the road so as not to alter the original water flow or drainage patterns. Any work

⁵⁸ Exhibit 11 at 5

⁵⁹ Exhibit 1 at 4-4

required below the ordinary high water line, such as road crossings or culvert installation, will require a permit from Minnesota Department of Natural Resources. See section 10.5 of the site permit for a list of other permits that may be required.

68. There are no active railroad lines in the Project area. No interstate pipelines have been identified within the Project area.⁶⁰
69. There is currently one major utility corridor in the Project area. The L and O Power Cooperative has a 115 kV transmission line running north to south along State Highway 75 along the east side of the Project area, and two small distribution substations in the northeast and southeast portions of the Project area. Distribution lines are infrequent within the Project area.⁶¹
70. Prior to construction, Gopher State One Call will be contacted to locate underground facilities so they can be avoided. Further, section 7.15 of the site permit requires the Applicant to submit the location of all its underground cables and collector and feeder lines to Gopher State One Call. To the extent Project facilities cross or otherwise affect existing telephone lines or equipment, Prairie Rose will make arrangements with applicable service providers to avoid interference with such facilities. Telephone service is provided by local telephone companies to the homes and businesses in the area.⁶²
71. The Applicant has conducted a microwave beam path analysis, and one microwave beam path was identified within the Project area. The Applicant will conduct an off-air television reception analysis of the Project. The Applicant will not operate the wind farm so as to cause microwave, television, radio, telephone, or navigation interference contrary to FCC regulations or other law. In the event the wind farm or its operation causes such interference, the Applicant will take the steps necessary to correct the problem.⁶³ Section 6.4 of the site permit requires the Applicant to submit a plan to conduct an assessment of television signal reception and microwave signal patterns in the Project area.
72. Construction, operation, and maintenance of the proposed wind plant will comply with all of the required federal, state, and local permit requirements. See section 10.5 of the site permit.

Recreational Resources

73. There are no WMAs within the Project area. WMAs located within five miles of the Project include: Poplar Creek WMA located 1.0 mile northeast of the Project area; Jasper WMA located 2.0 miles northwest of the Project area; Eden WMA located 2.5 miles north of the Project area; Little Beaver Creek WMA located 2.5 miles south of the Project area; Springwater WMA located 3.5 miles south of the Project area; and, Ringneck Ridge WMA located 4.5 miles northwest of the Project area.⁶⁴

⁶⁰ *Id.* at 5-10

⁶¹ *Id.*

⁶² *Id.* at 5-11

⁶³ *Id.* at 5-12

⁶⁴ *Id.* at 5-15

74. Scientific and Natural Areas (SNAs) are areas designated to protect rare and endangered species habitat, unique plant communities, and significant geologic features that possess exceptional scientific or educational values. There are no SNAs within the Project area. USFWS Waterfowl Production Areas (WPAs) are managed to protect breeding, forage, shelter, and migratory habitat for waterfowl or wading birds, such as ducks, geese, herons, and egrets. There are no WPAs in the Project area. USFWS administers a program by which the USFWS holds easements on private lands that have wetlands and/or grassland habitat. Development may be restricted on lands held in a USFWS easement. No easements are known to exist within the Project Area; the USFWS has been contacted to verify the presence or lack of easements.⁶⁵
75. No National Wildlife Refuges (NWRs) were identified within the Project area. The Touch the Sky Unit of the Northern Tallgrass Prairie NWR is located within about 0.5 mile of the southern Project area boundary. It is managed through the USFWS' Windom Wetland Management District (WMD).⁶⁶
76. Two state parks are located less than five miles from the Project area. Split Rock Creek State Park is located about 2.5 miles northwest of the Project area. This park is about 1,300 acres and is located on Split Rock Lake in Pipestone County. Split Rock Creek hosts about 57,000 visitors each year (DNR, 2009). Blue Mounds State Park is located about 2.5 miles southeast of the Project area. This park is about 1,800 acres and is known for its unique rock outcrops and relatively tall cliffs. Blue Mounds hosts about 80,000 visitors each year (DNR, 2009).⁶⁷

Community Benefits

77. Prairie Rose will pay a Wind Energy Production Tax to the county and townships each year expected to be between \$895,700 to \$960,800 per year.⁶⁸ Landowners with wind turbines on their property will also receive payments from the Applicant. The Project is expected to create new job opportunities within the local community, both during construction and operation.

Effects on Land-Based Economies

78. Prairie Rose estimates the total acreage of agricultural land permanently impacted by wind facilities to be between 31.7 and 45.5 acres, or less than 1 percent of the project area.⁶⁹ Overall, impact to agricultural lands as a result of the Project is anticipated to be short term and is not expected to alter crop production. Once in operation, it may be occasionally necessary for Prairie Rose to complete repairs or clear vegetation around a turbine or facility, which could result in additional temporary impacts to agricultural operations. These interruptions are expected to be infrequent and short term.

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ *Id.* at 15-16

⁶⁸ Exhibit 11 at 4

⁶⁹ *Id.* at 6

79. The Turbine and facility siting will include discussions with property owners to identify features on their property, including drain tile, which should be avoided. Impacts to drain tile due to Project construction and operation are not anticipated. However, in the event that there is damage to drain tile as a result of construction activities or operation of the LWECS, the tile will be repaired according to the agreement between the Applicant and the owner of any damaged tile.⁷⁰ Section 7 of the site permit addresses mitigation measures for agricultural lands.
80. Prairie Rose will avoid impacts to Reinvest in Minnesota (RIM) land and will minimize impacts to Conservation Reserve Program (CRP) land to the extent possible.⁷¹
81. Impacts to mining are not anticipated. Sand and gravel operations tend to be small and other occurrences of these materials are likely to be present in nearby areas, including large commercial operations in the general area. Quartzite is not currently being quarried within the Project area.⁷²

Archaeological and Historical Resources

82. A review of the Minnesota State Historic Preservation Office (SHPO) computer database review did not identify any archeological sites within the Project area. However, two historic bridges are within the boundary. Ten historic structures have been identified within two miles of the Project area. These sites include a church, a school, a bank, bridges and other historic sites.⁷³
83. Section 6.3 of the site permit requires the Applicant to conduct an archaeological reconnaissance survey (Phase I). In concurrence with the SHPO recommendation, Prairie Rose will conduct a Phase I archaeological resources inventory. The archaeological resource inventory will focus on areas proposed for project construction, including wind turbine locations, associated access roads, electrical cables and other construction elements. These investigations will be conducted by professionals who meet the Secretary of the Interior's Standards for Archaeology as published in Title 36 Code of Federal Regulations Part 6. Survey strategies for the archaeological resource inventory will depend on surface exposure and the characteristics of the landforms proposed for development. After receiving the proposed turbine, access road, and electrical cable layouts, archaeologists will design an appropriate survey strategy for archaeological resources.⁷⁴
84. If any archaeological sites are found during the Phase I survey, their integrity and significance should be addressed in terms of the site's potential eligibility for placement on the National Register of Historic Places (NRHP). If such sites are found to be eligible for the NRHP, appropriate mitigative measures will need to be developed in consultation with the SHPO, the State Archaeologist, and consulting American Indian communities.

⁷⁰ Exhibit 1 at 5-22

⁷¹ *Id.* at 5-23

⁷² *Id.*

⁷³ *Id.* at 5-13

⁷⁴ *Id.* at 5-14

Section 6.3 of the site permit also requires the Applicant to stop work and notify the SHPO and the Commission if any unrecorded cultural resources are found during construction.

Air and Water Emissions

85. No harmful air or water emissions are expected from the construction and operation of the Project.

Wildlife

86. The Project area is used primarily for agricultural purposes, with cropland producing 78 percent of the vegetative cover.⁷⁵ Wildlife habitat impacts are expected to be minimal because turbines and access roads will be placed exclusively on cropped land. With proper planning, neither construction nor operation of the Project is expected to have a significant impact on wildlife. Based on studies of existing wind power projects in the United States and Europe, the greatest impact of concern to wildlife would primarily be to avian and bat populations. The Applicant will design its facility to minimize avian impacts by avoiding high use wildlife habitat, using tubular towers to minimize perching, placing electrical collection lines underground as practicable and minimizing infrastructure.⁷⁶
87. Section 6.7 of the site permit requires the Applicant to prepare an avian and bat protection plan, submit quarterly avian and bat reports, and report five or more dead or injured non-protected avian or bat species or a single dead or injured migratory, state threatened, endangered, species of special concern, and federally listed species discovered within 24 hours of discovery. Section 6.1 requires the Applicant to conduct pre-construction desktop and field inventories of potentially impacted native prairies, wetlands, and any other biologically sensitive areas within the site and assess the presence of state threatened, endangered, or species of special concern or federally listed species. Section 6.1 also requires the Applicant to submit any biological survey or studies conducted. Section 4.5 requires that turbines and associated facilities will not be constructed in wildlife management areas, state scientific and natural areas or parks, and a setback of five rotor diameters in prevailing wind and three rotor diameters in non-prevailing wind is applied to such public lands.

Rare and Unique Natural Resources

88. The Project area contains several prairie remnants which merit protection. Along with conserving these remnants, the DNR is concerned with potential impacts to the grassland birds that depend on these prairies. Evidence suggests that grassland birds are deterred to some degree from nesting in these appropriate habitat areas due to the presence of tall structures.⁷⁷ Section 4.7 of the site permit requires the Applicant to prepare a prairie protection and management plan when native prairie could be impacted.

⁷⁵ *Id.* at 5-30

⁷⁶ *Id.* at 5-35

⁷⁷ *Id.* at 5-38

89. The DNR National Heritage Program identified several rare features within one-mile of the project area. These include Blanding's Turtles, Topeka Shiners, several "Sites of Biodiversity Significance," and Crystalline Bedrock Outcroppings.⁷⁸ Section 13.1 of the site permit contains a special condition to avoid siting in areas of native prairie, rock outcroppings, and biodiversity sites. Section 13.2 of the site permit contains a special condition that requires Prairie Rose to follow the fact sheets of recommendations for avoiding and minimizing impacts for Blanding's turtles and Topeka shiners and distribute a summary of the recommendations to contractors and its employees.
90. Burrowing owls, 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.⁷⁹ The DNR and Applicants worked together on a survey protocol to investigate potential evidence of the species in the area. The resulting survey found no evidence of Burrowing owls.⁸⁰ The Applicants have continued to consult with DNR on a protocol for further study. Permit condition 13.2 requires additional surveying to account for the expanded project size and the necessary seasonal surveying requirements.

Vegetation

91. No public waters, wetlands, or forested land are expected to be adversely affected by the Project. No groves of trees or shelterbelts will need to be removed to construct and operate the system. Native prairie will also be avoided. As discussed in Finding 88, section 4.7 of the site permit will require a prairie protection and management plan if native prairie could be impacted, including areas temporarily impacted by construction.

Soils

92. The site permit has requirements to implement sound water and soil conservation practices during construction and operation of the Project throughout the Project's life in order to protect topsoil and adjacent resources and to minimize soil erosion. The Project will be subject to the requirements of the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) stormwater permit for construction activity. An erosion and sediment control plan and Storm Water Pollution Prevention Plan (SWPPP) will also be prepared for the Project and the disturbed areas will be seeded after construction to stabilize the area (site permit, section 7.11).

Geologic and Ground Water Resources

93. Bedrock in the Project area is Sioux Quartzite. Quartzite is red and purple to light gray and may be interbedded with hard red claystone (pipestone). The thickness of this bedrock may be more than 1,000 ft. Bedrock outcrops were noted in areas throughout the

⁷⁸ *Id.* at 5-37

⁷⁹ *Id.*

⁸⁰ Geronimo Wind Energy Burrowing Owl Survey Report, August 26, 2010.

