Rugby Wind Farm

EXHIBIT
2

Transmission Line

Application to the North Dakota Public Service Commission for a Certificate of Corridor Compatibility and Route Permit

June 15, 2005

PPM Energy
A ScottishPower Company

RUGBY WIND FARM
TRANSMISSION LINE

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Prepared for:

PPM Energy
A ScottishPower Company

Prepared by:

HDR

HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Table of Contents

List of Tables

List of Figures

Appendices

1.0 INTRODUCTION

PPM Energy, Inc. (PPM) submits this application for a Waiver of Procedures and Time Schedules, a Certificate of Corridor Compatibility (Corridor Certificate), and a Route Permit to construct the Rugby Wind Farm transmission line (the Route). The Project is located entirely within Pierce County, North Dakota, (Figure 1) and will consist of an approximately 9.5 mile (15.3 km) 230 kV transmission line between a new Project Substation located in Section 28 of Spring Lake Township.

PPM develops environmentally responsible electric generation projects in the Western, Midwestern, and Northeastern United States. PPM owns and operates or markets the output for over 800 Megawatts (MW) of renewable energy generation capacity, including two projects in the Upper Midwest – the 51 MW Moraine Wind Project located in Pipestone and Murray Counties, Minnesota, and the 44 MW Flying Cloud Wind Project in Dickinson County, Iowa. In addition, PPM owns gas storage and gas-fired generation facilities in the Western United States. PPM is headquartered in Portland, Oregon.

1.1 COMPLIANCE WITH THE ENERGY CONVERSION AND TRANSMISSION FACILITY SITING ACT CHAPTER 49-22

The North Dakota Energy Conversion and Transmission Facility Siting Act requires an application for a Corridor Certificate and a Route Permit to meet the criteria set forth in North Dakota Century Code (NDCC) 49-22. The siting of an energy conversion facility is to be made in an orderly manner compatible with environmental preservation and the efficient use of resources (NDCC 49-22-02).

To the extent available, PPM has presented information required by the North Dakota Energy Conversion and Transmission Facility Siting Act. PPM has considered exclusion areas, avoidance areas, the selection criteria, and the policy criteria in the design of the Route. In addition, sufficient transmission line design and technical information have been provided for a thorough evaluation of the reasonableness of the Corridor studied and proposed Route. PPM's policy is to locate and design the proposed transmission line by minimizing environmental impacts and utilizing existing corridors.

Tables 1 and 2 outline the information required to fulfill the requirements for a Corridor Certificate and Route Permit with the North Dakota Public Service Commission (Commission or PSC) using the PSC Guidelines and identifying where these requirements are addressed in this document. PPM has attempted to streamline the information presented to expedite the permitting of the facility.

1.1.1 Waiver of Procedures and Time Schedules

PPM submits this Application for a Waiver of Procedures and Time Schedules and consolidated applications for a Corridor Certificate and Route Permit (collectively, Application) for purposes of siting and constructing an approximately 9.5 mile (15.3 km) 230 kV transmission facility. By this Application, PPM requests that the Commission, pursuant to NDCC Section 49-22-07.2, waive the following requirements:

1. That the Commission hold a single consolidated hearing on this waiver request and the Consolidated Application for a Certificate of Corridor Compatibility and Route Permit, rather than separate hearings as may be required by NDCC Sections 49-22-08 & -08.1, 49-22-13 and North Dakota Administrative Code (NDAC) Section 69-06-01-02. PPM also requests that the Commission shorten the three-month period specified in NDCC Section 49-22-08(5) and the six-month period specified in NDCC Section 49-22-08.1(5).
2. That the Commission waive the requirements of NDCC Section 49-22-08 and NDCC Section 49-22-08.1 insofar as these sections may require the separate filing of applications for a Corridor Certificate and a Route Permit, and insofar as they require the publication of notices of filing applications.
3. That the Commission waive the requirements of a Ten-Year Plan to be included in the Application. PPM will file a Ten-Year Plan with the Commission by July 2005.
4. That the Commission waive requirements for mylar maps and stereo-pair aerial photographs as set forth in the Commission's Application Guidelines for a Corridor Certificate and a Route Permit. Geographic Information System (GIS) maps are provided in the Application.

The Commission's Application Guidelines for Waiver of Procedures and Time Schedules require a facility description, need for, cost of and justification for the request for waiver, together with evidence that the project will produce minimal adverse effects. As demonstrated in the Application, and as summarized below, PPM's Waiver Request and the issuance of a Corridor Certificate and Route Permit is justified, as the proposed facility is of such design, location and purpose that it will produce minimal adverse effects.

Description

PPM proposes to construct, own and operate an approximately 9.5 mile (15.3 km), 230,000 volt (230 kV), three-phase alternating current electric transmission line from a proposed wind farm substation located in Section 28 of Spring Lake Township in Pierce County, to the Rugby Substation east of Rugby, North Dakota. The purpose of the transmission line is to transmit the energy generated by the proposed Rugby Wind Farm Project to the transmission system. Additionally, the proposed facility offers North Dakota and the Mid-Continent Area Power Pool/Midwest Independent System Operator (MAPP/MISO) region the opportunity to ensure adequate capacity exists, stabilize and perhaps even lower wholesale power prices and provide added reliability through transmitting the electricity generated by a clean, cost-effective renewable energy facility.

A description of the Project is described in greater detail throughout the Application.

Need

The need for the proposed facility and how it will further the public interest is described in greater detail in Section 2.0 of the Application.

Cost

The estimated cost of the project is approximately $3,300,000.

Justification for Waiver

Waivers of timelines and procedures are needed in order to prevent potentially significant delays in this project. A key incentive for wind energy is the Federal Production Tax Credit (PTC). The PTC is set to expire at the end of 2005. PPM believes that the PTC will be extended beyond 2005 for at least one year. PPM is targeting construction for 2006 provided that the PTC is extended in sufficient time to complete the Project in time to qualify for the PTC; PPM secures a Power Purchase Agreement(s) (PPA(s); and the Project has received all pre-construction permits and approvals. Like other wind projects, the Rugby Wind Farm and, consequently, the associated facilities would not be viable without receiving this credit.

Section 49-22-07.2 of the Act provides that the Commission may waive procedures and time schedules upon a finding that "the proposed facility is of such length, design, location or purpose that it will produce minimal adverse effects." Based upon the thorough investigation and analysis set forth in the Application, waivers are appropriate because the proposed facility will produce minimal adverse effects.

In determining whether the proposed facility will result in adverse impacts on the environment, PPM evaluated the project using the criteria set forth in the Act, the Rules, and the Commission's Guidelines for Energy Conversion and Transmission Facility Siting (Guidelines). PPM evaluated the impacts of the project considering the siting criteria laid out in NDAC 69-06-08 (Section 3.0 of the Application) and the factors to be considered in NDCC Section 49-22-09 (Section 8.0 of the Application). Impacts associated with the project are summarized in Section 5.17 of the Application. Based upon this evaluation and the factors set forth in the Energy Conversion and Transmission Facility Siting Act and PSC Guidelines, it is clear that the proposed facility will produce minimal adverse effects.

State and Federal Agencies were consulted to provide input on potential impacts of the proposed Corridor and Route and, in general, concluded that the proposed facility would produce minimal adverse effects. Their findings are summarized in Section 8.11 of the Application.

Also, PPM's proposal takes into consideration all Federal and State Agency concerns and thereby further mitigates any adverse effects associated with the Project. The designated State Agencies and officers listed in NDAC 69-06-01-05 were notified about the proposed project in January of 2005 and PPM will continue to work with the Agencies to implement any conditions that may be imposed.

In short, PPM submits and believes the evidence demonstrates that it has taken all feasible and prudent actions to minimize and mitigate to the greatest extent possible all known or potential adverse impacts. As a result, the proposed Project will produce minimal adverse effects. Accordingly, PPM respectfully requests that the Commission grant the requested waivers and render an expeditious decision.

1.1.2 Certificate of Corridor Compatibility

Table 1 outlines the information required in the PSC Guidelines dated November 1979 for a Corridor Certificate.

Table 1
Corridor Certificate Completion Checklist

State Authority	Description	Section
Chapter 49-22	PSC Guidelines: Energy Conversion and Transmission Facility Siting	1.1.1
Section A	Description	1.2
1.	Type: Describe the type of transmission facility addressed in this application. The description shall include the purpose of the facility and the technology to be employed	1.0, 1.2.1
2.	Product: Describe the type, source, and final destination of the product to be transmitted by the proposed facility.	1.2.3
3.	Size and Design:	4.0
a.	Provide a description of the size and design of the ELECTRICAL facility including, but not limited to, the following:	4.1, 4.2.1, 4.2.4
1.	Width of right of way;	4.2.1
2.	Estimated span lengths;	4.2.1
3.	Anticipated type of structure;	4.2.1
4.	Approximate length of facility	Figures, 1.2, 4.1
5.	Voltage; and	4.2.1
6.	The requirement for a general location of any new associated facilities.	4.2.4
b.	Provide a description of the size and design of the pipeline facility including, but not limited to, the following:	N/A
4.	Time Schedule: Provide the anticipated time schedule for the accomplishment of the following events:	1.3
a.	Certificate of Corridor Compatibility;	1.3
b.	Route Application;	1.3
c.	Route Permit;	1.3
d.	Construction start date;	1.3
e.	Construction complete; and	1.3
f.	In-service date.	1.3

State Authority	Description	Section
Section B	Studies	
	Provide a copy of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal, regional, state or local agency.	Appendix C Studies completed: 1. Wetland Delineation Report (Appendix C.1) 2. Vegetation Evaluation (Appendix C.2) 3. Microwave Interference Study (Appendix C.3) 4. Class I Cultural Resources Inventory (Appendix C.4) 5. WEST Phase I Biological Survey of Rugby Wind Farm (submitted to the USFWS) (Appendix C.5) 6. Phase I Environmental Site Assessment (Available upon request) 7. PPM will conduct a Class III cultural resources survey, prior to construction.
Section C	Need for Facility	2.0
1.	An analysis of the need for the proposed facility based on present and projected demand for the product to be transmitted by the facility, including the most recent system studies supporting the analysis of the need.	2.1
2.	A description of any feasible alternative methods of serving the need.	2.2
3.	A statement justifying any deviations from the most recent Ten-Year Plan which the proposed facility may present.	2.3
Section D	Location	1.0, 1.2
1.	Select a study area, which includes the proposed corridor, of sufficient width to enable the Commission to evaluate the factors addressed in Section 49-22-09, NDCC.	1.2.1, 6.0
2.	Identify and map the criteria that led to the proposed corridor location within the study area.	Figure 2, 1.2.1, 3.0
3.	Discuss the relative value of each criteria and how the proposed corridor location was selected giving consideration to all criteria.	1.2.1, 3.0
4.	The criteria to be evaluated shall include at a minimum all of the following which are within the study area:	3.0
a.	Exclusion areas;	3.1.1
b.	Avoidance areas;	3.1.2
c.	Selection criteria;	3.1.3
d.	Policy criteria;	3.1.4

State Authority	Description	Section
e.	Design and construction limitations; and	3.1.5
f.	Economic considerations.	3.1.6
5.	Discuss the general mitigative measures that will be taken to minimize adverse impacts which result from a route location in the proposed corridor.	5.1.3, 5.2.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 5.8.3, 5.9.3, 5.10.3, 5.11.3, 5.12.3, 5.13.3, 5.14.3, 5.15.3, 5.16.3
6.	List the qualifications of the people in the various disciplines that contributed to the corridor location study	9.0
7.	Maps	Figures
a.	Map the criteria within the study area showing the proposed corridor. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be ½ inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Figures
b.	Furnish one set of Mylar maps, separate from the application, of the same scale as the criteria maps and showing the same basic features as the criteria maps, including the study area, but not the proposed facility location.	Figures
Chapter 49-22-09	Factors to be considered in evaluating applications and designation of sites, corridors, and routes.	8.0
1.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	8.1
2.	The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	8.2
3.	The potential for beneficial uses of waste energy from a proposed energy conversion facility	8.3
4.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	8.4
5.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	8.5
6.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	8.6
7.	The direct and indirect economic impacts of the proposed facility	8.7
8.	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	8.8

State Authority	Description	Section
9.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	8.9
10.	The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species	8.10
11.	Problems raised by federal agencies, other state agencies, and local entities	8.11

1.1.3 Route Permit Application

Table 2 below outlines the information required in the PSC Guidelines dated November 1979 for a Route Permit. Information regarding easements for transmission lines per NDCC 49-22-08.1(f) is also included in the Application in Section 3.1.5.