Project area. The surface of the bedrock appears to be highly fractured and eroded. Groundwater in the region is mainly supplied by surficial sand and gravel deposits and fractures within the Sioux quartzite. Generally the Project area lies atop materials that generally do not yield significant amounts of water. Impacts to geologic and groundwater resources are not anticipated. Siting of turbines in areas of shallow bedrock may encounter issues relating to the construction of foundations. It appears that most of the bedrock found at the surface is highly eroded and fractured and would not require blasting to remove.⁸¹

Surface Water and Wetlands

94. Wind turbines and associated facilities will not be located in public water wetlands, except that collector and feeder lines may cross if authorized by the appropriate permitting agency (site permit, section 4.6). A permit may be required if surface waters are impacted (see section 10.5.1 of the site permit). A wetland delineation report will be completed to determine all wetland boundaries adjacent to areas of proposed turbine locations.⁸²

Future Development and Expansion

95. Current information suggests windy areas in this part of the state are large enough to accommodate more wind facilities. In addition to existing wind projects, the future may likely bring Pipestone, Rock and surrounding counties additional types and sizes of wind projects supplied by different vendors and installed at different times. The Applicant has indicated that it is considering the project area for future development, but if such a project is proposed, a separate site permit would have to be obtained in order to construct the project.
96. While large-scale projects have occurred elsewhere (Texas, Iowa, and California), little systematic study of the cumulative impact has occurred. Research on the total impact of many different projects in one area has not occurred. EFP staff will continue to monitor for impacts and issues related to wind energy development.
97. The Commission is responsible for siting of LWECS “in an orderly manner compatible with environmental preservation, sustainable development, and the efficient use of resources.”⁸³ Section 4.1 of the site permit provides for buffers between adjacent wind generation projects to protect wind production potential.

Maintenance

98. Maintenance of the turbines will be on a scheduled, rotating basis with one or more units normally off for maintenance each day, if necessary. Maintenance on the interconnection points will be scheduled for low wind periods. Prairie Rose will have on-site service and maintenance activities, including routine inspections, regular preventive maintenance,

⁸¹ Exhibit 1 at 5-27

⁸² *Id.* at 5-29

⁸³ Minn. Stat. § 216F.03.

unscheduled maintenance and repair, and routine minor maintenance on the wind turbines and associated facilities. The operations and maintenance facility will be permitted by Rock County or the local township.⁸⁴

Decommissioning and Restoration

99. Decommissioning of the site would include removal of turbines and related facilities. Foundations will be removed to a depth of four feet below grade and buried back to grade. Additionally, any disturbed surface would be graded, reseeded, and restored as nearly as possible to its preconstruction condition.⁸⁵ Section 9.2 of the site permit requires removal of wind facilities to a depth of four feet and restoration and reclamation of the site to the extent feasible. The Project site would be restored within 18 months after Project expiration.
100. Decommissioning activities will include: (1) removal of all wind turbine components and towers; (2) removal of all pad mounted transformers; (3) removal of overhead and underground cables and lines; (4) removal of foundations; and (5) removal of surface road material and restoration of the roads and turbine sites to previous conditions to the extent feasible.
101. As provided in section 9.1 of the site permit, the Applicant will ensure that it carries out its obligations to provide for the resources necessary to fulfill its requirements to properly decommission the Project at the appropriate time. Section 9.1 requires the applicant to submit a Decommissioning Plan to the Commission prior to the pre-operation meeting.

Site Permit Conditions

102. All of the above findings pertain to the Applicant's requested permit for a 200 MW LWECS project.
103. Most of the conditions contained in the site permit were established as part of the site permit proceedings of other wind turbine projects permitted by the Public Utilities Commission. Comments received by the Commission have been considered in development of the site permit. Minor changes and special condition additions that provide for clarification or additional requirements have been made.
104. The site permit contains conditions that apply to site preparation, construction, cleanup, restoration, operation, maintenance, abandonment, decommissioning, and all other aspects of the Project.

⁸⁴ Exhibit 1 at 4-8 to 4-9

⁸⁵ *Id.* at 4-10

Based on the foregoing findings, the Minnesota Public Utilities Commission makes the following:

CONCLUSIONS OF LAW

1. Any of the foregoing findings, which more properly should be designated as conclusions, are hereby adopted as such.
2. The Minnesota Public Utilities Commission has jurisdiction over this matter pursuant to Minnesota Statutes section 216F.04.
3. The Applicant has substantially complied with the procedural requirements of Minnesota Statutes chapter 216F and Minnesota Rules chapter 7854.
4. The Minnesota Public Utilities Commission has complied with all procedural requirements required of Minnesota Statutes chapter 216F and Minnesota Rules chapter 7854.
5. The Minnesota Public Utilities Commission has considered all the pertinent factors relative to its determination of whether a site permit should be approved.
6. The Prairie Rose Wind Farm is compatible with the policy of the state to site LWECS in an orderly manner compatible with environmental preservation, sustainable development, and the efficient use of resources under Minnesota Statutes section 216F.03.
7. The Minnesota Public Utilities Commission has the authority under section 216F.04 to place conditions in a permit and may deny, modify, suspend, or revoke a permit. The conditions in the site permit are reasonable and appropriate.

Based on the foregoing Findings of Fact and Conclusions of Law, the Minnesota Public Utilities Commission issues the following:

ORDER

An LWECS Site Permit is hereby issued to Prairie Rose Wind, LLC to construct and operate the up to 200 MW Prairie Rose Wind Farm in Rock and Pipestone counties in accordance with the conditions contained in the site permit and in compliance with the requirements of Minnesota Statutes 216F.04 and Minnesota Rules 7854 for PUC Docket No. IP-6843/WS-10-425.

The site permit is attached hereto, with maps showing the approved site and preliminary turbine layouts.

BY THE ORDER OF THE COMMISSION

Burl W. Haar
Executive Secretary

(S E A L)

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Exhibit List

In the Matter of the Application of Prairie Rose Wind, LLC for a Site Permit for the Prairie Rose Wind Farm for up to a 200 Megawatt Large Wind Energy Conversion System in Rock and Pipestone Counties.

PUC Docket No. IP-6843//WS-10-425

EFP Exhibit No.	Exhibit	Date	eDocket Number
1	Prairie Rose Wind, LLC Site Permit Application for a Large Wind Energy Conversion System Prairie Rose Wind Farm.	05/13/2010	<u>20105-50418-01</u> <u>20105-50418-02</u> <u>20105-50418-03</u> <u>20105-50418-04</u> <u>20105-50418-05</u>
2	PUC Order accepting the Application as complete and granting a variance to Minnesota Rule 7854.0800 to extend the period for the PUC to make a preliminary determination on whether a site permit may be issued.	06/22/2010	<u>20106-51852-01</u>
3	Applicant's Revised Application Maps per EFP Request.	06/23/2010	<u>20106-51915-01</u>
4	Applicant's Affidavit of Service of mailing Application to landowners and government officials.	07/02/10	<u>20108-53979-01</u>
5	a. Notice of Application Acceptance, Additional Service; b. Affidavits of Publication.	07/07/2010 07/15/2010	<u>20107-52277-02</u> <u>20107-52289-02</u> <u>20108-53528-02</u>
6	Public and government agency comments on issues to consider in developing the draft site permit.	08/17/2010	<u>201010-55169-02</u>

EFP Exhibit No.	Exhibit	Date	eDocket Number
7	Geronimo Wind Energy Burrowing Owl Survey Report.	08/26/2010	<u>201010-55207-02</u>
8	Geronimo Wind Energy Summary of Wildlife Evaluations.	09/30/2010	<u>201010-55207-01</u>
9	PUC Order issuing Draft Site Permit for public review and comment.	10/28/2010	<u>201010-55923-01</u>
10	a. Notice of Public Hearing and Availability of Draft Site Permit with Affidavit of Service;	12/14/2010	<u>201012-57460-02</u>
	b. Affidavits of Publication;	12/16/2010	<u>20111-58355-01</u>
	c. <i>EQB Monitor</i>	12/27/2011	<u>201012-57903-01</u>
11	Applicant's request for a change in project size from 101 to 200 MW.	02/11/2011	<u>20112-59482-01</u> <u>20112-59482-03</u>
12	OAH Summary of public testimony and comments.	03/03/2011	<u>20113-60075-01</u>
13	PUC Order issuing a revised Draft Site Permit.	03/28/2011	<u>20113-60671-01</u>
14	a. Notice of Availability of revised Draft Site Permit with Affidavit of Service;	04/14/2011	<u>20114-61319-02</u>
	b. <i>EQB Monitor</i>	04/18/2011	<u>20116-63513-01</u>
15	DNR Comment letter on the revised Draft Site Permit.	05/27/2011	<u>20115-63036-01</u>

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

**SITE PERMIT FOR A
LARGE WIND ENERGY CONVERSION SYSTEM**

**IN
ROCK AND PIPESTONE COUNTIES MINNESOTA**

**ISSUED TO
PRAIRIE ROSE WIND, LLC**

PUC DOCKET NO. IP-6843/TL-10-425

In accordance with Minnesota Statutes section 216F.04 this site permit is hereby issued to:

Prairie Rose Wind, LLC

Prairie Rose Wind, LLC is authorized to construct and operate up to a 200 Megawatt Large Wind Energy Conversion System on the site identified in this site permit and in compliance with the conditions contained in this permit.

This permit shall expire thirty (30) years from the date of this approval.

Approved and adopted this _____ day of August 2011

BY ORDER OF THE COMMISSION

BURL W. HAAR
Executive Secretary

(S E A L)

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SITE PERMIT

This Site Permit for a Large Wind Energy Conversion System (LWECS) authorizes Prairie Rose Wind Energy, LLC (Permittee) to construct and operate the Prairie Rose Wind Farm (Project), a 200 Megawatt (MW) nameplate capacity LWECS and associated facilities in Rock and Pipestone counties, on a site of approximately 35,335 acres in accordance with the conditions contained in this permit.

SECTION 1 PROJECT DESCRIPTION

The up to 200 MW nameplate capacity LWECS Project authorized to be constructed in this permit will be developed and constructed by the Permittee. The Project will consist of from 110 to 124 turbines, the number dependent on final selection of the GE 1.6 MW (82.5 m Rotor Diameter) or the Vestas V100 1.8 MW (Meter Rotor Diameter) turbine. Associated facilities include access roads, electrical collection system, step-up substation, transmission line, O&M building, and two permanent meteorological towers and other weather data collection systems. Turbines are interconnected by communication and overhead and underground 34.5 kV electrical power collection facilities within the wind farm that will deliver wind-generated power to the collection substation. The O&M building will be permitted locally. Power will ultimately be transported via a new 115 kV line to the Split Rock substation near Brandon, South Dakota.

SECTION 2 DESIGNATED SITE

2.1 PROJECT BOUNDARY

The Project boundary is shown on the maps at **Attachment 1**. The Project is located in the following townships:

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

2.2 TURBINE LAYOUT

Preliminary wind turbine and associated facility layouts are shown on maps at Attachment 1. Each preliminary layout represents the approximate location of wind turbines and associated facilities (e.g., the setup substation will be located along County Road 7 in Rose Dell Township at one of the two locations indicated on the “Associated Facilities” maps in Attachment 1) within the Project boundary and identifies a layout that minimizes the overall potential human and environmental impacts, which were evaluated in the permitting process. The final layout depicting the location of each wind turbine and associated facility shall be located within the Project boundary. The Project boundary serves to provide the Permittee with the flexibility to do

minor adjustments to the preliminary layout to accommodate landowner requests, unforeseen conditions encountered during the detailed engineering and design process, and federal and state agency requirements. Any modification of the location of a wind turbine and associated facility to a preliminary layout shall be done in such a manner to have comparable overall human and environmental impacts and shall be specifically identified in the site plan pursuant to Section 5.1. The Permittee shall submit the final site layout in the site plan pursuant to Section 5.1.

SECTION 3 APPLICATION COMPLIANCE

The Permittee shall comply with those practices set forth in its Site Permit Application, dated May 2010, and the record of this proceeding unless this Permit establishes a different requirement in which case this Permit shall prevail.

Attachment 4 contains a summary of compliance filings required under this permit. Attachment 4 is provided solely for the convenience of the Permittee and shall not be construed as a substitute for the conditions contained in this permit.

SECTION 4 SETBACKS AND SITE LAYOUT RESTRICTIONS

4.1 WIND ACCESS BUFFER

Wind turbine towers shall not be placed less than five (5) rotor diameters (RD) on prevailing wind directions and three (3) RD on non-prevailing wind directions from the perimeter of the lands where the Permittee does not hold the wind rights, without the approval of the Commission. This section does not apply to public roads and trails.

4.2 RESIDENCES

Wind turbine towers shall not be located closer than 1,000 feet from all residences or the distance required to comply with the noise standards pursuant to Minnesota Rule 7030.0040 established by the Minnesota Pollution Control Agency (PCA), whichever is greater.

4.3 NOISE

The wind turbine towers shall be placed such that the Permittee shall comply with noise standards established as of the date of this permit by the PCA at all times at all appropriate locations. The noise standards are found in Minnesota Rules chapter 7030. Turbine operation shall be modified or turbines shall be removed from service if necessary to comply with these noise standards. The Permittee or its contractor may install and operate turbines, as close as the minimum setback required in this permit, but in all cases shall comply with PCA noise standards. The Permittee shall be required to comply with this condition with respect to all homes or other receptors in place as of the time of construction, but not with respect to such receptors built after construction of the towers.

4.4 ROADS

Wind turbine and meteorological towers shall not be located closer than 250 feet from the edge of the nearest public road right-of-way or from public trails.

4.5 PUBLIC LANDS

Wind turbines and associated facilities including foundations, access roads, underground cable, and transformers, shall not be located in public lands, including Waterfowl Production Areas, Wildlife Management Areas, Scientific and Natural Areas, or in county parks and wind turbine towers shall also comply with the setbacks of Section 4.1.

4.6 WETLANDS

Wind turbines and associated facilities including foundations, access roads, underground cable, and transformers, shall not be placed in public waters wetlands, as defined in Minnesota Statutes section 103G.005, subdivision 15a, except that electric collector or feeder lines may cross or be placed in public waters or public waters wetlands subject to permits and approvals by the Minnesota Department of Natural Resources (DNR) and the United States Army Corps of Engineers (USACE).

4.7 NATIVE PRAIRIE

The Permittee shall, in consultation with the Commission and DNR, prepare a Prairie Protection and Management Plan and submit it to the Commission and DNR at least ten (10) working days prior to the pre-construction meeting if native prairie, as defined in Minnesota Statutes section 84.02, subdivision 5, is identified in any biological and natural resource inventories conducted pursuant to Section 6.1. The plan shall address steps to avoid impacts to native prairie and mitigation to unavoidable impacts of native prairie by restoration or management of other native prairie areas that are in degraded condition, by conveyance of conservation easements, or by other means agreed to by the Permittee and Commission. Wind turbines and associated facilities including foundations, access roads, collector and feeder lines, underground cable, and transformers shall not be placed in native prairie unless addressed in a prairie protection and management plan and shall not be located in areas enrolled in the Native Prairie Bank Program. Construction activities, as defined in Minnesota Statutes section 216E.01, shall not impact native prairie unless addressed in a Prairie Protection and Management Plan.

4.8 SAND AND GRAVEL OPERATIONS

Wind turbines and all associated facilities, including foundations, access roads, underground cable, and transformers shall not be located within active sand and gravel operations, unless otherwise negotiated with the landowner with notice given to the owner of the sand and gravel operation.

4.9 WIND TURBINE TOWERS

Structures for wind turbines shall be self-supporting tubular towers. The towers may be up to 80 meters (262.5 feet).

4.10 TURBINE SPACING

The turbine towers shall be constructed within the site boundary as shown in Attachment 1. The turbine towers shall be spaced no closer than three (3) RD in non-prevailing wind directions and five (5) RD on prevailing wind directions. If required during final micro-siting of the turbine towers to account for topographic conditions, up to 20 percent of the towers may be sited closer than the above spacing but the Permittee shall minimize the need to site the turbine towers closer.

4.11 METEOROLOGICAL TOWERS

Permanent towers for meteorological equipment shall be free standing. Permanent meteorological towers shall not be placed less than 250 feet from the edge of the nearest public road right-of-way and from the boundary of the Permittee's site control, or in compliance with the county ordinance regulating meteorological towers in the county the tower is built, whichever is more restrictive. Meteorological towers shall be placed on property the Permittee holds the wind or other development rights.

Meteorological towers shall be marked as required by the Federal Aviation Administration (FAA). There shall be no lights on the meteorological towers other than what is required by the FAA. This restriction shall not apply to infrared heating devices used to protect the wind monitoring equipment.

4.12 AVIATION

The Permittee shall not place wind turbines or associated facilities in a location that could create an obstruction to navigable airspace of public and licensed private airports (as defined in Minnesota Rule 8800.0100, subparts 24a and 24b) in Minnesota, adjacent states, or providences. The Permittee shall apply the minimum obstruction clearance for licensed private airports pursuant to Minnesota Rule 8800.1900, subpart 5. Setbacks or other limitations shall be followed in accordance with the Minnesota Department of Transportation (DOT), Department of Aviation, and FAA. The Permittee shall notify owners of all known airports within six (6) miles of the Project prior to construction.

4.13 FOOTPRINT MINIMIZATION

The Permittee shall design and construct the LWECs so as to minimize the amount of land that is impacted by the LWECs. Associated facilities in the vicinity of turbines such as electrical/electronic boxes, step-up transformers, and monitoring systems shall, to the greatest extent feasible, be mounted on the foundations used for turbine towers or inside the towers unless otherwise negotiated with the affected landowner(s).

4.14 COMMUNICATION CABLES

The Permittee shall place all supervisory control and data acquisition (SCADA) communication cables underground and within or adjacent to the land necessary for turbine access roads unless otherwise negotiated with the affected landowner(s).

4.15 ELECTRICAL COLLECTOR AND FEEDER LINES

Collector lines that carry electrical power from each individual transformer associated with a wind turbine to an internal project interconnection point may be overhead or buried underground. Collector lines shall be placed within or adjacent to the land necessary for turbine access roads unless otherwise negotiated with the affected landowner(s).

Feeder lines that carry power from an internal project interconnection point to the Project substation or interconnection point on the electrical grid may be overhead or underground. Feeder line locations shall be negotiated with the affected landowner(s).

Any feeder lines that parallel public roads shall be placed within the public rights-of-way or on private land immediately adjacent to public roads. If feeder lines are located within public rights-of-way, the Permittee shall obtain approval from the governmental unit responsible for the affected right-of-way.

Collector and feeder line locations shall be located in such a manner to minimize interference with agricultural operations, including, but not limited to, existing drainage patterns, drain tile, future tiling plans, and ditches. Safety shields shall be placed on all guy wires associated with overhead feeder lines. The Permittee shall submit the engineering drawings of all collector and feeder lines in the site plan pursuant to Section 5.1.

The Permittee must fulfill, comply with, and satisfy all Institute of Electrical and Electronics Engineers, Inc. (IEEE) standards applicable to this Project, including but not limited to, IEEE 776 [Recommended Practice for Inductive Coordination of Electric Supply and Communication Lines], IEEE 519 [Harmonic Specifications], IEEE 367 [Recommended Practice for Determining the Electric Power Station Ground Potential Rise and Induced Voltage from a Power Fault], and IEEE 820 [Standard Telephone Loop Performance Characteristics] provided the telephone service provider(s) have complied with any obligations imposed on it pursuant to these standards. Upon request by the Commission, the Permittee shall report to the Commission on compliance with these standards.

SECTION 5 ADMINISTRATIVE COMPLIANCE PROCEDURES

The following administrative compliance procedures shall be executed in accordance with the Permit Compliance Filings at Attachments 3 and 4.

5.1 SITE PLAN

At least ten (10) working days prior to the pre-construction meeting, the Permittee shall submit to the Commission:

- (a) a site plan for all turbines, roads, electrical equipment, collector and feeder lines, and other associated facilities to be constructed;
- (b) engineering drawings for site preparation, construction of the facilities; and

(c) a plan for restoration of the site due to construction.

Construction is defined under Minnesota Statutes section 216E.01. The Permittee may submit a site plan and engineering drawings for only a portion of the Project if the Permittee intends to commence construction on certain parts of the Project before completing the site plan and engineering drawings for other parts of the Project. The Permittee shall document, through GIS mapping, compliance with the setbacks and site layout restrictions required by this permit, including compliance with the noise standards pursuant to Minnesota Rules chapter 7030. In the event that previously unidentified environmental conditions are discovered during construction that by law or pursuant to conditions outlined in this permit would preclude the use of that site as a turbine site, the Permittee shall have the right to move or relocate turbine site. The Permittee shall notify the Commission of any turbines that are to be relocated before the turbine is constructed on the new site and demonstrate compliance with the setbacks and site layout restrictions required by this permit.

5.2 NOTICE TO LOCAL RESIDENTS

Within ten (10) working days of approval of this permit, the Permittee shall send a copy of the permit to the office of the auditor of each county in which the site is located and to the clerk of each city and township within the site boundaries. If applicable, the Permittee shall, within ten (10) working days of permit approval, send a copy of this permit to each regional development commission, local fire district, soil and water conservation district, watershed district, and watershed management district office with jurisdiction in the county where the site is located. Within thirty (30) days of approval of this permit, the Permittee shall send a copy of the permit to each landowner within the Project boundary. In no case shall the landowner receive this site permit and complaint procedure less than five (5) days prior to the start of construction on their property.

5.3 NOTICE OF PERMIT CONDITIONS

Prior to the start of construction, the Permittee shall inform all employees, contractors, and other persons involved in the construction and ongoing operation of the Project of the terms and conditions of this permit.

5.4 FIELD REPRESENTATIVE

At least ten (10) working days prior to the pre-construction meeting and continuously throughout construction, including site restoration, the Permittee shall designate a field representative responsible for overseeing compliance with the conditions of this permit during the construction phase of this Project. This person (or a designee) shall be accessible by telephone during normal working hours. This person's address, phone number, and emergency phone number shall be provided to the Commission, which may make the number available to local residents and officials and other interested persons. The Permittee may change the field representative by notification to the Commission.

5.5 SITE MANAGER

The Permittee shall designate a site manager responsible for overseeing compliance with the conditions of this permit during the commercial operation and decommissioning phases of this Project. The Permittee shall provide the Commission with the name, address, and phone number, and emergency phone number of the site manager prior to placing any turbine into commercial operation. This information shall be maintained current by informing the Commission of any changes, as they become effective.

5.6 PRE-CONSTRUCTION MEETING

Prior to the start of any construction, the Permittee shall conduct a pre-construction meeting with the Field Representative and the State Permit Manager designated by the Commission to coordinate field monitoring of construction activities.

5.7 PRE-OPERATION COMPLIANCE MEETING

At least ten (10) working days prior to commercial operation, the Permittee shall conduct a pre-operation compliance meeting with the Site Manager and the State Permit Manager designated by the Commission to coordinate field monitoring of operation activities.

5.8 COMPLAINTS

At least ten (10) working days prior to the pre-construction meeting, the Permittee shall submit to the Commission the company's procedures to be used to receive and respond to complaints. The Permittee shall report to the Commission all complaints received concerning any part of the Project in accordance with the procedures provided in Attachments 2 and 3 of this permit.

SECTION 6 SURVEYS AND REPORTING

6.1 BIOLOGICAL AND NATURAL RESOURCE INVENTORIES

The Permittee, in consultation with DNR and other interested parties, shall conduct pre-construction desktop and field inventories of potentially impacted native prairies, wetlands, and any other biologically sensitive areas within the site and assess the presence of state threatened, endangered, or species of special concern or federally listed species. The results of any surveys shall be submitted to the Commission and DNR at least ten (10) working days prior to the pre-construction meeting to confirm compliance of conditions in this permit.

The Permittee shall provide to the Commission any biological surveys or studies conducted on this Project, including those not required under this permit.

6.2 SHADOW FLICKER

At least ten (10) working days prior to the pre-construction meeting, the Permittee shall provide data on shadow flicker impacts on each residence of non-participating landowners and participating landowners. Information shall include the results of modeling used, assumptions

made, and the anticipated levels of impact from turbine shadow flicker on each residence. The Permittee shall provide documentation on its efforts to avoid, minimize and mitigate shadow flicker impacts.