Table 2
Route Permit Completion Checklist

State Authority	Description	Section
Chapter 49-22	PSC Guidelines: Energy Conversion and Transmission Facility Siting	1.1.2
Section A	Description	1.2
1.	Type: Describe the type of transmission facility proposed.	1.0, 1.2.2
2.	Product: Describe the product or products to be transmitted.	1.2.3
3.	Size and Design: Provide a general description of the proposed size and design, and any alternate size or design, which was considered. Provide one (1) copy of the design data report, separate from the application, for the proposed facility and any associated facilities.	4.0
4.	Time Schedule: Provide the anticipated time schedule for the accomplishment of major events including, at a minimum, the following:	1.3
a.	Route Permit;	1.3
b.	Right-of-way acquisition complete;	1.3
c.	Construction start date;	1.3
d.	Construction complete;	1.3

State Authority	Description	Section
e.	Test operations; and	1.3
h.	In-service date.	1.3
Section B	Studies	
	Provide a copy of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal, regional, state or local agency.	Appendix C Studies completed: 1. Wetland Delineation Report (Appendix C.1) 2. Vegetation Evaluation (Appendix C.2) 3. Microwave Interference Study (Appendix C.3) 4. Class I Cultural Resources Inventory (Appendix C.4) 5. WEST Phase I Biological Survey of Rugby Wind Farm (submitted to the USFWS) (Appendix C.5) 6. Phase I Environmental Site Assessment. (Available upon request) 7. PPM will conduct a Class III cultural resources survey, prior to construction.
Section C	Need for Facility	2.0
1.	An analysis of the need for the proposed facility based on present and projected demand for the product to be transmitted by the facility, including the most recent system studies supporting the analysis of the need.	2.1
2.	A description of any feasible alternative methods of serving the need.	2.2
3.	A statement justifying any deviations from the most recent Ten-Year Plan which the proposed facility may present.	2.3

State Authority	Description	Section
Section D	Location	1.0, 1.2
1.	Discuss the utility's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives.	Appendix A
2.	Discuss the factors listed in Section 49-22-09, NDCC to aid the Commission's evaluation of the proposed route.	All 6.0
3.	Identify and map the criteria that led to the proposed route location within the designated corridor.	Figure 3, 1.2.2, 3.0
4.	Discuss in detail the relative value of each criteria and how the location, construction, and operation of the facility will affect each criteria.	3.0, 5.0-5.16
5.	The criteria to be evaluated shall include at a minimum all of the following which are within the designated corridor:	3.0
a.	Exclusion areas;	3.1.1
b.	Avoidance areas;	3.1.2
c.	Selection criteria;	3.1.3
d.	Policy criteria;	3.1.4
e.	Design and construction limitations; and	3.1.5
f.	Economic considerations.	3.1.6
6.	Discuss the mitigative measures that will be taken to minimize adverse impacts which result from the location, construction, and operation of the proposed facility.	5.1.3, 5.2.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 5.8.3, 5.9.3, 5.10.3, 5.11.3, 5.12.3, 5.13.3, 5.14.3, 5.15.3, 5.16.3
7.	List the qualifications of the people in the various disciplines that contributed to the facility route location study.	9.0
8.	Maps	Figures
a.	Map the criteria within the designated corridor showing the proposed route and location of any new associated facilities. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be ½ inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Figures

State Authority	Description	Section
b.	Furnish one (1) set of Mylar maps, separate from the application, of the same scale as the criteria maps and showing the same basic features as the criteria maps, including the designated corridor, but not the proposed route or location of any new associated facilities.	Figures
c.	Furnish one (1) set of uncontrolled 9x9 inch stereo-pair aerial photographs, separate from the application, with acceptable resolution showing the designated corridor, proposed route and location of any new associated faculties, and Section, Township and Range numbers, at a scale of 1 inch = 2000 feet, together with a flight map at a scale of ½ inch = 1 mile showing each flight line and the beginning and ending photo number of each flight line. Photo mosaic strip maps will also be acceptable. If the applicant can demonstrate that because of the limited size and scope of the project, aerial photographs would not be practical, this requirement may be waived.	Figures
Chapter 49-22-09	Factors to be considered in evaluating applications and designation of sites, corridors, and routes.	8.0
1.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	8.1
2.	The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	8.2
3.	The potential for beneficial uses of waste energy from a proposed energy conversion facility	8.3
4.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	8.4
5.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	8.5
6.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	8.6
7.	The direct and indirect economic impacts of the proposed facility	8.7

State Authority	Description	Section
8.	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	8.8
9.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	8.9
10.	The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species	8.10
11.	Problems raised by federal agencies, other state agencies, and local entities	8.11

1.2 PROJECT SUMMARY

PPM proposes to construct a 230 kV transmission line on H-frame tangent structures within the Corridor identified in Section 1.2.1. A description of the proposed facility is in Section 4.2. A Route was selected after addressing the factors identified in NDCC 49-22-09 and evaluating the criteria in NDAC 69-06-08-02. Below is a description of the Study Area, Proposed Corridor and the Proposed Route for the new 230 kV transmission line. The new line will be approximately 9.5 miles (15.3 km) in length and will transmit energy from the proposed Rugby Wind Farm Project Substation (Project Substation) to the existing Rugby Substation, located east of Rugby, North Dakota.

1.2.1 Study Area and Proposed Corridor

Figure 2 presents exclusion and avoidance areas in the Study Area that were analyzed to select the proposed Corridor. The area near the City of Rugby was identified as optimal from wind resource, transmission interconnection, environmental and economic perspectives. The transmission line will transmit the energy generated by the Rugby Wind Farm from the Project Substation to the Rugby Substation. Energy transmitted along the new transmission line will be sold at the Rugby Substation busbar to a regional utility.

In reviewing the Study Area vicinity, to the west of the Study Area the City of Rugby and Rugby Municipal Airport are not compatible land uses with the transmission line. The area east of the Study Area is farther from the Project Substation and interconnection point, thus requiring a longer transmission line. The proposed Corridor was selected in the Study Area considering the exclusion and avoidance criteria outlined in NDAC 69-06-08-02.

The proposed Corridor is a one to three mile wide Corridor for the proposed transmission line from the Rugby Wind Farm site to the point of interconnection, a busbar at Rugby Substation. The Corridor consists of the Sections, Townships, and Ranges in Table 3 and is represented on the Study Area map

shown in Figures 2, 4 and 5. The Corridor chosen complies with NDCC 69-06-04-02 which states that the width of the Corridor must be 10 percent of the length of the line, not less than one mile and not more than six miles in width.

Table 3
Corridor Study Area

Township Name	Township	Range	Sections
Meyer	156N	72W	3-10
Torgerson	157N	72W	3-5, 8-17, 20-29, 32-36
Spring Lake	158N	72W	16, 17, 20-22, 27-29, 32-34

Following an analysis of the transmission need for the Rugby Wind Farm, it was determined that a 230 kV transmission line was required. The factors addressed in NDCC 49-22-09 were considered in evaluating the Corridor for a 230 kV transmission line and are discussed in Section 8.0. All exclusion and avoidance criteria within the Study Area were considered in selecting the proposed Corridor. PPM avoided waterfowl production areas (WPAs), residences, recreational areas and irrigated land to the extent practicable. PPM also considered utilizing existing transmission corridors and interconnecting with existing infrastructure at the Rugby Substation. This is consistent with NDAC Policy Criteria for transmission corridors and routes (§§69-06-08-02-2e; 69-06-08-02-4i; 69-06-08-02-4g) which encourages applicants to avoid places of residence, maximize benefits by utilizing existing and proposed Route corridors and coordinating facilities.

1.2.2 Proposed Route

Figure 3 identifies the proposed Route. The figure highlights an area 500 feet either side of the proposed Route centerline. The proposed Route will parallel the existing 230 kV transmission line in the locations presented in Table 4.

Table 4
Route Location

Township Name	Township	Range	Sections
Meyer	156N	72W	6, 7
Torgerson	157N	72W	3, 4, 10, 15, 21, 22, 28, 33
Spring Lake	158N	72W	28, 33

Following an analysis of the Corridor, it was determined that the best location for the new transmission line would be approximately 120 to 150 feet east of the existing 230 kV Rugby-Glenboro transmission line. The average span length would be approximately 660 feet. PPM will attempt to parallel the existing

230 kV transmission line from structure to structure, as practicable. PPM is proposing to align the pole placement of the proposed line with the existing Xcel 230 kV line to make it as easy as possible for the farmers to work around the parallel lines. The criteria identified in Section 1.2.1 as the primary criteria in the decision-making for the location of the proposed Corridor also dictated the selection of the proposed Route within the proposed Corridor. In particular, the avoidance criteria for federally designated lands (i.e. WPAs) and residences dictated the location of the line. Additionally, structure locations will be fine-tuned to more specifically avoid residences; wetlands and water bodies, especially in United States Fish and Wildlife Service (USFWS) Wetland Easements; and native vegetation to the extent practicable, as described within this document.

1.2.3 Product

The transmission line will transmit the energy generated by the Rugby Wind Farm from the Project Substation to the Rugby Substation. The line is intended to carry 230 kV, three-phase, alternating current, electrical energy. The maximum capacity will be 400 MW and is expected to operate at 150 MW. Energy transmitted along the new transmission line will be sold at the Rugby Substation busbar to a regional utility.

1.3 PROJECT SCHEDULE

The in-service date is dependent upon permitting, PPAs, PTC approval and other development activities. The PTC is set to expire at the end of 2005. PPM believes that the PTC will be extended beyond 2005 for at least one year. PPM is targeting construction for 2006 provided the PTC is extended in sufficient time to complete the project in time to qualify for the PTC, PPM secures PPA(s) and it has received all pre-construction permits and approvals.

1. Certificate of Corridor Compatibility: PPM anticipates the Corridor Certificate will be approved in July or August 2005.
2. Route Permit Application: The route permit application is included herein.
3. Route Permit: PPM anticipates the Route Permit will be approved concurrent with the Corridor Certificate in July or August 2005. It is critical for PPM to receive the Route Permit and Corridor Certificate as soon as possible, as completing this step will allow PPM to move forward with other commitments associated with the Project, including ordering long-lead time equipment.
4. Right-of-Way Acquisition: PPM is responsible for all right-of-way acquisition and is in the process of obtaining the necessary easements from landowners. PPM has secured easements for the bulk of the Route. The land acquisition is expected to be complete by the end of June 2005.
5. Equipment Procurement, Manufacture and Delivery: PPM will order the transmission and substation components as soon as practicable. Once the components have been ordered, delivery is anticipated within six months.
6. Construction: If the project proceeds in 2006, project construction is expected to begin in May 2006, subject to road restrictions and weather. The construction will take approximately four months to complete.

7. Test and Operations: PPM expects that testing of the system will occur in August 2006.
8. In-Service Date: The expected in-service date will be August 2006.

No expansions or additions are anticipated at this time for the Project.

2.0 NEED FOR FACILITY

2.1 NEEDS ANALYSIS

PPM elected to propose a 230 kV line as it optimizes the efficiency with which the project can deliver the power to the point of delivery, and would be the most efficient and cost-effective option over time due to the lower line losses inherent with a 230 kV line versus a 115 kV line, at the 150 MW capacity level.

The Rugby Substation is 230 kV at the high side and 115 kV at the low side. Otter Tail Power, a member of the MISO control area, owns the 230 kV side of the substation and a non-MISO member owns the 115 kV side of the substation. PPM wishes to market the energy and capacity directly into the MISO market. Interconnecting with Otter Tail Power on the 230 kV side of the substation will avoid the risk of having to pay MISO tariff importation fees. Interconnecting at the 115 kV side of the substation would carry the risk of having to pay MISO tariff importation fees.

While no expansions or additions are anticipated at this time for the Rugby Wind Farm, a 230 kV line would allow for the associated Rugby Wind Farm to be expanded without triggering the need for additional transmission capacity. A 115 kV transmission line would not allow for any substantive expansions of the Rugby Wind Farm site without triggering needs for additional transmission capacity. For all the foregoing reasons, PPM elected to propose a 230 kV transmission line and interconnection.