6.3 ARCHAEOLOGICAL RESOURCES

The Permittee shall work with the State Historic Preservation Office (SHPO) and the State Archaeologist. The Permittee shall carry out a Phase 1 or 1A Archaeology survey for all proposed turbine locations, access roads, junction boxes, and other areas of Project construction impact to determine whether additional archaeological work is necessary for any part of the proposed Project. The Permittee shall contract with a qualified archaeologist to complete such surveys, and shall submit the results to the Commission, the SHPO, and the State Archaeologist at least ten (10) working days prior to the pre-construction meeting.

The SHPO and the State Archaeologist will make recommendations for the treatment of any significant archaeological sites which are identified. Any issues in the implementation of these recommendations will be resolved by the Commission in consultation with SHPO and the State Archaeologist. In addition, the Permittee shall mark and preserve any previously unrecorded archaeological sites that are found during construction and shall promptly notify the SHPO, the State Archaeologist, and the Commission of such discovery. The Permittee shall not excavate at such locations until so authorized by the Commission in consultation with the SHPO and the State Archaeologist.

If human remains are encountered during construction, the Permittee shall immediately halt construction at that location and promptly notify local law enforcement authorities and the State Archaeologist. Construction at the human remains location shall not proceed until authorized by local law enforcement authorities or the State Archaeologist.

If any federal funding, permit, or license is involved or required, the Permittee shall notify the SHPO as soon as possible in the planning process to coordinate section 106 (36 C.F.R. part 800) review.

Prior to construction, construction workers shall be trained about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If any archaeological sites are found during construction, the Permittee shall immediately stop work at the site and shall mark and preserve the site and notify the Commission and the SHPO about the discovery. The Commission and the SHPO shall have three (3) working days from the time the agency is notified to conduct an inspection of the site if either agency chooses to do so. On the fourth day after notification, the Permittee may begin work on the site unless the SHPO has directed that work shall cease. In such event, work shall not continue until the SHPO determines that construction can proceed.

6.4 INTERFERENCE

At least ten (10) working days prior to the pre-construction meeting, the Permittee shall submit a plan to the Commission for conducting an assessment of television signal reception and microwave signal patterns in the Project area. The assessment shall be designed to provide data

that can be used in the future to determine whether the turbines and associated facilities are the cause of disruption or interference of television reception or microwave patterns in the event residents should complain about such disruption or interference after the turbines are placed in operation. The assessment shall be completed prior to installation of the turbines. The Permittee shall be responsible for alleviating any disruption or interference of these services caused by the turbines or any associated facilities.

The Permittee shall not operate the Project so as to cause microwave, television, radio, telecommunications, or navigation interference in violation of Federal Communications Commission regulations or other law. In the event the Project or its operations cause such interference, the Permittee shall take timely measures necessary to correct the problem.

6.5 WAKE LOSS STUDIES

At least ten (10) working days prior to the pre-construction meeting, the Permittee shall provide to the Commission the pre-construction micro-siting analysis leading to the final tower locations and an estimate of total Project wake losses. The Permittee shall provide to the Commission any operational wake loss studies conducted on this Project.

6.6 NOISE

The Permittee shall submit a proposal to the Commission at least ten (10) working days prior to the pre-operation compliance meeting for the conduct of a post-construction noise study. Upon the approval of the Commission, the Permittee shall carry out the study. The study shall be designed to determine the operating LWECs noise levels at different frequencies and at various distances from the turbines at various wind directions and speeds. The Permittee shall submit the study within eighteen (18) months after commercial operation.

6.7 AVIAN AND BAT PROTECTION PLAN

The Permittee shall prepare an Avian and Bat Protection Plan in consultation with the Commission and the DNR and submit it to the Commission at least ten (10) working days prior to the pre-construction meeting. The plan shall address steps to be taken to identify and mitigate impacts to avian and bat species during the construction phase and the operation phase of the Project. The plan shall also include formal and informal monitoring, training, wildlife handling, documentation (e.g., photographs), and reporting protocols for each phase of the Project.

The Permittee shall submit quarterly avian and bat reports to the Commission. Quarterly reports are due by the 15th of each January, April, July, and October commencing the day following commercial operation and terminating upon the expiration of this permit. Each report shall identify any dead or injured avian and bat species, location of find by turbine number, and date of find for the reporting period in accordance with the reporting protocols. If a dead or injured avian or bat species is found, the report shall describe the potential cause of the occurrence and the steps taken to avoid future occurrences.

The Permittee shall notify the Commission, U.S. Fish and Wildlife Service, and DNR within twenty-four (24) hours of the discovery of any of the following:

- (a) five or more dead or injured non-protected avian or bat species within a reporting period;
- (b) one or more dead or injured migratory avian or bat species;
- (c) one or more dead or injured state threatened, endangered, or species of special concern;
or
- (d) one or more dead or injured federally listed species.

6.8 PROJECT ENERGY PRODUCTION

The Permittee shall submit a report no later than February 1st following each complete year of Project operation. The report shall include:

- (a) The rated nameplate capacity of the permitted Project;
- (b) The total monthly energy generated by the Project in MW hours;
- (c) The monthly capacity factor of the Project;
- (d) Yearly energy production and capacity factor for the Project;
- (e) The operational status of the Project and any major outages, major repairs, or turbine performance improvements occurring in the previous year; and
- (f) Any other information reasonably requested by the Commission.

This information shall be considered public and must be submitted electronically.

6.9 WIND RESOURCE USE

The Permittee shall upon the request of the Commission report to the Commission on the monthly energy production of the Project and the average monthly wind speed collected at one permanent meteorological tower selected by the Commission during the preceding year or partial year of operation.

Section 11.7 shall apply to data provided pursuant to this section.

6.10 EXTRAORDINARY EVENTS

Within twenty-four (24) hours of an occurrence, the Permittee shall notify the Commission of any extraordinary event. Extraordinary events include but shall not be limited to: fires, tower collapse, thrown blade, collector or feeder line failure, and injured LWECS worker or private person. The Permittee shall, within thirty (30) days of the occurrence, submit a report to the Commission describing the cause of the occurrence and the steps taken to avoid future occurrences.

SECTION 7 CONSTRUCTION AND OPERATION PRACTICES

7.1 SITE CLEARANCE

The Permittee shall disturb or clear the site only to the extent necessary to assure suitable access for construction, safe operation, and maintenance of the LWECS.

7.2 TOPSOIL PROTECTION

The Permittee shall implement measures to protect and segregate topsoil from subsoil in cultivated lands unless otherwise negotiated with the affected landowner.

7.3 SOIL COMPACTION

The Permittee shall implement measures to minimize soil compaction of all lands during all phases of the Project's life and shall confine compaction to as small an area as practicable.

7.4 LIVESTOCK PROTECTION

The Permittee shall take precautions to protect livestock during all phases of the Project's life.

7.5 FENCES

The Permittee shall promptly replace or repair all fences and gates removed or damaged during all phases of the Project's life unless otherwise negotiated with the affected landowner. When the Permittee installs a gate where electric fences are present, the Permittee shall provide for continuity in the electric fence circuit.

7.6 DRAINAGE TILES

The Permittee shall take into account the location of drainage tiles during Project layout and construction. The Permittee shall promptly repair or replace all drainage tiles broken or damaged during all phases of the Project's life unless otherwise negotiated with the affected landowner.

7.7 EQUIPMENT STORAGE

The Permittee shall not locate temporary equipment staging areas on lands under its control unless negotiated with landowner. Temporary staging areas shall not be located in wetlands or native prairie as defined in Sections 4.6 and 4.7.

7.8 ROADS

7.8.1 PUBLIC ROADS

At least ten (10) working days prior to the pre-construction meeting, the Permittee shall identify all state, county, or township roads that will be used for the Project and shall notify the

Commission and the state, county, or township governing body having jurisdiction over the roads to determine if the governmental body needs to inspect the roads prior to use of these roads. Where practical, existing roadways shall be used for all activities associated with the Project. Where practical, all-weather roads shall be used to deliver cement, turbines, towers, assembled nacelles, and all other heavy components to and from the turbine sites.

The Permittee shall, prior to the use of such roads, make satisfactory arrangements with the appropriate state, county, or township governmental body having jurisdiction over roads to be used for construction of the Project for maintenance and repair of roads that will be subject to extra wear and tear due to transportation of equipment and Project components. The Permittee shall notify the Commission of such arrangements upon request of the Commission.

7.8.2 TURBINE ACCESS ROADS

The Permittee shall construct the least number of turbine access roads it can. Access roads shall be low profile roads so that farming equipment can cross them and shall be covered with Class five gravel or similar material. Access roads shall not be constructed across streams and drainage ways without required permits and approvals from the DNR, USFWS, and/or USACE. When access roads are constructed across streams and drainage ways, the access roads shall be designed in a manner so runoff from the upper portions of the watershed can readily flow to the lower portion of the watershed. Access roads shall also be constructed in accordance with all necessary township, county, or state road requirements and permits.

7.8.3 PRIVATE ROADS

The Permittee shall promptly repair private roads or lanes damaged when moving equipment or when obtaining access to the site, unless otherwise negotiated with the affected landowner.

7.9 CLEANUP

The Permittee shall remove all waste and scrap that is the product of construction, operation, restoration, and maintenance from the site and properly dispose of it upon completion of each task. Personal litter, bottles, and paper deposited by site personnel shall be removed on a daily basis.

7.10 TREE REMOVAL

The Permittee shall minimize the removal of trees and the Permittee shall not remove groves of trees or shelter belts without notification to the Commission and the approval of the affected landowner(s).

7.11 SOIL EROSION AND SEDIMENT CONTROL

The Permittee shall develop a Soil Erosion and Sediment Control Plan prior to construction and submit the Plan to the Commission at least ten (10) working days prior to the pre-construction meeting. This Plan may be the same as the Storm Water Pollution Prevention Plan (SWPPP) submitted to the PCA as part of the National Pollutant Discharge Elimination System (NPDES) permit application.

The Soil Erosion and Sediment Control Plan shall address what types of erosion control measures will be implemented during each Project phase and shall at a minimum identify: plans for grading, construction, and drainage of roads and turbine pads; necessary soil information; detailed design features to maintain downstream water quality; a comprehensive re-vegetation plan to maintain and ensure adequate erosion control and slope stability and to restore the site after temporary Project activities; and measures to minimize the area of surface disturbance. Other practices shall include containing excavated material, protecting exposed soil, and stabilizing restored material and removal of silt fences or barriers when the area is stabilized. The plan shall identify methods for disposal or storage of excavated material. Erosion and sedimentation control measures shall be implemented prior to construction and maintained throughout the Project's life.

The Permittee shall develop an invasive species prevention plan to prevent the introduction of invasive species on lands disturbed by project construction activities. This requirement may be included as an element of the Soil Erosion and Sediment Control Plan.

7.12 RESTORATION

The Permittee shall, as soon as practical following construction of each turbine, considering the weather and preferences of the landowner, restore the area affected by any Project activities to the condition that existed immediately before construction began, to the extent possible. The time period may be no longer than twelve (12) months after completion of construction of the turbine, unless otherwise negotiated with the affected landowner(s). Restoration shall be compatible with the safe operation, maintenance, and inspection of the Project.

7.13 HAZARDOUS WASTE

The Permittee shall be responsible for compliance with all laws applicable to the generation, storage, transportation, clean-up, and disposal of hazardous wastes generated during any phase of the Project's life.

7.14 APPLICATION OF HERBICIDES

The Permittee shall restrict herbicide use to those herbicides and methods of application approved by the Minnesota Department of Agriculture and the U.S. Environmental Protection Agency. Selective foliage or basal application shall be used when practicable. The Permittee shall contact the landowner or his designee to obtain approval for the use of herbicide prior to any application on their property. The landowner may request that there be no application of herbicides on any part of the site within the landowner's property. All herbicides shall be applied in a safe and cautious manner so as to not damage property, including crops, orchards, tree farms, or gardens. The Permittee shall also, at least ten (10) working days prior to the application, notify beekeepers with an active apiary within one mile of the proposed application site of the day the company intends to apply herbicide so that precautionary measures may be taken by the beekeeper.

7.15 PUBLIC SAFETY

The Permittee shall provide educational materials to landowners within the site boundary and, upon request, to interested persons, about the Project and any restrictions or dangers associated with the Project. The Permittee shall also provide any necessary safety measures, such as warning signs and gates for traffic control or to restrict public access. The Permittee shall submit the location of all underground facilities, as defined in Minnesota Statutes section 216D.01, subdivision 11, to Gopher State One Call.

7.16 EMERGENCY RESPONSE

The Permittee shall prepare an emergency response plan (fire protection and medical emergency plan) in consultation with the emergency responders having jurisdiction over the area prior to LWECS construction. The Permittee shall submit a copy of the plan to the Commission at least ten (10) working days prior to the pre-construction meeting and a revised plan, if any, at least ten (10) working days prior to the pre-operation compliance meeting. The Permittee shall also register the LWECS with the local governments' emergency 911 services.

7.17 TOWER IDENTIFICATION

All turbine towers shall be marked with a visible identification number.

7.18 FEDERAL AVIATION ADMINISTRATION LIGHTING

Towers shall be marked as required by the FAA. There shall be no lights on the towers other than what is required by the FAA. This restriction shall not apply to infrared heating devices used to protect the wind monitoring equipment.

SECTION 8 FINAL CONSTRUCTION

8.1 AS-BUILT PLANS AND SPECIFICATIONS

Within sixty (60) days after completion of construction, the Permittee shall submit to the Commission a copy of the as-built plans and specifications. The Permittee must also submit this data in a GIS compatible format so that the Commission can place it into the Minnesota Geospatial Information Office's geographic data clearinghouse located in the Department of Administration.

8.2 FINAL BOUNDARIES

After completion of construction, the Commission shall determine the need to adjust the final boundaries of the site required for this Project. If done, this permit may be modified, after notice and opportunity for public hearing, to represent the actual site required by the Permittee to operate the Project authorized by this permit.

8.3 EXPANSION OF SITE BOUNDARIES

No expansion of the site boundaries described in this permit shall be authorized without the approval of the Commission. The Permittee may submit to the Commission a request for a change in the boundaries of the site for the Project. The Commission will respond to the requested change in accordance with applicable statutes and rules.

SECTION 9 DECOMMISSIONING, RESTORATION, AND ABANDONMENT

9.1 DECOMMISSIONING PLAN

At least ten (10) working days prior to the pre-operation compliance meeting, the Permittee shall submit to the Commission a Decommissioning Plan documenting the manner in which the Permittee anticipates decommissioning the Project in accordance with the requirements of Minnesota Rules 7854.0500, subpart 13. The Permittee shall ensure that it carries out its obligations to provide for the resources necessary to fulfill its requirements to properly decommission the Project at the appropriate time. The Commission may at any time request the Permittee to file a report with the Commission describing how the Permittee is fulfilling this obligation.

9.2 SITE RESTORATION

Upon expiration of this permit, or upon earlier termination of operation of the Project, or any turbine within the Project, the Permittee shall have the obligation to dismantle and remove from the site all towers, turbine generators, transformers, overhead and underground cables and lines, foundations, buildings, and ancillary equipment to a depth of four feet. To the extent feasible, the Permittee shall restore and reclaim the site to its pre-project topography and topsoil quality. All access roads shall be removed unless written approval is given by the affected landowner(s) requesting that one or more roads, or portions thereof, be retained. Any agreement for removal to a lesser depth or for no removal shall be recorded with the county and shall show the locations of all such foundations. All such agreements between the Permittee and the affected landowner shall be submitted to the Commission prior to completion of restoration activities. The site shall be restored in accordance with the requirements of this condition within 18 months after expiration, or upon earlier termination of the Project, or any turbine within the Project.

9.3 ABANDONED TURBINES

The Permittee shall advise the Commission of any turbines that are abandoned prior to termination of operation of the Project. A Project, or any turbine within the Project, shall be considered abandoned after one (1) year without energy production and the land restored pursuant to Section 9.2 unless a plan is developed and submitted to the Commission outlining the steps and schedule for returning the Project, or any turbine within the Project, to service.

SECTION 10 AUTHORITY TO CONSTRUCT LWECS

10.1 WIND RIGHTS

At least ten (10) working days prior to the pre-construction meeting, the Permittee shall demonstrate that it has obtained the wind rights and any other rights necessary to construct and operate the Project within the boundaries of the LWECS authorized by this permit.

Nothing in this permit shall be construed to preclude any other person from seeking a site permit to construct a LWECS in any area within the boundaries of the Project covered by this permit if the Permittee does not hold exclusive wind rights for such areas.

10.2 POWER PURCHASE AGREEMENT

In the event the Permittee does not have a power purchase agreement or some other enforceable mechanism for sale of the electricity to be generated by the Project at the time this permit is issued, the Permittee shall provide notice to the Commission when it obtains a commitment for purchase of the power. This permit does not authorize construction of the Project until the Permittee has obtained a power purchase agreement or some other enforceable mechanism for sale of the electricity to be generated by the Project. In the event the Permittee does not obtain a power purchase agreement or some other enforceable mechanism for sale of the electricity to be generated by the Project within two years of the issuance of this permit, the Permittee must advise the Commission of the reason for not having such power purchase agreement or enforceable mechanism. In such event, the Commission may determine whether this permit should be amended or revoked. No amendment or revocation of this permit may be undertaken except in accordance with applicable statutes and rules, including Minnesota Rule 7854.1300.

10.3 FAILURE TO COMMENCE CONSTRUCTION

If the Permittee has not completed the pre-construction surveys required under Section 5 and commenced construction, as defined in Minnesota Statutes section 216E.01, of the LWECS within two years of the issuance of this permit, the Permittee must advise the Commission of the reason construction has not commenced. In such event, the Commission shall make a determination as whether this permit should be amended or revoked. No revocation of this permit may be undertaken except in accordance with applicable statutes and rules, including Minnesota Rule 7854.1300.

10.4 PREEMPTION OF OTHER LAWS

Pursuant to Minnesota Statutes section 216F.07, this site permit shall be the only site approval required for the location of this Project, and this permit shall supersede and preempt all zoning, building, and land use rules, regulations, and ordinances adopted by regional, county, local, and special purpose governments. Nothing in this permit shall release the Permittee from any obligation imposed by law that is not superseded or preempted by law.

10.5 OTHER PERMITS

The Permittee shall be responsible for acquiring any other federal, state, or local permits or authorizations that may be required to construct and operate a LWECS within the authorized site. The Permittee shall submit a copy of such permits and authorizations to the Commission upon request.

10.5.1 COMPLIANCE WITH FEDERAL AND STATE AGENCY PERMITS

The Permittee shall comply with all terms and conditions of permits or licenses issued by Federal, State, or Tribal authorities including, but not limited to, the requirements of the PCA (Section 401 Water Quality Certification, National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) stormwater permit for construction activity, and other site specific discharge approvals), DNR (License to Cross Public Lands and Water, Public Water Works Permit, and state protected species consultation), SHPO (Section 106 Historic Consultation Act), FAA determinations, and DOT (Utility Access Permit, Highway Access Permit, Oversize and Overweight Permit, and Aeronautics Airspace Obstruction Permit).

10.5.2 COMPLIANCE WITH COUNTY, CITY OR MUNICIPAL PERMITS

The Permittee shall comply with all terms and conditions of permits or licenses issued by the counties, cities, and municipalities affected by the Project that do not conflict or are not preempted by federal or state permits and regulations.

SECTION 11 COMMISSION POST-ISSUANCE AUTHORITIES

11.1 PERIODIC REVIEW

The Commission shall initiate a review of this permit and the applicable conditions at least once every five (5) years. The purpose of the periodic review is to allow the Commission, the Permittee, and other interested persons an opportunity to consider modifications in the conditions of this permit. No modification may be made except in accordance with applicable statutes and rules.

11.2 MODIFICATION OF CONDITIONS

After notice and opportunity for hearing, this permit may be modified or amended for cause including but not limited to the following:

- (a) Violation of any condition in this permit;
- (b) Endangerment of human health or the environment by operation of the facility; or
- (c) Existence of other grounds established by rule.

11.3 REVOCATION OR SUSPENSION OF PERMIT

The Commission may take action to suspend or revoke this permit upon the grounds that:

- (a) A false statement was knowingly made in the application or in accompanying statements or studies required of the Permittee, and a true statement would have warranted a change in the Commission's findings;
- (b) There has been a failure to comply with material conditions of this permit, or there has been a failure to maintain health and safety standards; or
- (c) There has been a material violation of a provision of an applicable statute, rule, or an order of the Commission.

In the event the Commission determines that it is appropriate to consider revocation or suspension of this permit, the Commission shall proceed in accordance with the requirements of Minnesota Rule 7854.1300 to determine the appropriate action. Upon a finding of any of the above, the Commission may require the Permittee to undertake corrective measures in lieu of having this permit suspended or revoked.

11.4 MORE STRINGENT RULES

The Commission's issuance of this site permit does not prevent the future adoption by the Commission of rules or orders more stringent than those now in existence and does not prevent the enforcement of these more stringent rules and orders against the Permittee.

11.5 TRANSFER OF PERMIT

The Permittee may not transfer this permit without the approval of the Commission. If the Permittee desires to transfer this permit, the holder shall advise the Commission in writing of such desire. The Permittee shall provide the Commission with such information about the transfer as the Commission requires to reach a decision. The Commission may impose additional conditions on any new Permittee as part of the approval of the transfer.

11.6 RIGHT OF ENTRY

Upon reasonable notice, presentation of credentials and at all times in compliance with the Permittee's site safety standards, the Permittee shall allow representatives of the Commission to perform the following:

- (a) To enter upon the facilities easement of the site property for the purpose of obtaining information, examining records, and conducting surveys or investigations;
- (b) To bring such equipment upon the facilities easement of the property as is necessary to conduct such surveys and investigations;
- (c) To sample and monitor upon the facilities easement of the property; and

(d) To examine and copy any documents pertaining to compliance with the conditions of this permit.

11.7 PROPRIETARY INFORMATION

Certain information required to be submitted to the Commission under this permit, including energy production and wake loss data, may constitute trade secret information or other type of proprietary information under the Data Practices Act or other law and is not to be made available by the Commission. The Permittee must satisfy requirements of applicable law to obtain the protection afforded by the law.

SECTION 12 EXPIRATION DATE

This permit shall expire thirty (30) years after the date this permit was approved and adopted.

SECTION 13 SPECIAL CONDITIONS

Special conditions shall take precedence over any of the other conditions of this Permit if there should be a conflict between the two.

13.1 NATIVE PRAIRIE AND ROCK OUTCROPPINGS

The Permittee shall avoid all native prairies and rock outcroppings by siting project infrastructure in upland cropped areas, and in particular, shall avoid all “Sites of Biodiversity Significance” ranked “Outstanding,” “High,” or “Medium”, and to the extent practicable, sites ranked as “Low” or “Below”.

13.2 ENDANGERED SPECIES

The Permittee shall follow the fact sheets of recommendations for avoiding and minimizing impacts for Blanding’s turtles and Topeka shiners. The summary of recommendations for avoiding and minimizing impacts to these populations, including the attached colored photocopies of the Blanding’s turtles, shall be made available to all contractors and its employees. Attachment 5 contains the fact sheets recommendations.