2.2 ALTERNATIVES

A 115 kV transmission line was considered, but rejected because of the reasons stated above in the needs analysis. Two alternative substation locations are being considered in Section 28 of Spring Lake Township (Figure 4 and 5). These alternatives are proposed so PPM can evaluate how to minimize environmental impacts due to the construction of the substation. At this time, the preferred substation site is the Substation A location. This site is preferred for the following reasons:

- The transmission line length is shorter from this location, which decreases costs and potential impacts to landowners.
- The location is more central to the Rugby Wind Farm site.
- The potential for wetland impacts along Route from Substation B are potentially greater.
- Substation A is further from Herd Lake WPA, an avoidance area.

However, Substation B is still under consideration since the Substation A location will require greater amounts of grading at the site.

2.3 TEN-YEAR PLAN

PPM will file a Ten-Year Plan with the North Dakota PSC by July 2005.

3.0 TRANSMISSION FACILITY CORRIDOR AND ROUTE CRITERIA

PPM evaluated a study area to determine the best locations for a 230 kV transmission line Corridor and Route. The proposed Corridor was identified as the optimal location from an environmental, wind resources and economic perspective (Figure 2). Since the purpose of the line is to transmit energy from the Rugby Wind Farm to the existing Rugby Substation, the transmission line must interconnect into the Project Substation. The Corridor encompasses an area that has a width of 10 percent or more of the length of the transmission line, which must begin in Section 28 and end at the existing Rugby Substation approximately 9.5 miles (15.3 km) to the south. The proposed Route described in this study is the result of this Corridor study, which included securing easements with landowners, identifying known environmentally sensitive areas, considering North Dakota's power plant siting exclusion and avoidance areas, reviewing Pierce County requirements, and communications with Local, State, and Federal agencies.

The proposed location for the Project Substation is Section 28 of Spring Lake Township. There are two alternatives at this location. As stated above, PPM prefers the Proposed Substation A location since it minimizes the environmental impacts associated with the project.

PPM has reviewed the criteria in Chapter 69-06-08 and has factored these criteria into the Corridor study and the Route design. None of the exclusion and avoidance criteria identified in the Corridor encompass greater than 50 percent of the Corridor width. The criteria listed in Chapter 69-06-08 are discussed in this section.

3.1.1 Exclusion Areas

Per Section 69-06-08-02-1, the following geographical areas (Table 5) shall be excluded in the consideration of a route for a transmission facility, and shall include a buffer zone of reasonable width to protect the integrity of the area. Exclusion areas are mapped for the Corridor and Route in Figures 2 and 3.

Table 5
Exclusion Areas

Exclusion Area	Present within Project Vicinity?	Proposed Buffer		Section Addressed
		Corridor	Route	
Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; monuments; and wilderness areas	None	None	None	5.7, 5.8, 5.14
Designated or registered state: parks; historic sites; monuments; historical markers; archaeological sites; and nature preserves	None	None	None	5.7, 5.8
County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions	Present	The Rugby Golf Course is located on the western edge of the Corridor. No impacts are anticipated and no buffer is proposed.	None	5.8
Areas critical to the life stages of threatened or endangered species	None	No areas critical to threatened and endangered species have been identified in the Corridor.	No areas critical to threatened and endangered species have been identified in the Route.	5.16
Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged	None	No unique or rare areas have been identified in the Corridor. PPM is working with the USFWS and North Dakota Game and Fish Department (GFD) to avoid potential impacts.	No unique or rare areas have been identified along the Route. PPM is working with the USFWS and GFD to avoid potential impacts.	5.16

3.1.2 Avoidance Areas

Per Section 69-06-08-02-2, the following geographical areas (Table 6) shall not be considered in the routing of a transmission facility unless the applicant shows that under the circumstances there is no reasonable alternative. In determining whether an avoidance area should be designated for a facility, the Commission may consider, among other things, proposed management of adverse impacts; orderly siting of facilities; system reliability and integrity; efficient use of resources; and alternative routes. Avoidance areas are mapped for the Corridor and Route in Figures 2 and 3.

Table 6
Avoidance Areas

Avoidance Areas	Present within Project Vicinity?	Proposed Buffer		Section Addressed
		Corridor	Route	
Designated or registered national: historic districts; wildlife areas; wild, scenic or recreational rivers; wildlife refuges; and grasslands	Present	PPM is consulting with the USFWS. PPM recommends establishing a buffer of 0.25 miles from WPAs. There are two WPAs within 0.25 miles of the Corridor. No impacts are anticipated.	None	5.7, 5.12, 5.15
Designated or registered state: wild, scenic, or recreational rivers; game refuges; game management areas; management areas; forests, forest management lands; and grasslands	None	None	None	5.12, 5.14
Historical resources which are not specifically designated as exclusion or avoidance areas	None identified to date	No historical resources were on record with the North Dakota State Historic Preservation Office (SHPO) that were within the proposed Corridor. In consultation with the SHPO, a professional archaeologist would establish buffer appropriate to resources discovered during the Class III Survey.	No historical resources were on record with the SHPO that were along the proposed Route. In consultation with the SHPO, a professional archaeologist would establish buffer appropriate to resources discovered during the Class III Survey.	5.7
Areas that are geologically unstable	None	No areas that are geologically unstable are within the project Corridor.	No areas that are geologically unstable are along the Route.	5.11
Within 500 feet of a residence, school, or place of business	Present	A buffer of 500 feet from residences was considered in the evaluation of the Corridor. There were several occupied residences identified within the proposed Corridor.	No homes are located within 500 feet of the Route.	5.9
Reservoirs and municipal water supplies	None	No municipal water supplies or reservoirs have been identified in the Corridor. There are likely several domestic wells in the Corridor. No impacts are anticipated	None	5.11
Water sources for organized rural water districts	None	None	None	5.11
Irrigated land. This criterion shall not apply to an underground transmission facility.	Present	There is one irrigation permit located within the Corridor. PPM will avoid this parcel of land. No buffer has been established and no conflicts are anticipated.	None	5.9
Areas of recreational significance which are not designated as exclusion areas	None	None	None	5.8

3.1.3 Selection Criteria

Per Section 69-06-08-02-3, a corridor or route shall be designated (Table 7) only when it is demonstrated to the Commission by the applicant that any significant adverse effects resulting from the location, construction and maintenance of the facility, as they relate to the following, will be at an acceptable minimum or that those effects will be managed and maintained at an acceptable minimum. Figures 5 to 16 identify the selection criteria for the Project as well as other related resources.

Table 7
Selection Criteria

Selection Criteria	Potential Adverse Effects		Section Addressed
The impact upon agriculture:			
	Corridor	**Route**	
Agricultural production	The structure type proposed will permanently impact approximately 100 ft^2 of land per structure. Less than 0.1 percent of the yearly production of the top five commodities will be impacted for the Corridor.	Approximately 0.2 acres (7100 ft^2) of land will be permanently impacted due to transmission line structure placement along the Route. Less than 0.1 percent of the yearly production of the top five commodities will be impacted.	5.9
Family farms and ranches	Land area lost to the construction of the transmission line structures will have a minimal adverse effect to family farms. No family farms will be displaced due to construction in the Corridor.	Land area lost to the construction of the transmission line structures will have a minimal adverse effect to family farms. No family farms will be displaced due to construction of the Route.	5.9
Land which the owner demonstrates has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation	Where impacts are expected, no owner has expressed concerns related to economically suitable irrigation on their land.	Where impacts are expected, no owner has expressed concerns related to economically suitable irrigation on their land.	5.9
Surface drainage patterns and ground water flow patterns	No impacts to surface drainage patterns or groundwater flow patterns are anticipated.	No impacts to surface drainage patterns or groundwater flow patterns are anticipated.	5.11, 5.12
The impact upon:			
Noise sensitive land uses	The noise sensitive land uses within the Project are the residences near the transmission line. There are 17 homes within the Corridor. No impacts to noise sensitive land uses are anticipated.	The noise level at 300 feet from the existing and proposed lines is between 38 and 41 dBA. Noise impacts are nominal. The nearest sensitive receptor to the proposed route is approximately 550 feet. No impacts to noise sensitive land uses are anticipated.	5.5

Selection Criteria	Potential Adverse Effects		Section Addressed
The visual effect on the adjacent area	The transmission line will be visible to landowners and residents who live near the line. PPM will minimize visual impacts to the extent practicable.	Visual impacts will be most evident to landowners and residents in close proximity to the Route and drivers traveling along Highway 2 and 17. PPM will minimize impacts by utilizing the existing transmission line corridor and will line up the new route structures with the existing structures to the extent practicable. Structures will also avoid sensitive areas to the extent practicable.	5.6
Extractive and storage resources	No impacts are anticipated to extractive or storage resources.	No impacts are anticipated to extractive or storage resources.	5.11
Wetlands, woodlands, and wooded areas	Wetland resources will be avoided to the extent practicable. PPM will utilize line designs to avoid and minimize impacts to wetlands in the Corridor. Woodlands are primarily associated with homes in the form of woodlots and windbreaks. If impacts to wetlands and woodlands cannot be avoided, options to minimize impacts will be considered and mitigation will be proposed consistent with regulatory requirements.	An initial review of preliminary layout indicates that one wetland along the proposed Route cannot be spanned using the proposed transmission line design. Wetlands over 1,000 feet in length, which is the maximum span of the proposed transmission line design, may require that transmission structures be placed in wetlands. A wetland delineation of the Route indicates that the wetland located in Section 33 of Torgerson township is too large to span and is within USACE jurisdiction. As stated above, PPM intends to span all wetlands to the extent practicable and of the 15.82 acres of wetlands along the Route, approximately 100 ft^2 (0.01 acres) will be impacted. PPM intends to mitigate these impacts as required by the USACE and North Dakota Department of Health. Approximately 1.9 acres of woodlands and windbreaks will be impacted in six locations. Trees and shrubs will be replaced at a ratio of 2:1 at the site and will be monitored for survival for five years.	5.9, 5.13
Radio and television reception and other communication or electronic control facilities	No impacts to radio and television reception or other communication or electronic control facilities is anticipated.	No impacts to radio and television reception or other communication or electronic control facilities is anticipated due to the construction of the line in the proposed location (microwave study).	5.3

Selection Criteria	Potential Adverse Effects		Section Addressed
Human health and safety	Mitigative measures will be implemented as discussed in Section 5.4.3, and if maintenance schedules are met, no impacts to human health and safety are anticipated.	Mitigative measures will be implemented as discussed in Section 5.4.3, and if maintenance schedules are met, no impacts to human health and safety are anticipated.	5.4
Animal health and safety	No impacts to livestock are anticipated from the operation of the transmission line. Raptors, waterfowl and other bird species may be affected by the construction and placement of the transmission lines. Avian collisions are a possibility after the completion of the transmission line. Waterfowl are typically more susceptible to transmission line collision, especially if the line is placed between agricultural fields that serve as feeding areas, or between wetlands and open water, which serve as resting areas. Generally, the most difficult part of the structure for the bird to see is the shield wire. Mitigative measures will minimize these impacts.	No impacts to livestock are anticipated from the operation of the transmission line Raptors, waterfowl and other bird species may be affected by the construction and placement of the transmission lines. Avian collisions are a possibility after the completion of the transmission line. Waterfowl are typically more susceptible to transmission line collision, especially if the line is placed between agricultural fields that serve as feeding areas, or between wetlands and open water, which serve as resting areas. Generally, the most difficult part of the structure for the bird to see is the shield wire. Mitigative measures, as outlined in Section 5.15.3, will minimize these impacts.	5.9, 5.15
Plant life	The land is primarily agricultural in nature. Only the areas where the structures will be placed will permanently impact plant life. Other areas where temporary impacts may occur will be restored.	Approximately 0.2 acres (7100 ft^2) of land will be permanently impacted from the transmission line structure placement for the Route. The land is primarily agricultural in nature. Temporary impacts will be restored.	5.9, 5.14

3.1.4 Policy Criteria

Per Section 69-06-08-02-4, the Commission may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in a proper case may require the adoption of such policies and practices (Table 8).