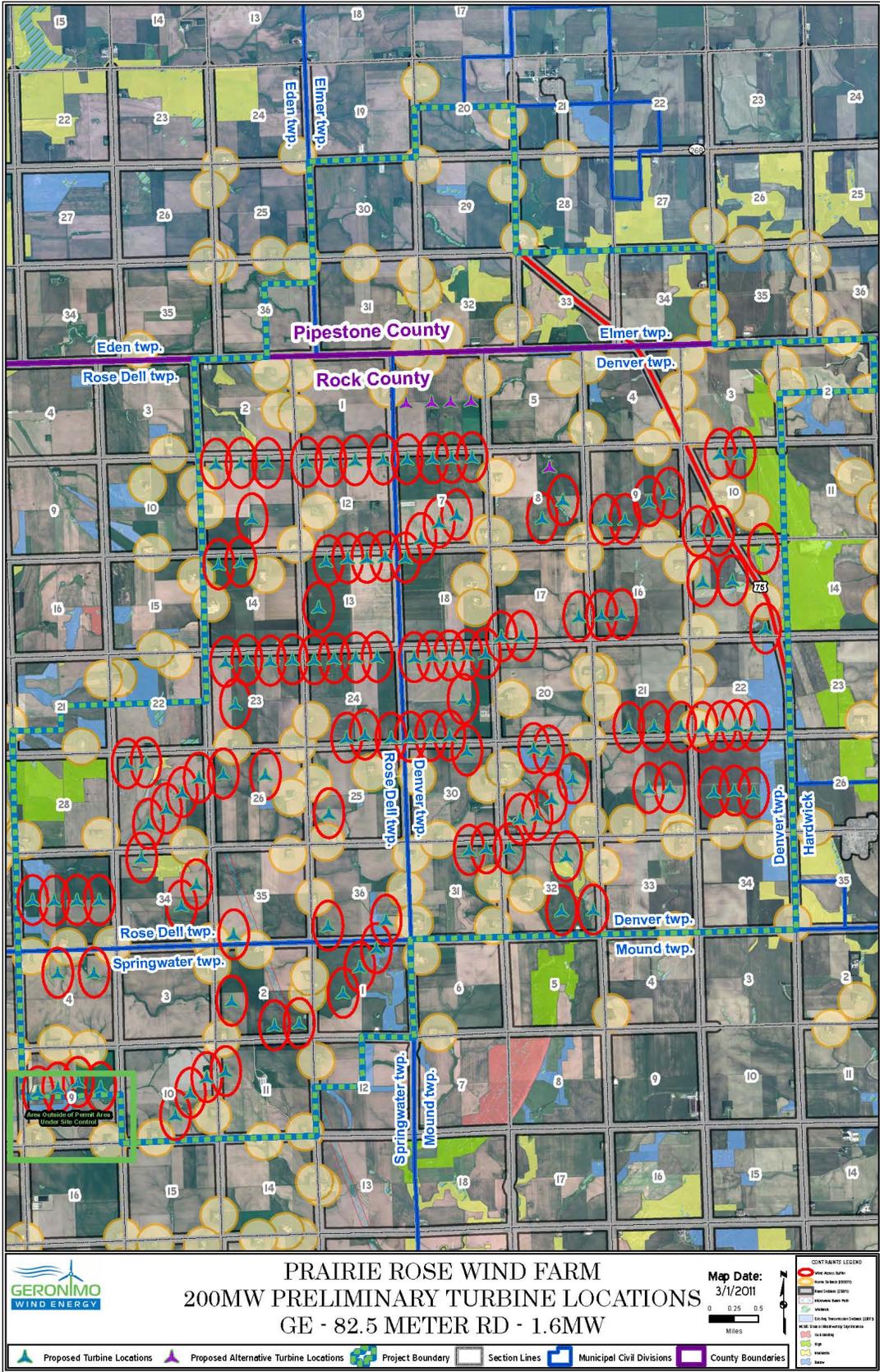
The Permittee shall complete survey work during July-August 2011 for Burrowing Owls using protocols approved by DNR and EFP. A written report of all findings shall be submitted to DNR and the Commission by September 30, 2011. Additional survey work shall be conducted prior to construction to determine and document the presence of any Burrowing Owl nests according to protocol approved by DNR and EFP. Continued monitoring for Burrowing Owls shall be addressed in the Avian and Bat Protection Plan (Permit Condition 6.7).

13.3 CONTROLLED BUFFER AREA OUTSIDE PROJECT BOUNDARY

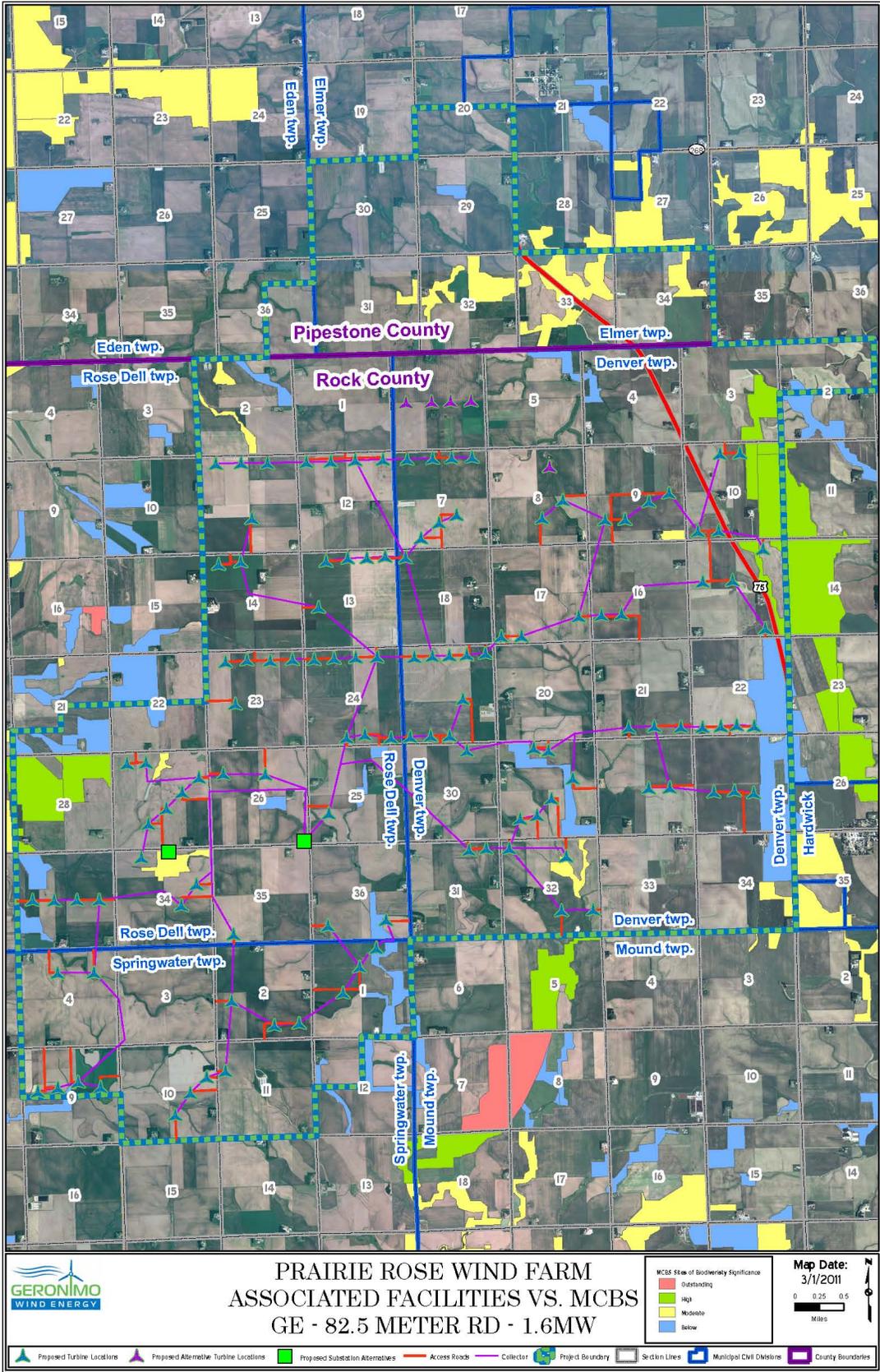
The Permittee is allowed to use area under its control outside the project boundary in Section 9 of Springwater Township as Wind Access Buffer for the location of four (4) turbines along the southern project boundary in that section.

ATTACHMENT 1: SITE PERMIT MAPS

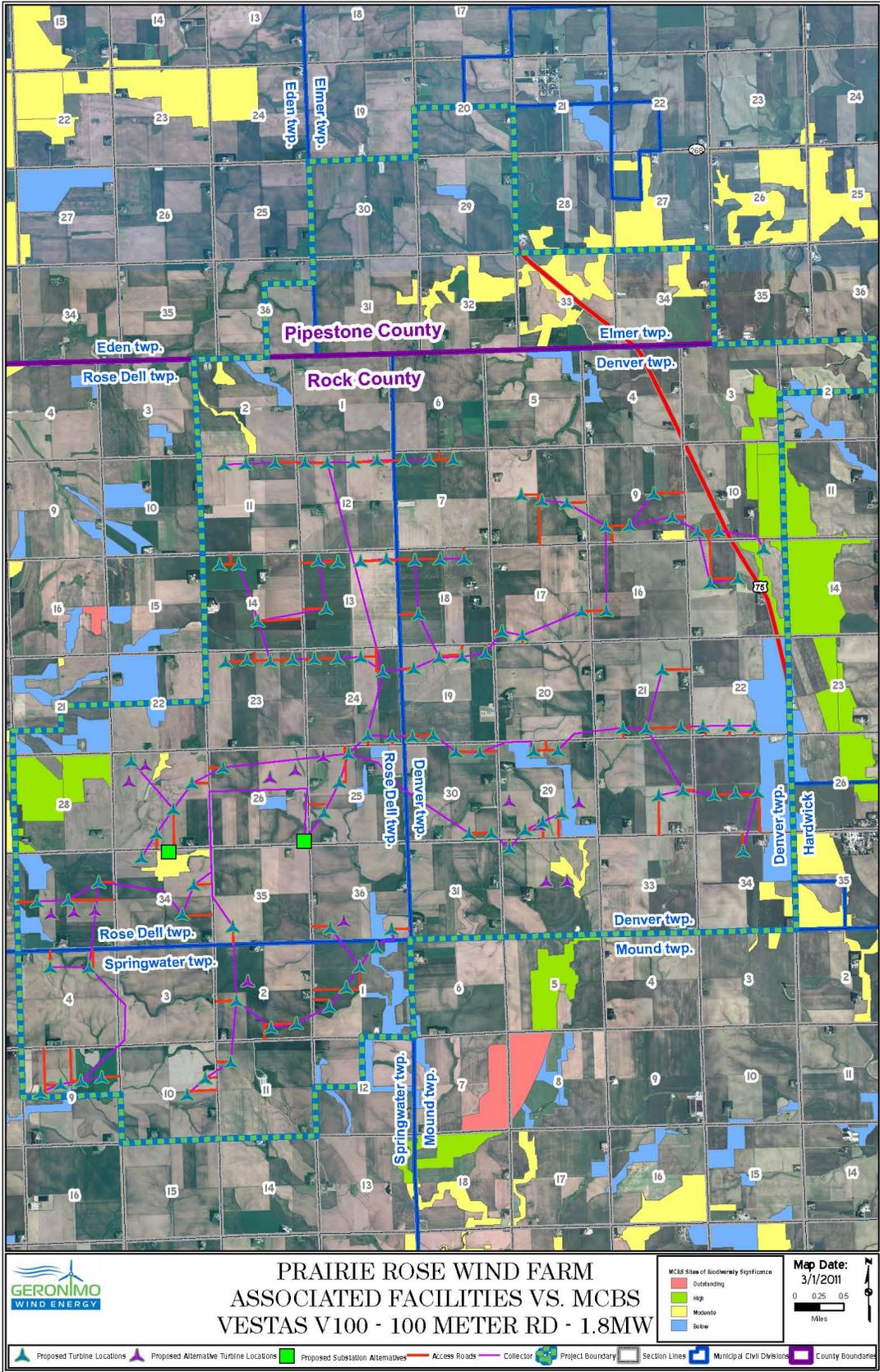
Site Permit Map 1 of 4



Site Permit Map 2 of 4



Site Permit Map 4 of 4



**MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLAINT HANDLING PROCEDURES
FOR
LARGE WIND ENERGY CONVERSION SYSTEMS**

A. Purpose:

To establish a uniform and timely method of reporting complaints received by the Permittee concerning Permit conditions for site preparation, construction, cleanup and restoration, operation, and resolution of such complaints.

B. Scope:

This document describes Complaint reporting procedures and frequency.

C. Applicability:

The procedures shall be used for all complaints received by the Permittee and all complaints received by the Commission under Minn. Rule 7829.1500 or 7829.1700 relevant to this Permit.

D. Definitions:

Complaint: A verbal or written statement presented to the Permittee by a person expressing dissatisfaction or concern regarding site preparation, cleanup or restoration or other LWECS and associated facilities site permit conditions. Complaints do not include requests, inquiries, questions, or general comments.