Table 8
Policy Criteria

Policy Criteria	Suitable Policy or Practice of Applicant	Section Addressed
Location and design	PPM's policy is to locate and design the proposed transmission line by minimizing environmental impacts and utilizing existing corridors.	1.1
Training and utilization of available labor in this state for the general and specialized skills required	PPM will use local labor to the extent practicable.	5.1
Economies of construction and operation	PPM will utilize local contractors to the extent practicable.	5.1
Use of citizen coordinating committees	PPM will work with landowners of properties for the Project in siting the transmission line.	7.0
A commitment of a portion of the transmitted product for use in this state	Energy transmitted by the project will be sold at the busbar of the Rugby Substation for use by a regional utility.	1.2, 4.2
Labor relations	No labor relations will be affected.	5.1
The coordination of facilities	Existing facilities and facility corridors have been utilized when the location of the wind farm and the associated facilities was considered.	1.2.1, 1.2.2
Monitoring of impacts	PPM and the EPC will practice BMPs during construction to monitor soil impacts and segregate topsoil. PPM will monitor tree and shrub replacement for five years, if needed.	5.10, 5.14, 5.15
Utilization of existing and proposed rights of way and corridors	One of the primary criterions in locating the Route was utilizing an existing transmission line corridor. The initial study area identified a corridor that included existing transmission line corridors within the Rugby Wind Farm site. The proposed 230 kV transmission line location was the best location when considering the factors identified by the Commission and PPM's policies and project design.	1.2.1, 1.2.2, 3.1.5
Other existing or proposed transmission facilities	The Corridor included existing transmission facilities and a Route is proposed that parallels the existing 230 kV Rugby to Glenboro transmission line.	1.2.1, 1.2.2, 3.1.5

3.1.5 Design and Construction Limitations

Design and construction limitations associated with the Project are primarily associated with the location of the transmission line. The points of termination largely dictate the location of the transmission line. Overall, the line must be constructed within the Rugby Wind Farm site and must connect the Project Substation to the Rugby Substation, southeast of the City of Rugby. PPM is paralleling existing corridors and rights-of-way where practicable. Since the purpose of the proposed 230 kV transmission line is to transmit energy from the proposed wind farm to the utility grid, the transmission line will be located in Section 28 of Spring Lake Township. The proposed Route is the most direct route while minimizing impacts to the criteria identified in Section 69-06-08-02.

For this particular project, PPM will attempt to span all wetlands along the Route. An initial review of the Corridor, a delineation of wetlands along the proposed Route, and a preliminary layout indicate that one wetland cannot be spanned using the proposed transmission line design. Wetlands over 1,000 feet in length, which is the maximum span of the proposed transmission line design, may require that transmission structures be placed in wetlands. The wetland located in Section 33 of Torgerson township cannot be spanned due to this limitation. A wetland delineation of the Route indicates that the wetland is too large to span and is within United States Army Corps of Engineers (USACE) jurisdiction. As stated above, PPM intends to span all wetlands to the extent practicable and of the 15.82 acres of wetlands along the Route, only 100 ft^2 (0.002 acres) will be impacted. PPM intends to mitigate these impacts as required by the USACE and North Dakota Department of Health.

The USFWS administers wetland easements on private property as part of their National Wildlife Refuge System. There are limitations to construction on these lands. Any direct impacts to wetlands within USFWS easements will result in a compatibility assessment by local USFWS staff. The process considers the magnitude of the impact, the type or quality of the habitat which is impacted, and the feasibility of avoiding the impact. If compatibility is found, a right-of-way permit will be issued for the impact. Figure 8 identifies the USFWS wetland easements and WPAs within the Corridor and vicinity.

Additional design and construction limitations include the necessity of entering the Rugby Substation from the east side of the existing substation. The existing substation layout largely dictates where new lines may enter. The existing substation equipment and transmission lines restrict where the new transmission line may enter the substation. Also, due to design costs and safety reasons, it is preferred to minimize the number of crossings of existing high voltage transmission lines.

Also, the use of wood h-frame structures have design limitations. Following geotechnical exploration it may become necessary to utilize special structures to avoid sensitive environmental features or different materials such steel to accommodate for soil features or other design limitations.

3.1.6 Economic Considerations

There are several economic considerations in deciding where the transmission line should be routed. Overall, minimizing the distance to the wind farm decreases the cost to construct the transmission line due to less material and right-of-way needed. Additionally, using a 230 kV transmission line versus lower voltages helps to minimize energy loss along the line, making transmission more efficient.

The wood structures proposed for the majority of the Route also help to decrease the cost of construction. Alternative structures such as steel would increase the cost of building the transmission line. The construction costs would significantly increase for the Project if alternative structures are used.. PPM evaluated a single circuit 230 kV steel davit arm structure for this Project. This alternate design was eliminated due to higher costs and additional potential impacts. The additional impacts would be due to the additional structures that would be required because of the shorter span lengths of this structure type.

Another consideration in decreasing cost is in minimizing the number of corner structures required for the transmission line. Corner structures increase the cost of projects since special structures and engineering are typically required. PPM attempted to minimize these economic factors while considering exclusion areas, avoidance areas, selection criteria, policy criteria, and other factors.

4.0 ENGINEERING AND OPERATIONAL DESIGN

4.1 PREFERRED ROUTE DESCRIPTION

The preferred Route centerline for the proposed transmission line will be approximately 120 to 150 feet east of the existing 230 kV transmission line. The transmission line will begin in the middle of the Rugby Wind Farm Site at the Project Substation. The Project Substation will be located in Section 28 of Spring Lake Township. There are two potential Substation locations being considered. The first (Proposed Substation Location A) is located in the southeast quarter of Section 28 and is the preferred substation site. From Location A, the Route will head west for approximately one mile, where it will turn southeast for approximately 1.9 miles. Proposed Substation Location B is located in the northwest quarter of Section 28. From Location B, the line would head south for approximately one mile, where it will also turn southeast for approximately 1.9 miles. In Section 3 of Torgerson Township, the line will turn south for approximately 2.5 miles. In Section 22 of Torgerson Township, the line will turn southwest for 0.7 miles, and will then turn south in Section 21, ending at the Rugby Substation in approximately 3.9 miles. The Route is presented in Figures 4 and 5.

4.2 DESCRIPTION OF PROPOSED FACILITY

The purpose of the proposed facility is to transmit the energy generated by the Rugby Wind Farm to the Rugby Substation. Energy transmitted by the Project will be sold at the busbar of the Rugby Substation to a regional utility. This infrastructure is necessary so the energy can be transmitted to the regional utility.

4.2.1 Transmission Structures and Right-of-Way Design

A design data report is attached as Appendix B. PPM considered a single circuit 230 kV steel davit arm structure for the project. This alternate design was eliminated due to higher costs and additional potential impacts. The additional impacts would be due to the additional structures that would be required because of the shorter span lengths of this structure type.

4.2.1.1 Transmission Structures

PPM is proposing to use H-frame, wood structures for the transmission line. However, final design and geotechnical investigations may warrant the use of steel pole or special structures to avoid sensitive areas or accommodate special engineering circumstances. Figure 6 depicts the structures that will be used for the transmission line. The structures will be erected and will be directly imbedded into the ground. The structures will be approximately 80 feet in height with an average span between each structure of 660 feet. The conductor will be 795 kcmil Aluminum Core Steel Reinforced (ACSR). The actual size of the conductor will be determined once the final design is complete, but this is the minimum conductor size to limit corona loss and noise. The shield wires, also known as lightning protection wires, will be 3/8-inch. The proposed transmission line is intended to carry 230 kV, alternating current. The maximum capacity of the line is 400 MW. It is expected to operate at 150 MW.

Angle structures will be determined once design is complete. These structures will be submitted to the PSC once the plan and profiles have been complete, at least 14 days prior to construction.

The proposed transmission line will be designed to meet or surpass all relevant state codes, National Electric Safety Code (NESC), Rural Utilities Service (RUS), Avian Power Line Interaction Committee (APLIC) raptor-safe design standards, and PPM company standards. Appropriate safety standards will be met for construction and installation and will be followed during and after construction.

4.2.1.2 Right-of-Way Design

The approximately 9.5 mile 230 kV transmission line will parallel the existing 230 kV line for the entire Route. The right-of-way required for the new line will be 170 feet. This includes 85 feet of right-of-way each side of the structure centerline (Figure 7). The new transmission line structures will be placed approximately 120 to 150 feet from the centerline of the existing transmission line structure.

4.2.2 Right-of-Way Preparation, Construction, Restoration and Maintenance

4.2.2.1 Right-of-Way Preparation

The proposed Route crosses areas that are primarily agricultural land. There are a five identified areas where there is tree and shrub growth that may require right-of-way clearing. Where safety requirements permit, trees and low growing shrubs will remain (generally less than 15 feet). Significant amounts of grading are not anticipated for preparation of the transmission right-of-way.

4.2.2.2 Transmission Construction Procedures

Construction of the transmission line will begin once all approvals are obtained and easement acquisition is complete. A detailed construction schedule will be developed based upon crew availability, weather conditions, and any other restrictions placed on certain areas for minimizing impacts from construction.

The construction will be designed for installation at existing grade for the majority of the Route. No extensive grading or leveling is anticipated at this time. Once construction is completed, any graded area will be restored to its original contour to the extent practicable.

Structures will be delivered to either the staked location or a project storage yard. If the structures are delivered to the location where they will be installed, they will be placed on the right-of-way out of the clear zone of any adjacent roadways or designated pathways. Insulators and other hardware will be attached while the structure is on the ground. After the right-of-way is prepared, structures will be assembled and erected at the structure site using a crane or similar heavy-duty equipment. Each pole will be directly imbedded and will require a hole dug 9.5 to 11.5 feet deep and 2.5 to 3 feet in diameter. A culvert will be placed in the hole, and the pole will be set within the culvert and backfilled with crushed rock. Structures in poor or wet soil conditions may require a specially engineered foundation such as a steel caisson that would be vibrated into the ground.

Most of the construction activity would be limited to the area immediately around each structure. Little additional ground disturbance is necessary at the structure sites. The total disturbed area in the vicinity of

each structure is expected to be confined to an area of 100 ft^2. Temporary impacts due to construction around the structure are estimated at approximately 2,000 ft^2. Access roads will be approximately 20 feet wide; however, this impact will be temporary and, in general, would not require any grading or excavation.

Once the structures have been erected, conductors will be installed by establishing stringing setup areas within the right-of-way. These areas are usually established every two miles along the Route. Conductor stringing operations will also require brief access to each structure to secure the conductor wire to the insulators or to install shield wire clamps once final sag is established. Stringing equipment generally consists of wire pullers, tensioners, conductor reels, shield wire reels and sheave blocks. Stringing operations involve pulling lightweight cables or ropes through the stringing sheaves located at every structure site. This cable or rope will be used to pull the conductors through the sheaves under sufficient tension to keep the conductor from coming into contact with the ground. Temporary guard or clearance poles will be installed as needed over existing distribution or communication lines, streets, roads, highways or other obstructions, after any necessary notifications are made and permits obtained. This ensures that conductors will not obstruct traffic or contact existing energized conductors or other cables.

4.2.2.3 Restoration Procedures

During construction, crews will attempt to limit ground disturbance wherever possible and will employ appropriate erosion control measures. Upon completion of construction activities, landowners will be contacted to determine if any additional restoration due to construction is necessary. Disturbed areas will be restored to their original condition to the maximum extent practicable and as negotiated with the landowner. Post-construction reclamation activities include removing and disposing of debris, dismantling all temporary facilities (including staging and lay down areas), leveling or filling tire ruts, and reseeding areas disturbed by construction activities with vegetation similar to that which was removed.

Erosion control measures will be implemented to minimize runoff during construction. Specific measures will be determined once final design of the Route is complete, and a field review is made to determine any areas of concern. Erosion control measures such as silt fencing, straw bale fencing, mulching, seeding, or mesh fabric overlay would be installed when and where appropriate. Access routes to structure locations will be reviewed prior to the mobilization of equipment so erosion concerns can be avoided or minimized. Construction crews exercise caution when equipment is within 50 feet of streams and rivers and will not drive equipment through streams or rivers that the transmission line crosses.

4.2.2.4 Maintenance Procedures

PPM will periodically use the right-of-way to perform inspections, to maintain equipment and to make repairs over the life of the line. PPM will also conduct routine maintenance to remove undesired vegetation that may interfere with the safe and reliable operation of the proposed line.

4.2.3 Easement/Right-of-Way Acquisition

PPM is currently in the process of securing easements. They will consult with the landowners to discuss the Project in detail prior to conducting any necessary engineering surveys and soil investigations. During the acquisition phase, individual property owners will be advised of construction schedules, needed access to the site, and any vegetation clearing required for the Project. The right-of-way will be cleared of the amount of vegetation necessary to construct, operate and maintain the proposed transmission line.

Where possible, staging and lay down areas will be located within the right-of-way and limited to previously disturbed or developed areas. When additional property is temporarily required for construction, temporary easements may be obtained from landowners for the duration of construction. These temporary easements will be limited to special construction access needs or additional staging or lay down areas required outside of the proposed right-of-way.