Substantial Complaint: A written Complaint alleging a violation of a specific Site Permit condition that, if substantiated, could result in Permit modification or suspension pursuant to the applicable regulations.

Unresolved Complaint: A Complaint which, despite the good faith efforts of the permittee and a person(s), remains to both or one of the parties unresolved or unsatisfactorily resolved.

Person: An individual, partnership, joint venture, private or public corporation, association, firm, public service company, cooperative, political subdivision, municipal corporation, government agency, public utility district, or any other entity, public or private, however organized.

E. Complaint Documentation and Processing:

1. The Permittee shall document all Complaints by maintaining a record of all applicable information concerning the Complaint, including the following:

- a. Name of complainant, address, phone number, and e-mail address.
 - b. Precise property description or parcel number.
 - c. Name of Permittee representative receiving Complaint and date of receipt.
 - d. Nature of Complaint and the applicable Site Permit conditions(s).
 - e. Activities undertaken to resolve the Complaint.
 - f. Final disposition of the Complaint.
2. The Permittee shall designate an individual to summarize complaints for the Commission. This person's name, phone number and e-mail address shall accompany all complaint submittals.
 3. A Person presenting the Complaint should to the extent possible, include the following information in their communications:
 - a. Name, address, phone number, and e-mail address.
 - b. Date
 - c. Tract or parcel
 - d. Whether the complaint relates to (1) a Site Permit matter, (2) an LWECs and associated facility issue, or (3) a compliance issue.

F. Reporting Requirements:

The Permittee shall report all complaints to the Commission according to the following schedule:

Immediate Reports: All substantial complaints shall be reported to the Commission the same day received, or on the following working day for complaints received after working hours. Such reports are to be directed to Wind Permit Compliance, 1-800-657-3794, or by e-mail to: DOC.energypermitcompliance@state.mn.us, or. Voice messages are acceptable.

Monthly Reports: By the 15th of each month, a summary of all complaints, including substantial complaints received or resolved during the preceding month, shall be Filed to Dr. Burl W. Haar, Executive Secretary, Public Utilities Commission, using the Minnesota Department of Commerce eDocket system (see eFiling instructions attached to this permit).

If no Complaints were received during the preceding month, the permittee shall submit (eFile) a summary indicating that no complaints were received.

G. Complaints Received by the Commission or OES:

Complaints received directly by the Commission from aggrieved persons regarding site preparation, construction, cleanup, restoration, operation and maintenance shall be promptly sent to the Permittee.

H. Commission Process for Unresolved Complaints:

Initial Screening: Commission staff shall perform an initial evaluation of unresolved Complaints submitted to the Commission. Complaints raising substantial LWECS Site Permit issues shall be processed and resolved by the Commission. Staff shall notify Permittee and appropriate person(s) if it determines that the Complaint is a Substantial Complaint. With respect to such Complaints, each party shall submit a written summary of its position to the Commission no later than ten days after receipt of the Staff notification. Staff shall present Briefing Papers to the Commission, which shall resolve the Complaint within twenty days of submission of the Briefing Papers.

I. Permittee Contacts for Complaints:

Mailing Address: Complaints filed by mail shall be sent to one of the addresses below:

Patrick Smith
Director of Environmental Planning
7650 Edinborough Way, Suite 725
Edina, MN 55435

Tel: 952-988-9000

email: Patrick@geronimowind.com

**MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLIANCE FILING PROCEDURE
FOR PERMITTED ENERGY FACILITIES**

1. Purpose

To establish a uniform and timely method of submitting information required by the Commission energy facility permits.

2. Scope and Applicability

This procedure encompasses all compliance filings required by permit.

3. Definitions

Compliance Filing – A sending (filing) of information to the Commission, where the information is required by a Commission site or route permit.

4. Responsibilities

- A) The permittee shall eFile all compliance filings with Dr. Burl Haar, Executive Secretary, Public Utilities Commission, through the Department of Commerce (DOC) eDocket system. The system is located on the DOC website:
<https://www.edockets.state.mn.us/EFiling/home.jsp>

General instructions are provided on the website. Permittees must register on the website to eFile documents.

- B) All filings must have a cover sheet that includes:

- 1) Date
- 2) Name of submitter / permittee
- 3) Type of Permit (Site or Route)
- 4) Project Location
- 5) Project Docket Number
- 6) Permit Section Under Which the Filing is Made
- 7) Short Description of the Filing

- C) Filings that are graphic intensive (e.g., maps, plan and profile) must, in addition to being eFiled, be submitted as paper copies and on CD. Copies and CDs should be sent to: 1) Dr. Burl W. Haar, Executive Secretary, Minnesota Public Utilities Commission, 121 7th Place East, Suite 350, St. Paul, MN, 55101-2147, and 2) Department of Commerce, Energy Facility Permitting, 85 7th Place East, Suite 500, St. Paul, MN, 55101-2198. Additionally, the Commission may request a paper copy of any eFiled document.

PERMIT COMPLIANCE FILINGS¹

PERMITTEE: Prairie Rose Wind Farm, LLC
PERMIT TYPE: LWECS Site Permit
PROJECT LOCATION: Rock County and Pipestone County
COMMISSION DOCKET: IP-6843/WS-10-425

PRE-CONSTRUCTION MEETING

Permit Section	Description	Due Date	Notes	eDocket Doc. ID	Date Filed
4.7	Native Prairie Protection Plan	10 working days prior to pre-construction meeting, if required.	Develop in consultation with Commission and DNR.		
5.1	Site Plan	10 working days prior to pre-construction meeting.			
5.4	Field Representative	10 working days prior to pre-construction meeting.			
5.8	Complaint Reporting Procedures	10 working days prior to pre-construction meeting.			
6.1	Biological & Natural Resource Inventories	30 days prior to pre-construction Meeting.	Results may trigger need for a Native Prairie Protection Plan.		
6.2	Shadow Flicker Analysis	10 working days prior to pre-construction meeting.			
6.3	Archaeological Resources	10 working days prior to pre-construction meeting and as recommended by the State Historic Preservation Office.			
6.4	Interference	10 working days prior to pre-construction Meeting.			
6.5	Wake Loss	10 working days prior to pre-construction meeting.			

¹ This compilation of permit compliance filings is provided for the convenience of the permittee and the Commission. However, it is not a substitute for the permit; the language of the permit controls.

PRE-CONSTRUCTION MEETING (Cont.)

Permit Section	Description	Due Date	Notes	eDocket Doc. ID	Date Filed
6.7	Avian and Bat Protection Plan	10 days prior to pre-construction meeting.	Develop in consultation with Commission and DNR.		
7.8	Road Identification	10 working days prior to pre-construction meeting.			
7.11	Soil Erosion & Sediment Control Plan	10 working days prior to pre-construction.	May be the same as NPDES SWPPP.		
7.16	Emergency Response	10 working days prior to pre-construction meeting. Must register in 911 Program.			
10.1	Wind Rights	10 working days prior to pre-construction meeting.			

PRE-OPERATION COMPLIANCE MEETING

Permit Section	Description	Due Date	Notes	eDocket Doc. ID	Date Filed
5.7	Pre-operation compliance meeting	10 working days prior to commercial operation.			
6.6	Noise Study Protocol	10 working days prior to pre-operation meeting.			
9.1 & 9.3	Decommissioning Plan	10 working days prior to commercial operation.			

OTHER REQUIREMENTS

Permit Section	Description	Due Date	Notes	eDocket Doc. ID	Date Filed
5.2	Notice to Landowners & Government Units	Within 30 working days of permit issuance.			
5.5	Site Manager	10 working days prior to prior to commercial operation.	Update contact information as necessary.		
5.8	Complaints	Complaint submittals on the 15 th of each month or within 24 hours.	Must eFile report even if no complaints.		
6.6	Noise Study Results	Within 18 months of Commercial Operation.			
6.7	Avian and Bat Reporting Requirements	Quarterly reports due and within 24 hours of discovery of certain species.			
6.8	Project Energy Production	Due 2/1 each year.			
6.9	Wind Resource Use	Upon request of the Commission.			
6.10	Extraordinary Events	Within 24 hours and report on occurrence of event within 30 days.			
8.1	As Builts	Within 60 days of completion of construction.			
10.2	PPA or Enforceable Mechanism	Within 2 years of permit issuance.	If no PPA or other enforceable mechanism at time of permit issuance.		
10.3	Failure to Start Construction	Within 2 years of permit issuance.			

ATTACHMENT 5: BEST PRACTICES FACT SHEETS

Recommendations for Construction Projects Affecting Waters Inhabited by Topeka Shiners (*Notropis topeka*) in Minnesota

**U.S. Fish and Wildlife Service
Twin Cities Field Office
(612) 725-3548**

Background

Topeka shiner (*Notropis topeka*) occurs throughout the Big Sioux and Rock River Watersheds in five counties in southwestern Minnesota (Figure 1). The U.S. Fish and Wildlife Service (Service) listed Topeka shiner as an endangered species in 1998 and designated critical habitat² for it in 2004. The Endangered Species Act (ESA) prohibits the taking³ of this species.

Endangered Species Act Requirements for Actions in Topeka Shiner Habitat

Federal Agency Actions

Federal agencies or their designated non-federal representatives must consult with the Service on any action that they fund, authorize, or carry out that may affect Topeka shiner or its critical habitat. If an agency proposes to implement an action that is likely to result in adverse effects to Topeka shiner, it must undergo formal consultation with the Service. If the agency determines that an action may affect Topeka shiners, but that those effects are not likely to be adverse, it may avoid formal consultation by receiving written concurrence on this determination from the Service.

Private or Local (Non-federal) Actions

Private landowners, corporations, state or local governments, and other non-federal entities or individuals who wish to conduct activities that might incidentally harm (or "take") Topeka shiners must first obtain an incidental take permit from the U.S. Fish and Wildlife Service (Service). To determine whether an action may require an incidental take permit, coordinate with the Service when planning actions that may affect streams or off-channel habitats in the Rock River or Big Sioux River watersheds in Minnesota. Contact the Service's Twin Cities Field Office (612/725-3548) for further information or see the following website for information regarding Endangered Species permits -- <http://endangered.fws.gov/permits/index.html?#forms>.

Project Recommendations

The following recommendations are provided to help design actions that would avoid or minimize adverse effects to Topeka shiner. These recommendations may not address every way in which proposed actions may affect this species and may not preclude the need for formal consultation for federal actions or for an incidental take permit for non-federal actions. Therefore, we highly recommend that you coordinate early in the planning process with the Service's Twin Cities Field Office (612/725-3548) when contemplating any action that may affect streams or associated off-channel habitats (oxbows, abandoned channels, etc.) in the Big Sioux River or Rock River watersheds in Minnesota (Fig. 1).

² See 69 Federal Register 44,736 (July 27, 2004) or <http://www.fws.gov/midwest/endangered/fishes/index.html> for further information about Topeka shiner critical habitat. 1 Revised 5/12/2005 USFWS Ecological Services

³ The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

1. Ensure that contractors and subcontractors understand all permit provisions that are necessary to avoid or minimize adverse effects to Topeka shiners.
2. Do not dewater stream reaches or temporarily divert streams for construction.
3. Do not conduct in-stream work before August 15 to avoid disrupting Topeka shiner spawning.
4. Follow all applicable requirements and best management practices for stormwater and erosion control – for example, requirements contained within stormwater permits from Minnesota Pollution Control Agency (MPCA). Useful resources for designing effective stormwater and erosion control include the MPCA Stormwater Best Management Practices Manual (see <http://www.pca.state.mn.us/water/pubs/sw-bmpmanual.html>) and the Minnesota Department of Transportation Erosion Control Handbook for Local Roads (see <http://www.lrrb.gen.mn.us/PDF/200308.pdf>). Other resources are available at <http://www.pca.state.mn.us/water/stormwater/stormwater-c.html#factsheets>. General suggestions for minimizing effects of erosion on Topeka shiners are shown below.
5. Minimize removal of riparian (streamside) vegetation; such removal should occur sequentially as needed over the length of the project.
6. Mulch areas of disturbed soils and reseed promptly.
7. Implement appropriate erosion and sediment prevention measures to the maximum extent practicable. Inspect devices frequently to ensure that they are effective and in good
8. Leave existing features, such as bridge abutments, retaining walls, and riprap, in place as much as is feasible.
9. Ensure that erosion prevention measures are in place and in adequate condition when leaving work site.
10. Design and install instream structures (e.g., box culverts) in a manner that will not impair passage of Topeka shiners and other fish species after construction is completed.
11. Do not operate motorized vehicles instream. Excavation, culvert placement, etc. should be conducted from streambanks outside of standing or flowing water.
12. Backfill placed in the stream shall consist of rock or granular material free of fines, silts, and mud. Machinery parts (i.e., backhoe buckets, etc.) shall be cleaned of all such material and free of grease, oil, etc. before their instream use.
13. Prevent materials and debris from falling into the water during construction. If materials or debris fall into the water or into riparian areas retrieve them promptly by hand or with equipment working from the banks.
14. If the project is modified, or if field conditions change, the applicant or agency representative should contact U.S. Fish and Wildlife Service before proceeding.