4.2.4 Associated Facilities

There are several facilities associated with the transmission line construction. The Rugby Wind Farm, associated operations and maintenance facility, and wind farm electrical system are included in the application to the PSC for a Certificate for Site Compatibility submitted concurrent with this application. The new Project Substation will be located in Section 28 of Spring Lake Township. The substation will be a 230/34.5kV substation and will facilitate the relaying of the wind-generated energy to the Rugby Substation along the new 230 kV transmission line. The new Project Substation footprint and Operations and Maintenance building for the Rugby Wind Farm will occupy approximately three acres and will be located on 10 acres of land. The attached design data report identifies the general specifications of the new project substation (Appendix B). The existing Rugby Substation will require upgrades. A fourth 230 kV circuit breaker will be added to the existing three-breaker ring bus.

5.0 ENVIRONMENTAL ANALYSIS

This Section provides a description of the environmental conditions that exist in the Corridor and Route. Conservative impact estimates associated with the proposed Route assumed that the line will be approximately 9.5 miles (15.3 km) in length with 660 foot average spans. The approximate number of structures for a line of this length is 71 based on the average spans. The proposed structure is an H-frame and there are two poles per structure. Each structure will permanently impact approximately 100 ft^2, or 50 ft^2 per pole. The temporary impacts are estimated to include an area of approximately 2,000 ft^2 around each structure and a 20 foot wide temporary access road that would extend the length of the Route and would require only limited grading.

General information on land use and vegetation within the Corridor were estimated using the USFWS land use database. Percentages of land use within the Corridor were estimated using the Corridor limits, whereas the land use percentages for the Route were estimated using the proposed right-of-way. The right-of-way for the 230 kV transmission line is 85 feet on either side of the structure centerline. The transmission line is proposed to be placed 120 to 150 feet east of the centerline of the existing 230 kV line.

Consistent with PPM's policy that people and conservation of the environment come first in the conduct of their operations, the Project has been designed to limit the environmental impact of the proposed facility. This policy is attached as Appendix A.

5.1 DEMOGRAPHICS

5.1.1 Description of Resources

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

The Corridor and Route are located in portions of Torgeson township and North Pierce unincorporated township (UT) in Pierce County, North Dakota. The population of Pierce County is 4,675, the population of Torgeson township is 73, and the population of North Pierce UT is 609. The per capita income in these townships is lower than the County average. However, a lower percentage of the township populations are below the poverty level than the County population. None of the population of Torgeson township is below the poverty level, and approximately 10.7 percent of the population of North Pierce UT is below the poverty level. Approximately 12.5 percent of the population of Pierce County is below the poverty level. Table 9 summarizes the population and economic characteristics within the Corridor.

According to the 2000 U.S. Census, the largest industries employing residents of Pierce County are Agriculture and Services.

Table 9
Population and Economic Characteristics

Location	Population	Per Capita Income	Percentage of Population Below Poverty Level
Pierce County	4,675	$14,055	12.5 percent
North Pierce UT	609	$13,844	10.7 percent
Torgeson Township	73	$13,788	0 percent

5.1.2 Impacts

5.1.2.1 Corridor

Short-term impacts to socioeconomic resources from the transmission line will be relatively minor. Permanent agricultural land conversion associated with the transmission line structure placement will constitute a small socioeconomic impact to those landowners with structures on their land. There is no indication that any minority or low-income population is concentrated in any one area of the Corridor, or that the transmission line will be placed in an area occupied primarily by any minority group.

The construction of the transmission line and associated substation improvements will provide temporary increases to the total personal income of the area if local contractors are used. Additional personal income will also be generated by circulation and recirculation of dollars paid out by the applicants as business expenditures and State and Local taxes. Labor relations will not be affected.

As noted in the previous section, the development of the Project, which includes the transmission line and substation improvements, has strong potential to contribute to economic growth in the Corridor and vicinity.

5.1.2.2 Proposed Route

Approximately 29 acres of agricultural land will be temporarily removed from production during transmission line construction. Permanent agricultural land conversion associated with the transmission line structures will be approximately 0.2 acres for the entire Route. Landowner compensation will be established by individual lease agreements. As stated above, agricultural areas surrounding transmission line structures can still be farmed following construction of the Project. Project construction will not cause additional impacts to leading industries along the Route. There is no indication that any minority or low-income population is concentrated in any one area of the Route, or that the transmission line will be placed in an area occupied primarily by any minority group.

5.1.3 Mitigation

5.1.3.1 Corridor

Socioeconomic impacts associated with the Project will be primarily positive with an influx of wages and expenditures made at local businesses during the Project construction and an increase in the county's tax base from the construction of the transmission line. PPM will use local labor and contractors to the extent practicable.

Impacts to landowners will be minimized to the extent practicable.

5.1.3.2 Proposed Route

See Section 5.1.3.1 above for mitigation associated with the proposed Route.

5.2 LAND USE

5.2.1 Description of Resources

The proposed Project would be located in northern Pierce County, north and east of the City of Rugby. The Project proposes to install a transmission line connecting the Project Substation for the proposed Rugby Wind Farm to the existing Rugby Substation located south of Highway 2 and east of Rugby. The current land use within the Corridor is rural agricultural land used for crops and grazing cattle. Several locations within the Corridor are currently, or were previously, mined for aggregate resources. These gravel pit locations are more fully described in Section 5.11.1 in Geologic and Groundwater Resources. The proposed Corridor is not within the Rugby city limits or within an area of military installation.

The development of the proposed transmission line will not displace any residences or existing or planned industrial facilities. The proposed transmission will parallel the existing 230 kV transmission line.

Based on a review of aerial photographs, land use database information, USFWS database information, and a visit to the Corridor and Route, it was determined that the majority of the land area within the Corridor and Route is agricultural land use (Figure 12). Table 10 identifies current land use in the Corridor and Route based on the USFWS database.

Table 10
Major Habitats and Their Relative Abundance

Habitat	Transmission Corridor		Transmission Route	
	Acreage	Percent of Corridor	Acreage	Percent of Route
Cropland	8581	54 percent	136.7	69 percent
Hayland	175	1 percent	0.8	<0.1 percent
Undisturbed Grassland (including CRP)	992	6 percent	5.6	3 percent
Native Grassland	4261	27 percent	46.9	24 percent
Open Water, Lake, Riparian	619.8	4 percent	0.1	<0.1 percent
Wetlands	1249	8 percent	7.6	4 percent
Undefined (Farmsteads, Roads, etc.)	50	<1 percent	0	0 percent

Sixty-one percent of the Corridor is used for agricultural purposes. Agricultural land use includes approximately 54 percent cropland, one percent hayland, and six percent undisturbed grasslands. Undisturbed grassland is previously disturbed or previously cropped upland that has been seeded back into some type of grass mixture, but is currently undisturbed. The undisturbed grassland is frequently enrolled in a USDA program, such as the Conservation Reserve Program (CRP). This undisturbed status is only temporary in nature and after the contract expires the land may become cropland again. Native grasslands are 27 percent of the Corridor and are primarily used for grazing livestock. The native grasslands include remnant native prairie of various quality, dependent on grazing pressure and herbicide applications to control weed species. Approximately 12 percent of the Corridor is wetland, lake, open water, or riparian area.

Seventy-two percent of the Route is used for agricultural purposes. Agricultural land use includes approximately 69 percent cropland, <0.1 percent hayland, and three percent Conservation Reserve Program (CRP) grasslands. Native grasslands are 24 percent of the Route and are primarily used for grazing livestock. The native grasslands include remnant native prairie of various quality, dependent on grazing pressure and herbicide applications to control weed species. Four percent of the Route is wetland, lake, open water or riparian area.

5.2.2 Impacts

5.2.2.1 Corridor

Land use in the Corridor is not expected to change as a result of construction of the proposed transmission line. Two transmission lines (115 kV and 230 kV) are already present within the Corridor. Land used for crops is abundant in the Corridor. Ranching activity is also not expected to be impacted by the proposed transmission line located within the Corridor studied. The majority of the area under or adjacent to the transmission line can still be used for agricultural practices following construction of the line.

5.2.2.2 Proposed Route

The Route will parallel the 230 kV line. The majority of the land impacted by the construction of the transmission line is used for agriculture. This land use is abundant along the Route. Ranching activity is also not expected to be impacted by the proposed transmission line. The majority of this area will remain in agricultural use since the land under or adjacent to the line can still be used by the landowner. During construction of the Route, additional areas may be temporarily disturbed for laydown areas.

The proposed land use would not involve any ongoing industrial use of non-renewable resources or emissions into the environment.

5.2.3 Mitigation

5.2.3.1 Corridor

PPM will work closely with the landowners, the USFWS, and other agencies in finalizing transmission structure locations and access to the site to minimize land use disruptions and impacts to environmentally sensitive areas to the extent possible. These areas will be graded to original contours and if necessary reseeded with vegetation recommended by the USFWS and Natural Resources Conservation Service (NRCS). Construction of the transmission line will not change the land use in the Corridor.

5.2.3.2 Proposed Route

See Section 5.2.3.1 above.

5.3 PUBLIC SERVICES

5.3.1 Description of Resources

Local Services

The Project is located in a lightly populated, rural area in north-central North Dakota. There is an established transportation and utility network that provides access and necessary services to the light industry, small cities, homesteads and farms existing in and near the Corridor. The closest town to the Corridor is the City of Rugby, located approximately one-half mile west of the southern end of the transmission Corridor. The City provides sanitary sewer, water, cable television, DSL, telephone, school and library services. Additionally, the City's local services include emergency services, a volunteer fire department, ambulance service, a hospital and four full-time police officers. There are also local retail service facilities and institutions.

Electrical Service

There are currently two transmission lines running through the Corridor. Xcel Energy owns a 230 kV transmission line that runs north through the Corridor from the Rugby Substation. The Route will parallel Xcel Energy's 230 kV transmission line. Central Power owns a 115 kV transmission line that runs north through the western portion of the project.

Roads

County and township (section line) roads characterize the existing roadway infrastructure in and around the Corridor. There are two State Highways within and adjacent to the Corridor. Highway 17 runs east-west along the northern edge of the Corridor. Highway 3 is located approximately 3 miles west of the Corridor and runs north-south. U.S. Highway 2 crosses the southern end of the Corridor and Route.

Traffic

The existing traffic volumes on the area's county highways are documented in Table 11 and Figure 9. Determining the specific capacity of any highway is a complex process; however, general estimates are used for planning purposes. For purposes of comparison, the functional capacity of a two-lane paved rural highway is approximately 5,000 vehicles per day, or Average Daily Traffic (ADT). In general, the State Highways in and near the Corridor and Route carry higher levels of traffic than what is average for rural North Dakota, but represent only a fraction of the capacity of the roadway.

Table 11
Existing Daily Traffic Levels

Roadway Segment	Existing Average Daily Traffic (ADT)
Highway 17 on north edge of Corridor	210
Highway 3 north of Highway 17	1,025
Highway 3 south of Highway 17	1,425
Highway 2 east of Rugby	2,325
Rolette Road north of Highway 17	55
33rd Avenue NE through the Corridor	95

Source: 2002 Traffic Volumes from NDDOT, Bismarck

Additional county and township roads run through the Corridor, but have no count data available. In general, NDDOT indicated that roads under 100 ADT are rarely counted. As indicated in Table 11, all non-State routes are less than 100 ADT. As per the North Dakota Department of Transportation, the routes with no counts are likely lower than those with count data.

The Route will be adjacent to 33rd Avenue for approximately 3 miles in Sections 3, 10, 15, and 22; Township 157N, Range 72W. The Route will also cross Highway 2.

Water Supply

The townships have limited public infrastructure services, which is typical of most townships. Homes typically utilize septic systems and water wells for their household needs.

Telephone, Fiber Optic, Microwave, Television and Radio Communications

The potential for impacts on radio and television reception, and other communication or electronic control facilities were evaluated. No radio or television signal interference directly from the transmission of electricity is anticipated because of the differences in frequency of the signals. It is possible that localized interference could occur as a result of electric discharges across small gaps in the transmission system hardware or from the development of partial electric discharges from the line itself (generally referred to as "corona"). While it is unlikely that either of these situations would occur, in the event that radio and television signals are impacted, the use of corona-free hardware and routine transmission line maintenance would eliminate the problem.

One communication tower has been identified within one mile of the Route, several land mobile communication sites are present within the Corridor, and two microwave communication beam paths are present just east of Rugby at the southern end of the Corridor. Microwave telecom systems are present in the southern portion of the Corridor. Four beam paths were identified; three of these paths generally run east-west and have a node in the city of Rugby. The fourth runs roughly northwest-southeast, and has a northern terminal node at or adjacent to the Rugby Substation. A summary of the microwave beam path and the microwave interference study and worst case Fresnel Zone calculations from Comsearch are attached as Appendix C.3.

A number of land mobile telecom systems are present, but generally confined to the western and southern portions of the Corridor.

5.3.2 Impacts

5.3.2.1 Corridor

Local Services

No negative impacts to local services are anticipated.

Electrical Service

No impact is anticipated to the transmission system; the new transmission line and substation improvements may increase overall service reliability.

Roads

Constructing the transmission line will require temporary access along the Route, which is approximately 9.5 miles. The access road will be approximately 20 feet (6.1 meters) wide; no major grading or filling is anticipated since the access road will only be needed during construction.

Traffic

The maximum transmission line construction workforce is expected to generate approximately an average of 25 additional vehicle trips per day. Using any combination of State and County highways and other township roads throughout the Project site, the traffic impacts are considered negligible. Since many of the area roadways have minimal ADT currently, the addition of 25 vehicle trips represents a large percentage increase (and likely would be perceptible), but would still be less than seasonal variations such as autumn harvest. The capacity of any route and Level-of-Service to the traveling public would not be impacted.

Truck access to the Corridor is served by U.S. Highway 2 into Rugby, which is a four-lane divided highway connecting to I-29 in Grand Forks and US Highway 83 in Minot (another four-lane divided highway to I-94 in Bismarck). From Rugby, Highway 3 to Highway 17 will serve as the primary truck access into the northern portion of the Corridor. Specific additional truck routes will be dictated by the location required for delivery. Additional operating permits will be issued by the State, County and/or township for over-sized truck movements.

Water Supply

Construction and operation of the transmission line will not significantly impact the water supply. The installation or abandonment of any wells is not anticipated to be necessary for transmission line construction. No surface water or groundwater appropriation is anticipated.

Telephone, Fiber Optic, Microwave, Television and Radio Communications

No impacts to these communication resources are anticipated.

5.3.2.2 Proposed Route

See above, Section 5.3.2.1.

5.3.3 Mitigation

5.3.3.1 Corridor

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

Local Services

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

Electrical Service

The construction of the Project, including proposed upgrades to the Rugby Substation, will improve transmission system service.

Roads

The temporary transmission line construction access road will follow the new 230 kV transmission line alignment. Impacts from transmission line construction are expected to primarily consist of compaction of agricultural soils. Where necessary, the soil will be disked following construction.

Traffic

No impacts are anticipated, and no mitigation is necessary.

Water Supply

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

Telephone, Fiber Optic, Microwave, Television and Radio Communications

Utilities Underground Location Center will be contacted prior to construction to locate and avoid underground facilities. To the extent project facilities cross or otherwise affect existing telephone or fiber optic lines or equipment, PPM will enter into agreements with service providers so as to avoid interference with their facilities.

Since no impacts to microwave or land based telecom systems are anticipated, no mitigation should be required.

5.3.3.2 Proposed Route

See above, Section 5.3.3.1.

5.4 HUMAN HEALTH AND SAFETY

5.4.1 Description of Resources

5.4.1.1 Human Health

The term electromagnetic fields (EMF) refers to electric and magnetic fields that are present around any electrical device. Electric fields arise from the voltage or electrical charges and magnetic fields arise from the flow of electricity or current that travels along transmission lines, distribution (feeder) lines, substation transformers, house wiring, and electrical appliances. The intensity of the electric field is related to the voltage of the line and the intensity of the magnetic field is related to the current flow through the conductors (wire). EMF can occur indoors and outdoors.

Considerable research has been conducted throughout the past three decades to determine whether exposure to power-frequency (60 Hz) EMF cause biological responses and health effects. Epidemiological and toxicological studies have shown no statistically significant association or weak

associations between EMF exposure and health risks. There are no discernible health impacts from power lines.

Recent reviews of potential human health effects from transmission line EMF were completed in California (California EMF Program 383) as part of the State of California EMF Program and in Wisconsin for the Arrowhead-Weston Environmental Impact Statement (EIS) (Arrowhead-Weston 5-21). Both studies have similar conclusions of no discernible health impacts from power lines. Both of these studies recommend the general precaution of minimizing unnecessary contact and advise prudent avoidance to EMF exposure.

5.4.1.2 Human Safety

Proper safeguards will be implemented during construction and operation of the facility. The Project will be designed to meet local, state, NESC, PPM, and RUS safety standards. Construction crews will comply with local, state, NESC, PPM, and RUS standards regarding the installation of facilities.

The proposed transmission line will be equipped with protective devices such as breakers and relays at the substation to safeguard the public from the transmission line if an accident occurs or if a structure or conductor falls to the ground. The protective equipment at the substation will de-energize the line should an accident occur. In addition, the Rugby Wind Farm Project Substation will be fenced and access limited to authorized personnel.

5.4.2 Impacts

5.4.2.1 Corridor

Human Health

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, the Project will have little impact to public health and safety due to EMF. The addition of transmission facilities is not expected to add significantly to the presence of EMF exposure in the Corridor.

5.4.2.2 Proposed Route

Electric Forces and Magnetic Fields from 230 kV Line

Electric forces and magnetic fields were modeled from the proposed single circuit 230 kV for the Route. Electric fields are predicted to decrease to background levels of approximately 0.1 kilovolt per meter (kV/meter) within 200 feet of the transmission line and magnetic fields are predicted not to exceed background levels of 500 milligauss (mG). The nearest sensitive receptor to the proposed route is approximately 550 feet where EMF from the transmission line is predicted to be significantly below background levels.

5.4.2.3 Human Safety

No impacts are anticipated.

5.4.3 Mitigation

5.4.3.1 Corridor

Human Health

In selecting a route that avoids impacts to residences and other occupied structures, PPM has limited human exposure to EMF to the extent practicable. No additional mitigation should be needed.

Human Safety

If the proper safeguards and protective measures are implemented as described above, no additional mitigation is required.

5.4.3.2 Proposed Route

See above Section 5.4.3.1.

5.5 NOISE

5.5.1 Description of Resources

Noise is comprised of a variety of sounds of different intensities, across the entire frequency spectrum. Humans perceive sound when sound pressure waves encounter the auditory components in the ear. These components convert these pressure waves into perceivable sound. Transmission conductors and transformers at substations produce noise under certain conditions. The level of noise or its loudness depends on conductor conditions, voltage level, and weather conditions. Noise emission from a transmission line occurs during heavy rain and wet conductor conditions. In foggy, damp, or rainy weather conditions, power lines can create a subtle crackling sound due to the small amount of the electricity ionizing the moist air near the wires. During heavy rain the general background noise level is usually greater than the noise from a transmission line. In addition, very few people are out near the transmission line. For these reasons audible noise is not noticeable during heavy rain. During light rain, dense fog, snow and other times when there is moisture in the air, the proposed transmission lines will produce audible noise higher than rural background levels but similar to household background levels. During dry weather, audible noise from transmission lines is an imperceptible, sporadic crackling sound.

Noise is measured in units of decibels (dB) on a logarithmic scale. Because human hearing is not equally sensitive to all frequencies of sound, certain frequencies are given more "weight." The A-weighted (dBA) scale corresponds to the sensitivity range for human hearing. Noise levels capable of being heard by humans are measured in dBA, the A-weighted sound level recorded in units of decibels. A noise level change of 3-dBA is imperceptible to human hearing. A 5-dBA change in noise level, however, is clearly noticeable. A 10-dBA change in noise levels is perceived as a doubling of noise loudness, while a 20-dBA change is considered a dramatic change in loudness. Table 12 shows noise levels associated with common, everyday sources, and places the magnitude of noise levels discussed here in context. Low to mid-30 dBA are relatively low background levels and are generally representative of the Corridor.

Higher levels exist near roads and other areas of human activity. The windy conditions in this region tend to increase ambient noise levels compared to other rural areas.

Table 12
Common Noise Sources and Levels

Sound Pressure Level (dB)	Typical Sources
120	Jet aircraft takeoff at 100 feet
110	Same aircraft at 400 feet
90	Motorcycle at 25 feet
80	Garbage disposal
70	City street corner
60	Conversational Speech
50	Typical office
40	Living room (without TV)
30	Quiet bedroom at night

Source: Environmental Impact Analysis Handbook, ed. By Rau and Wooten, 1980

5.5.2 Impacts

5.5.2.1 Corridor

The 230 kV transmission line route was modeled using the Bonneville Power Administration Corona and Fields Interactive 1989 Experimental (CFI8X) model to evaluate audible noise from high voltage transmission lines. Where possible, the CFIX8 model was executed in a worst-case manner, to ensure that audible noise was not under-predicted. This involved adjusting the orientation of phase angles used in the CFIX8 model.

5.5.2.2 Proposed Route

Audible noise was modeled from the proposed single circuit 230 kV transmission lines on an H-Frame configuration for the Route. This analysis relied on the following assumptions:

- The three conductors were assumed to be approximately 30 feet above the ground, and spaced 20 feet apart.
- The conductor diameter was assumed to be 1.108 inches, based on the Anderson Electrical Connectors Technical Data booklet.
- The line to neutral voltage was calculated to be 132.79 kV.
- Phase angles were modeled as 240, 120 and 0 degrees, respectively.

The proposed 230 kV line may be sited within 120 to 150 feet of an existing 230 kV line. A second analysis was performed to predict the combined Noise Levels generated by the two 230 kV lines. This analysis relied on the following assumptions for the existing line:

- The three conductors were assumed to be approximately 42 feet above the ground, and spaced 20 feet apart.
- The conductor diameter was assumed to be 1.196 inches, based on the Anderson Electrical Connectors Technical Data booklet.
- The line to neutral voltage was calculated to be 132.79 kV.
- Phase angles were modeled as 240, 120 and 0 degrees, respectively.
- The location for the midpoint of proposed line was modeled at 0 and the midpoint of the existing line was modeled at -120 feet from the proposed line.

Table 13 presents modeling results for the proposed line and the combined existing and proposed line in dBA on an L_{50} basis. These levels are predicted to occur at a point five feet above the ground and are positioned at the centerline between the two structures during wet conditions. The attenuation rate is approximately -4 dB per distance doubled. This rate is typical of noise sources that are characterized as line sources.

Table 13
Predicted Audible Noise from 230 kV lines for Route

Distance from Center of transmission line corridor (feet)	-300	-200	-100	-50	-30	0	30	50	100	200	300
Audible Noise, L_{50} (dBA) from Proposed 230 kV line	36	38	41	45	46	48	46	45	41	38	36
Audible Noise, L_{50} (dBA) from Proposed and Existing 230 kV lines	41	44	48	47	48	49	47	46	43	40	38

5.5.3 Mitigation

5.5.3.1 Corridor

The nearest sensitive receptor to the proposed route is approximately 550 feet where noise from the transmission line is predicted to be below rural background levels. No mitigative measures are necessary since there will be nominal noise impacts from the Project.

5.5.3.2 Proposed Route

See above, Section 5.5.3.1.

5.6 VISUAL IMPACTS

5.6.1 Description of Resources

The topography of the Study Area and Corridor is a mixture of open plains with rolling fields broken by large hills and adjacent lakes. Elevations in the Corridor range between 1500 and 1750 feet above sea level. The highest elevations occur at the peaks of steep moraines located in the central portion of the site. The dominant landforms in the site are glacial deposits including a stagnation moraine, sand and gravel outwash deposits, and silty/sandy lacustrine deposits. A topographic map of the Project area is shown in Figure 5.

Within the project area the dominant land use is pasture. The most widely grown crops in the project area are wheat, corn and sunflowers. Wetland areas are dominated by cattails, sedges, rushes and willows. A mix of deciduous and coniferous trees planted for windbreaks typically surrounds farmsteads. Generally, these forested areas are isolated groves or windrows established by the landowner/farmers to prevent wind erosion and shelter dwellings. Typical tree species include box elder, bur oak and cottonwood.

The site is located in a topographically isolated portion of the Willow Creek watershed which empties into the Souris River. It is five miles from the edge of the Devil's Lake watershed. Most of the site consists of isolated basins associated with wetlands or lakes. The few small intermittent creeks that exit the site flow to the west-southwest. Figure 10 shows the typical landscape in the area.