Endangered, Threatened, and Special Concern Species of Minnesota

Blanding's Turtle
(Emydoidea blandingii)

Minnesota Status: Threatened
Federal Status: none

State Rank¹: S2
Global Rank¹: G4

HABITAT USE

Blanding's turtles need both wetland and upland habitats to complete their life cycle. The types of wetlands used include ponds, marshes, shrub swamps, bogs, and ditches and streams with slow-moving water. In Minnesota, Blanding's turtles are primarily marsh and pond inhabitants. Calm, shallow water bodies (Type 1-3 wetlands) with mud bottoms and abundant aquatic vegetation (e.g., cattails, water lilies) are preferred, and extensive marshes bordering rivers provide excellent habitat. Small temporary wetlands (those that dry up in the late summer or fall) are frequently used in spring and summer -- these fishless pools are amphibian and invertebrate breeding habitat, which provides an important food source for Blanding's turtles. Also, the warmer water of these shallower areas probably aids in the development of eggs within the female turtle. Nesting occurs in open (grassy or brushy) sandy uplands, often some distance from water bodies. Frequently, nesting occurs in traditional nesting grounds on undeveloped land. Blanding's turtles have also been known to nest successfully on residential property (especially in low density housing situations), and to utilize disturbed areas such as farm fields, gardens, under power lines, and road shoulders (especially of dirt roads). Although Blanding's turtles may travel through woodlots during their seasonal movements, shady areas (including forests and lawns with shade trees) are not used for nesting. Wetlands with deeper water are needed in times of drought, and during the winter. Blanding's turtles overwinter in the muddy bottoms of deeper marshes and ponds, or other water bodies where they are protected from freezing.

LIFE HISTORY

Individuals emerge from overwintering and begin basking in late March or early April on warm, sunny days. The increase in body temperature which occurs during basking is necessary for egg development within the female turtle. Nesting in Minnesota typically occurs during June, and females are most active in late afternoon and at dusk. Nesting can occur as much as a mile from wetlands. The nest is dug by the female in an open sandy area and 6-15 eggs are laid. The female turtle returns to the marsh within 24 hours of laying eggs. After a development period of approximately two months, hatchlings leave the nest from mid-August through early-October. Nesting females and hatchlings are often at risk of being killed while crossing roads between wetlands and nesting areas. In addition to movements associated with nesting, all ages and both sexes move between wetlands from April through November. These movements peak in June and July and again in September and October as turtles move to and from overwintering sites. In late autumn (typically November), Blanding's turtles bury themselves in the substrate (the mud at the bottom) of deeper wetlands to overwinter.

IMPACTS / THREATS / CAUSES OF DECLINE

- loss of wetland habitat through drainage or flooding (converting wetlands into ponds or lakes)
- loss of upland habitat through development or conversion to agriculture
- human disturbance, including collection for the pet trade* and road kills during seasonal movements
- increase in predator populations (skunks, raccoons, etc.) which prey on nests and young

*It is illegal to possess this threatened species.

RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS

These recommendations apply to typical construction projects and general land use within Blanding's turtle habitat, and are provided to help local governments, developers, contractors, and homeowners minimize or avoid detrimental impacts to Blanding's turtle populations. **List 1** describes minimum measures which we recommend to prevent harm to Blanding's turtles during construction or other work within Blanding's turtle habitat. **List 2** contains recommendations which offer even greater protection for Blanding's turtles populations; this list should be used *in addition to the first list* in areas which are known to be of state-wide importance to Blanding's turtles (contact the DNR's Natural Heritage and Nongame Research Program if you wish to determine if your project or home is in one of these areas), or in any other area where greater protection for Blanding's turtles is desired.

List 1. Recommendations for all areas inhabited by Blanding's turtles.	List 2. Additional recommendations for areas known to be of state-wide importance to Blanding's turtles.
GENERAL	
A flyer with an illustration of a Blanding's turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.	Turtle crossing signs can be installed adjacent to road-crossing areas used by Blanding's turtles to increase public awareness and reduce road kills.
Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed.	Workers in the area should be aware that Blanding's turtles nest in June, generally after 4pm, and should be advised to minimize disturbance if turtles are seen.
If a Blanding's turtle nests in your yard, do not disturb the nest.	If you would like to provide more protection for a Blanding's turtle nest on your property, see "Protecting Blanding's Turtle Nests" on page 3 of this fact sheet.
Silt fencing should be set up to keep turtles out of construction areas. It is <u>critical</u> that silt fencing be removed after the area has been revegetated.	Construction in potential nesting areas should be limited to the period between September 15 and June 1 (this is the time when activity of adults and hatchlings in upland areas is at a minimum).
WETLANDS	
Small, vegetated temporary wetlands (Types 2 & 3) should not be dredged, deepened, filled, or converted to storm water retention basins (these wetlands provide important habitat during spring and summer).	Shallow portions of wetlands should not be disturbed during prime basking time (mid morning to mid- afternoon in May and June). A wide buffer should be left along the shore to minimize human activity near wetlands (basking Blanding's turtles are more easily disturbed than other turtle species).
Wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.	Wetlands should be protected from road, lawn, and other chemical run-off by a vegetated buffer strip at least 50' wide. This area should be left unmowed and in a natural condition.
ROADS	
Roads should be kept to minimum standards on widths and lanes (this reduces road kills by slowing traffic and reducing the distance turtles need to cross).	Tunnels should be considered in areas with concentrations of turtle crossings (more than 10 turtles per year per 100 meters of road), and in areas of lower density if the level of road use would make a safe crossing impossible for turtles. Contact your DNR Regional Nongame Specialist for further information on wildlife tunnels.
Roads should be ditched, not curbed or below grade. If curbs must be used, 4 inch high curbs at a 3:1 slope are preferred (Blanding's turtles have great difficulty climbing traditional curbs; curbs and below grade roads trap turtles on the road and can cause road kills).	Roads should be ditched, not curbed or below grade.

ROADS cont.	
Culverts between wetland areas, or between wetland areas and nesting areas, should be 36 inches or greater in diameter, and elliptical or flat-bottomed.	Road placement should avoid separating wetlands from adjacent upland nesting sites, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details).
Wetland crossings should be bridged, or include raised roadways with culverts which are 36 in or greater in diameter and flat-bottomed or elliptical (raised roadways discourage turtles from leaving the wetland to bask on roads).	Road placement should avoid bisecting wetlands, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details). This is especially important for roads with more than 2 lanes.
Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.	Roads crossing streams should be bridged.
UTILITIES	
Utility access and maintenance roads should be kept to a minimum (this reduces road-kill potential).	
Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.	
LANDSCAPING AND VEGETATION MANAGEMENT	
Terrain should be left with as much natural contour as possible.	As much natural landscape as possible should be preserved (installation of sod or wood chips, paving, and planting of trees within nesting habitat can make that habitat unusable to nesting Blanding's turtles).
Graded areas should be revegetated with native grasses and forbs (some non-natives form dense patches through which it is difficult for turtles to travel).	Open space should include some areas at higher elevations for nesting. These areas should be retained in native vegetation, and should be connected to wetlands by a wide corridor of native vegetation.
Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1 st and before June 1 st).	Ditches and utility access roads should not be mowed or managed through use of chemicals. If vegetation management is required, it should be done mechanically, as infrequently as possible, and fall through spring (mowing can kill turtles present during mowing, and makes it easier for predators to locate turtles crossing roads).

Protecting Blanding's Turtle Nests: Most predation on turtle nests occurs within 48 hours after the eggs are laid. After this time, the scent is gone from the nest and it is more difficult for predators to locate the nest. Nests more than a week old probably do not need additional protection, unless they are in a particularly vulnerable spot, such as a yard where pets may disturb the nest. Turtle nests can be protected from predators and other disturbance by covering them with a piece of wire fencing (such as chicken wire), secured to the ground with stakes or rocks. The piece of fencing should measure at least 2 ft. x 2 ft., and should be of medium sized mesh (openings should be about 2 in. x 2 in.). It is *very important* that the fencing be **removed before August 1st** so the young turtles can escape from the nest when they hatch!

REFERENCES

- ¹Association for Biodiversity Information. "Heritage Status: Global, National, and Subnational Conservation Status Ranks." NatureServe. Version 1.3 (9 April 2001). <http://www.natureserve.org/ranking.htm> (15 April 2001).
- Coffin, B., and L. Pfannmuller. 1988. Minnesota's Endangered Flora and Fauna. University of Minnesota Press, Minneapolis, 473 pp.

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- Moriarty, J. J., and M. Linck. 1994. Suggested guidelines for projects occurring in Blanding's turtle habitat. Unpublished report to the Minnesota DNR. 8 pp.
- Oldfield, B., and J. J. Moriarty. 1994. Amphibians and Reptiles Native to Minnesota. University of Minnesota Press, Minneapolis, 237 pp.
- Sajwaj, T. D., and J. W. Lang. 2000. Thermal ecology of Blanding's turtle in central Minnesota. *Chelonian Conservation and Biology* 3(4):626-636.

CAUTION



BLANDING'S TURTLES MAY BE ENCOUNTERED IN THIS AREA

The unique and rare Blanding's turtle has been found in this area. Blanding's turtles are state-listed as Threatened and are protected under Minnesota Statute 84.095, Protection of Threatened and Endangered Species. Please be careful of turtles on roads and in construction sites. For additional information on turtles, or to report a Blanding's turtle sighting, contact the DNR Nongame Specialist nearest you: Bemidji (218-308-2641); Grand Rapids (218-327-4518); New Ulm (507-359-6033); Rochester (507-280-5070); or St. Paul (651-259-5764).

DESCRIPTION: The Blanding's turtle is a medium to large turtle (5 to 10 inches) with a black or dark blue, dome-shaped shell with muted yellow spots and bars. The bottom of the shell is hinged across the front third, enabling the turtle to pull the front edge of the lower shell firmly against the top shell to provide additional protection when threatened. The head, legs, and tail are dark brown or blue-gray with small dots of light brown or yellow. A distinctive field mark is the bright yellow chin and neck.

**BLANDING'S TURTLES DO NOT MAKE GOOD PETS
IT IS ILLEGAL TO KEEP THIS THREATENED SPECIES IN CAPTIVITY**

SUMMARY OF RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS TO BLANDING'S TURTLE POPULATIONS

(see Blanding's Turtle Fact Sheet for full recommendations)

- This flyer should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.
- Turtles that are in imminent danger should be moved, by hand, out of harms way. Turtles that are not in imminent danger should be left undisturbed to continue their travel among wetlands and/or nest sites.
- If a Blanding's turtle nests in your yard, do not disturb the nest and do not allow pets near the nest.
- Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.
- Small, vegetated temporary wetlands should not be dredged, deepened, or filled.
- All wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.
- Roads should be kept to minimum standards on widths and lanes.
- Roads should be ditched, not curbed or below grade. If curbs must be used, 4" high curbs at a 3:1 slope are preferred.
- Culverts under roads crossing wetland areas, between wetland areas, or between wetland and nesting areas should be at least 36 in. diameter and flat-bottomed or elliptical.
- Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.
- Utility access and maintenance roads should be kept to a minimum.
- Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.
- Terrain should be left with as much natural contour as possible.
- Graded areas should be revegetated with native grasses and forbs.
- Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).