5.6.2 Impacts

5.6.2.1 Corridor

The proposed transmission line will be visible to landowners and community residents who live near the proposed line within the Corridor. The structure design will be wooden H-frame poles, intended to, among other things, minimize visual impacts. The corridors also allow PPM to parallel an existing transmission right-of-way.

5.6.2.2 Proposed Route

The visual impact of the new transmission line will have an effect on the visual quality within the vicinity of the Route. However, the new 230 kV transmission line will parallel an existing 230 kV transmission line. There is also an existing 115 kV transmission line located ½ mile to 1 mile west of the existing 230 kV line and the proposed line. The impact to aesthetics will be minimal, due to the existing transmission lines. Figures 10 and 11 shows a photo of the existing structures along the Route as well as a photo simulation of the proposed structures.

The new transmission line would be approximately 120 to 150 feet east of the existing 230 kV Rugby-Glenboro transmission line. The structure locations will be fine tuned to more specifically avoid residences, wetlands and water bodies, especially in USFWS Wetland Easements; and native vegetation to the extent practicable, as described in Section 5.13.

PPM is proposing to use H-frame, wood structures for the Project. Figure 6 depicts the structures that will be used for the transmission line. The structures will be erected and will be directly imbedded into the ground. The structures will be approximately 80 feet in height with an average span between each structure of 660 feet.

The proposed transmission line will be located a mile to the east of Rugby, therefore, it will have minimal impacts to the city. The majority of the proposed 230 kV line will be crossing agricultural land and will minimize impacts to residences. Visual impacts will be most evident to drivers traveling east and west along Highway 2 and Highway 17. The line will impact landowners and residents that live in close proximity to the proposed Route.

5.6.3 Mitigation

5.6.3.1 Corridor

The proposed Corridor contains an existing 230 kV line and a 115 kV line. The new transmission line will be sited within close proximity to the existing 230 kV line, in order to keep the lines within the same corridor.

5.6.3.2 Proposed Route

Although the transmission line will contrast with the surrounding land uses, these areas have already been impacted visually by the existing 115 kV and 230 kV lines. The proposed Route will minimize the number of residences impacted by the line. The Route will also parallel Xcel Energy's existing transmission line route and line-up with the existing structures to the extent practicable. Care will also be taken to avoid structure placement, as much as possible, in biologically sensitive areas such as wetlands and high quality native prairies. Placing structures in front of picture windows will also be avoided.

5.7 CULTURAL RESOURCES

5.7.1 Description of Resources

PPM contacted the SHPO in December 2004 to request a review of potential project-related impacts on known or suspected cultural resources (Appendix D). The SHPO responded with a request for additional information in order to determine the Area of Potential Effects (APE) and any project impacts in the APE (Appendix D). The SHPO recommended that PPM sponsor a Class I cultural resources inventory for the study area to determine the nature of previous cultural resources investigations and the location of known archaeological sites in the area. The SHPO also stated that there is "potential for unrecorded properties in a variety of physiographic settings in the…project area" (Appendix D). Therefore, the SHPO suggested that a Class III cultural resources inventory, primarily pedestrian survey, might be appropriate. PPM has also contacted Mr. Brady Grant of the Turtle Mountain Chippewa and William Ambrose Littleghost of the Spirit Lake Nation to request their input on the Project. PPM has received no comments from Mr. Grant or Mr. Littleghost.

PPM has reviewed cultural resources information on file at the SHPO for the Corridor and Route and prepared a Class I Cultural Resources Inventory (Appendix C.4). A review of 14 previous studies and additional records on file at the SHPO for the Study Area vicinity identified one previously recorded archaeological resource and one archaeological site lead within one mile of the proposed transmission line Corridor (Table 14). There are no previously identified cultural resources within the project Corridor. The proposed Route also produced no previously recorded cultural resources.

Table 14
Previously Identified Archaeological Sites and Archaeological Sites Leads within one mile of the Corridor Study Area

Site Number	Site Name	Type	Location			Comments
			Township	Range	Section	
32-PI-00053	N/A	Prehistoric-Surface Features	158N	72W	15	Two stone circles; artifacts unknown (Morrison 2002)
32-PI-X0032	N/A	Unknown-Surface Feature	158N	72W	31	Stone circle (source unknown)

PPM will continue to consult with the SHPO, Mr. Grant and Mr. Littleghost in anticipation of the Class III inventory. PPM plans to conduct archaeological field investigations of proposed impact areas throughout the APE. These investigations will be conducted by a professional archaeologist permitted by the State of North Dakota per NDCC 55-03-01.

5.7.2 Impacts

5.7.2.1 Corridor

The placement of the transmission line will determine the potential impacts to cultural resources. No previously recorded cultural resources have been identified within the existing project corridor. The probability of encountering intact cultural resources is largely dependent on landforms and historic land use activities. Areas previously utilized for agriculture or mining activities will generally contain a lower probability for containing intact cultural resources, although PPM recognizes that agricultural activity does not necessarily compromise archaeological site integrity in all cases.

5.7.2.2 Proposed Route

The proposed Route follows the existing transmission line corridor. The right-of-ways consist of a 180 foot corridor, or 85 feet on each side of the line. Transmission line structures are 80 foot H-frames with an average span of 660 feet. No cultural resources have been identified along proposed transmission line Route.

PPM does not anticipate adverse impacts to previously identified cultural resources as a result of the Project. PPM will make every effort to avoid the cultural resources and any resources identified during the Class III field inventory.

5.7.3 Mitigation

5.7.3.1 Corridor

PPM does not anticipate adverse impacts to cultural resources within the project Corridor. No cultural resources were identified within the project Corridor during the background check and literature review.

5.7.3.2 Proposed Route

The proposed transmission line Route produced no previously recorded cultural resources. PPM does not anticipate adverse impacts to cultural resources within the proposed Route. In consultation with the SHPO, a professional archaeologist would establish buffer appropriate to resources discovered during the Class III Survey.

PPM will avoid impacts to identified archaeological resources to the extent practicable. Many of the potential archaeological resources in the area may be avoided due to the nature of transmission line construction, where the line can be constructed to avoid sensitive areas by moving proposed pole locations and spanning those areas. In the event that an impact would occur, PPM would determine the nature of the impact and consult with the SHPO on whether or not the resource was eligible for listing in the National Register of Historic Places (NRHP). Mitigation for project-related impacts on NRHP-eligible archaeological resources may include an effort to minimize project impacts on the resource and/or additional documentation through data recovery.

If the Class III cultural resources inventory should determine that such a plan is appropriate, PPM would also develop a discovery plan to be in place should previously unknown archaeological resources or human remains be inadvertently encountered during the project. The plan would outline the framework for handling such discoveries in an efficient and legally compliant manner. The discovery plan may include the following topics: construction contractor training, identification of resources in the field, contact information for PPM-designated professionals to address a discovery, procedures for avoidance, and associated tasks in the event of work stoppage in a construction area. With regard to a discovery of human remains, procedures would be followed to ensure that the appropriate authorities would become involved quickly and in accordance with Local and State guidelines.

5.8 RECREATIONAL RESOURCES

5.8.1 Description of Resources

Recreational opportunities in Pierce County include camping, hiking, biking, swimming, golfing, hunting, fishing and nature observation. Review of State and Federal databases indicates that no registered national wildlife refuges, State wildlife management areas, State game refuges, game management areas, nature preserves or county parks are present within the Corridor. One golf course is located within the Corridor; this is the Rugby Golf Course on Highway 2, approximately one mile east of the city of Rugby.

The golf course is located in the southwest quarter of Section 6, Township 156N, Range 72W; this is at the southwestern edge of the Corridor. No lakes with public boat access are located within the Corridor. There is one parcel of Federal land within the Corridor, but no public access is available. These areas are depicted in Figure 16.

In addition, there are private properties over which the USFWS has an easement for protection of wetland and grassland resources. The wetland easements stipulate that the landowner can not drain, fill, or burn the wetlands within the easement. The grassland easements stipulate that a landowner can not disturb the sod or burn the native grasslands within the easement. The purpose of wetland easements, and grassland easements is to protect wetland areas and grassland buffers for the reproduction and growth of waterfowl species. USFWS wetland and grassland easements in the Corridor are managed through the J. Clark Salyer National Wildlife Refuge and Wetland Management District (WMD). While the Corridor is not in or part of the wildlife refuge, the WMD covers all of Pierce County, including the Corridor.

5.8.2 Impacts

5.8.2.1 Corridor

In general, recreational impacts will be visual in nature and limited to individuals using public or private property in the Corridor for hiking, hunting, fishing, or nature observation. See Section 5.6 for detailed discussion of anticipated visual impacts and proposed mitigative measures. The golf course would be avoided. No other significant impacts to recreational resources are anticipated

5.8.2.2 Proposed Route

Recreational impacts will be visual in nature and limited to individuals using public or private property in the Corridor for hiking, hunting or nature observation. No additional impacts are anticipated.

5.8.3 Mitigation

5.8.3.1 Corridor

Since it is not anticipated that any recreational resources will be removed from service by implementation of the proposed Project, no adjacent land will be converted or dedicated to recreational use or wildlife management. Secondary recreational uses of proposed Project property may be allowable depending on security requirements. No other mitigation is anticipated to be necessary.

5.8.3.2 Proposed Route

The Route will follow an existing transmission line Corridor, and will avoid impacts to recreational areas.

5.9 EFFECTS ON LAND BASED ECONOMIES

5.9.1 Description of Resources

Agriculture/Farming

The majority of the Corridor is cultivated farmland, pasture, and grasslands as shown on the Figure 12. Cultivated land comprises approximately 8581 acres of the Corridor and 137 acres of the Route . There are also numerous small areas of cultivated land that are currently enrolled in the Conservation Reserve Program (CRP). These areas account for approximately 992 acres of the Corridor and six acres of the Route. Native grasslands comprise approximately 4261 acres of the land in the Corridor and 47 acres of the land along the Route . Approximately 61 percent of the land in the Corridor and 72 percent of the land in the Route is utilized for agricultural purposes.

According to the 2002 Census of Agriculture, Pierce County is ranked 38th overall among North Dakota counties in agricultural products sold. Within the Corridor, wheat is the most widely grown crop. Hay, sunflowers and corn are additional crops in the Corridor. Pierce County has approximately 487 farms, of which the primary commodity is crops, primarily wheat for grain. Cattle are the primary livestock in the County. According to the 2002 Census of Agriculture, the amount of land in farms decreased six percent in Pierce County. The market value of agricultural products from Pierce County in 2002 was approximately $36,295,000. Crop sales account for approximately 70 percent of the total value.

Crops are a large percentage of the value and the land type, such as prime farmland, is important in production. Prime farmland is the land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops. The National Resource Conservation Service (NRCS) has two classifications for prime farmland. The first is where all areas of the soil series are classified prime farmland. The second is where only the drained areas of the soil series are prime farmland. The NRCS also identifies farmland of statewide and local importance, which is land that is important for the production of food, feed, fiber, forage and oilseed crops. Generally, additional farmlands of Statewide or Local importance include those that are nearly prime and that produce high yields of crops in an economic manner when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmland soils if conditions are favorable. Table 15 lists the soils considered Prime Farmland and soils of statewide or local importance within the Corridor and along the Route. Figure 13 shows the prime farmland soil distribution in the Corridor and along the Route.

There is one irrigation permit located within the Corridor. PPM will avoid this parcel of land.

There are 17 farms with residences within the Corridor. These residences are identified on Figure 2. There are no residences within 500 feet of the proposed Route (Figure 3). The closest residence is 660 feet from the proposed Route.

Woodlands

Economically important forestry resources are not found in the Corridor. Woodlands are primarily associated with homes in the form of woodlots and windbreaks within the Corridor. Woodlands along the Route are depicted on Figure 17.

Table 15
Prime Farmlands - Pierce County

Map Symbol	Corridor Soil Units	All Areas Are Prime Farmland	Soil of Statewide/Local Importance	Prime Farmland Only When Drained	Soil Unit in Route?
1	Tonka Silt Loam			X	X
15	Bearden Silty Clay Loam, Saline		Local		X
35	Embden Fine Sandy Loam, 0-3 percent Slopes	X			X
36B	Embden-Egeland Fine Sandy Loams, 3-6 percent Slopes	X			
39	Swenoda Fine Sandy Loam, 0-3 percent Slopes	X			X
41B	Swenoda Fine sandy Loam, 3-6 percent Slopes	X			X
57	Vallers Loam			X	X
60	Emrick Loam, 0-3 percent Slopes	X			X
62	Emrick-Heimdal Loams, 0-3 percent Slopes	X			X
62B	Emrick-Heimdal Loams, 3-6 percent Slopes	X			X
64C	Heimdal-Esmond Loams, 3-9 percent Slopes		Local		X
65	Fram Loam, 0-3 percent Slopes	X			X
66	Gardena Silt Loam, 0-3 percent Slopes	X			X
70	Glyndon Silt Loam, 0-3 percent Slopes	X			X
72	Glyndon Silt Loam, Saline, 0-3 percent Slopes		Local		X
74	Borup Silt Loam			X	X
80	Cathay Loam, 0-3 percent Slopes		Statewide		X
80B	Cathay Loam, 3-6 percent Slopes		Statewide		X
88B	Arvilla Soils, 0-6 percent Slopes		Local		X

5.9.2 Impacts

5.9.2.1 Corridor

Agriculture/Farming

Impacts to agriculture will be nominal. Permanent impacts will be the areas surrounding the transmission line structures. All areas underneath and surrounding the proposed transmission line will be available for agricultural use following construction. Temporary impacts typically include soil disturbance, possible compaction around each pole and crop damage, if construction is during the growing season.

Woodlands

Since a majority of the woodlands are associated with homesteads and windbreaks, few impacts to woodlands are anticipated.

5.9.2.2 Proposed Route

Agriculture/Farming

No impacts are anticipated to animal health and safety due to the construction or operation of the transmission line. Except for the physical locations of the transmission line structures, all the land surrounding the transmission line will be available for grazing.

Actual impacts to agriculture production will be determined once the transmission line alignment is finalized. Each transmission line pole will permanently impact approximately 50 square feet of land. Each H-frame structure has two poles. Approximately 0.2 acres (7100 ft^2) of land will be permanently impacted due to transmission line structure placement. Temporary impacts from transmission line construction include the staging area at each structure and an approximately 20 foot wide construction access road that will extend along the transmission line (approximately 9.5 miles). Total temporary impacts from construction staging and the construction access road is approximately 29 acres. It is possible that some of this land is not used for agricultural purposes; thus the actual impacts to agriculture production cannot be determined until the transmission line location is finalized.

The effect of heavy equipment on agricultural soils was considered. Compaction of soil is a concern where construction equipment is used intensively, even during a relatively short duration such as the construction season needed for transmission line installation.

When considering the impact on production for the top five crops in Pierce County, the temporary construction impact of 29 acres would affect less than 0.1 percent of the yearly production for those commodities (based on yields reported in 2003).

Family farms will be impacted due to the loss of land associated with the construction of the transmission line; permanent impacts are anticipated to be minor as noted above.

Woodlands

Approximately 1.9 acres of woodlands and windbreaks will be impacted in six locations along the Route.

5.9.3 Mitigation

5.9.3.1 Corridor

Agriculture/Farming

The transmission line structures will be located so that the most productive farmland (prime farmland) will be avoided as much as possible. Only land used for structures will be unavailable for crop production. PPM will work with landowners to minimize impacts to their land. Once the transmission line is constructed, all land surrounding the structures can still be farmed or grazed. Construction staging areas and temporary transmission line access roads will be disked as necessary to relieve excessive compaction caused by construction. Landowners will be compensated for any damage that occurs to crops due to the construction of the transmission line.

Woodlands

Impacts to woodlands will be restricted to those areas necessary for the safe and reliable operation of the line. PPM will replace impacted trees and shrubs at a ratio of 2:1 and will monitor replacement vegetation for 5 years.

5.9.3.2 Proposed Route

See above, Section 5.9.3.1.

5.10 SOILS

5.10.1 Description of Resources

The soils in the Corridor are largely composed of three soils associations; Swenoda-Towner-Barnes (ND015), Heimdal-Emrick-Esmond (ND057), and Gardena-Overly-Aberdeen (ND010). The soil associations are mapped in Figure 14.

Swenoda-Towner-Barnes soils are old glacial outwash and glacial till plains with gently rolling to flat topography. The association makes up 26 percent of the soils in Pierce County. They range from well drained to poorly drained and tend to be sandy. The soil association is used for an even mix of crops and pasture/hay. It has a low available water capacity and a seasonal high water table. Strium soils make up a small component of the association and contain most of the wetland areas. The hazard of wind erosion in this association is high.

Heimdal-Esmond-Emrick soils occur in undulating to steep terrain in old glacial till plains. The association makes up 26 percent of the soils in Pierce County. Esmond soils occur at the higher elevations, followed by Heimdal soils in the intermediate elevations, and Emrick soils in the lower elevations. Most of the gently rolling areas are used for cropland. The rolling steep and stony areas are

used for pasture or hay. Wetlands in this area tend to occur in Strium and Tonka soils. Hazards of soil blowing and water erosion are significant in this soil association.

Gardena soils compose a small area in the western portion of the Corridor. Gardena soils occur in level to undulating terrain in old glacial lake plains. The association makes up only two percent of the soils in the county. Nearly all of the association is used for cropland and is among the most productive in the County.

5.10.2 Impacts

5.10.2.1 Corridor

The permanent impact to soils in the area will be limited to areas removed from agricultural production at transmission line structure locations. Temporary impacts to soils are anticipated during construction in the areas immediately surrounding the transmission line structures.

5.10.2.2 Proposed Route

The permanent impact to soils in the area will be limited to areas removed from agricultural production at transmission line structure locations. These impacts will be relatively minor, totaling approximately 0.2 acres (7100 ft^2) for the approximately 9.5 mile transmission line. During transmission line construction, approximately 29 acres may be impacted temporarily for access roads and staging areas. In isolated cases, grading may be required for access roadway construction. Generally, soil removed in these cases will be on steep slopes and not agriculturally productive. A discussion of impacts to prime farmland soils is in Section 5.9.

The potential for wind and water erosion exists in the soil types found within the Corridor. Construction practices will minimize soil erosion during and after transmission line construction and impacts are not expected to be significant.

5.10.3 Mitigation

5.10.3.1 Corridor

Wind and water erosion are potential hazards for the soils found within the Corridor. To minimize erosion during and after construction, BMPs for erosion and sediment control (SN 19389 9/99) will be utilized. Only non-structural practices should be required. These practices include: Temporary Seeding, Permanent Seeding, Mulching, Filter Strips, Erosion Blankets, Grassed Waterways and Sod Stabilization. Top soil will be segregated if cuts are made during construction and reapplied after final contours have been graded.

5.10.3.2 Proposed Route

See above, Section 5.10.3.1.

5.11 GEOLOGIC AND GROUNDWATER RESOURCES

5.11.1 Description of Resources

Pierce County is covered by glacial drift deposits of Pleistocene age. The surficial deposits are generally referred to as the Coleharbor Formation. In most areas of Pierce County the Coleharbor Formation is comprised of drift material from different periods of glacial advances including pre- and Early Wisconsinan, and late Wisconsinan. The surficial geology in the vicinity of the Corridor and along the Route includes stagnation moraine (till), sand and gravel outwash deposits and silty/sandy lacustrine deposits. Isolated sand and gravel deposits associated with kames and eskers are also present within the Corridor and along the Route. Glacial material is approximately 70 to 100 feet thick in the Corridor and along the Route, and the area is characterized by rolling topography.

In the Corridor and along the Route the uppermost bedrock unit generally is the Cretaceous Fox Hills Formation, although remnants of the Cretaceous Hell Creek Formation may overlie the Fox Hills formation depending on location and bedrock topography. Localized areas of bedrock highs can be found in the Corridor and along the Route. No areas of geologic instability (e.g., fault zones, karst topography) were identified within the Corridor or along the Route.

Geologic-related mineral resources in the Corridor include minor sand and gravel deposits, generally associated with glacial kames and eskers. Review of the Corridor and Route identified two inactive gravel pits within the Corridor. The Route will avoid these two sites.

Groundwater resources in the vicinity of the Corridor and Route are generally derived from buried glacial outwash deposits of sand and gravel or the Fox Hills Formation. Review of the North Dakota State Water Commission database indicates that wells in and around the Corridor and Route are either screened in the unconsolidated glacial drift aquifer or the Fox Hills aquifer. Depths of these wells range from approximately 60 to 150 feet. The State Water Commission database only identified observation wells and test borings within the Corridor and along the Route. No municipal water supplies or reservoirs have been identified in the Corridor. Given the number of residences in the Corridor and along the Route, it appears that the majority of the existing wells are not recorded in the State Water Commission database. This indicates that more domestic wells are in the area than have been documented; it is assumed that each residence has at least one water supply well. Domestic groundwater supply appears to be fairly accessible in the Corridor and along the Route, and is dependent on the occurrences of sand and gravel aquifers at any given area.

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

5.11.2 Impacts

5.11.2.1 Corridor

Impacts to groundwater resources are not anticipated as water supply needs will be limited to minor construction related activities. The only extractive or storage resources identified within the proposed Corridor are two inactive gravel pits. Depending on route location, isolated gravel resource areas could be made unavailable for future development.

5.11.2.2 Proposed Route

As noted in Section 5.11.2.1, gravel resource areas are present in the proposed Corridor. The proposed Route avoids know gravel resource sites. It is possible that other, undeveloped gravel resource areas are present in the area given the nature of the surficial geology. No active gravel or sand pits will be impacted by the Route.

5.11.3 Mitigation

5.11.3.1 Corridor

At the Corridor level, there is potential for sand and gravel resources to be made unavailable for future development. If this does occur, mitigation in the form of compensation could be required. No other mitigation is anticipated to be necessary.

5.11.3.2 Proposed Route

Transmission line structure locations will not impact the use of existing water wells because the structures will not be sited on or adjacent to occupied structures. Transmission line structures will be sited so as to avoid sand and gravel resources identified along the Route. Where sand and gravel resources cannot be avoided, PPM will coordinate with landowners regarding impacts and any necessary mitigation. No other mitigation is anticipated to be necessary.

5.12 SURFACE WATER AND FLOODPLAIN RESOURCES

5.12.1 Description of Resources

Surface water and floodplain resources for the Corridor and Route were identified by reviewing U.S. Geological Survey topographic maps, Flood Insurance Rate Maps (FIRM) produced by the Federal Emergency Management Agency (FEMA) and USFWS National Wetlands Inventory data. The major surface waters located within the Corridor include several wetlands (discussed in detail in Section 5.13), and several intermittent streams. These water resources are shown in Figure 15.

The Project lies within the Willow Subbasin of the Souris Basin, near the boundary between the Souris Basin and the Devils Lake-Sheyenne Basin. Intermittent streams drain primarily to the west and north. The rugged topography of the Corridor includes a number of isolated lacustrine and palustrine wetlands; many of these wetlands have no inlet or outlet. Seasonal variations in precipitation and groundwater recharge are the primary drivers of wetland and lake elevations. Field observations and review of recent

historical aerial photography indicate that wetland and lake elevations along the Corridor have been rising over the past several years.

Review of FEMA FIRM maps indicate the Corridor and its surroundings are not within 100-year or 500-year floodplains.

5.12.2 Impacts

5.12.2.1 Corridor

Construction of the transmission line will disturb land along the Route. In general, the transmission line structures will be built on uplands; this will avoid intermittent streams and wetlands located in the lower positions in the landscape. The transmission line construction access road will be built to avoid temporary impacts to surface waters.

5.12.2.2 Proposed Route

Impacts to the intermittent streams along the Route are not anticipated. Impacts to wetlands are addressed below in Section 5.13.

5.12.3 Mitigation

5.12.3.1 Corridor

The Route minimizes impacts to waters of the United States to the extent practicable. Permits through the USACE are possible due to the presence of large wetlands in the Corridor. Any transmission line structures within USFWS wetland or grassland easements will require a USFWS permit (see Section 5.14 for additional information).

Construction access roads adjacent to wetlands or intermittent streams and drainageways will be designed in a manner so runoff from the upper portions of the watershed can flow unrestricted to the lower portion of the watershed. A NPDES permit application and Storm Water Pollution Prevention Plan (SWPPP), will be prepared by PPM Energy and submitted to the North Dakota Department of Health prior to the initiation of transmission line construction.

5.12.3.2 Proposed Route

No impacts to intermittent streams and drainageways are anticipated, therefore no mitigation is necessary. Mitigation for surface water impacts will meet or exceed regulatory requirements.

5.13 WETLANDS

5.13.1 Description of Resources

Wetlands within the Corridor and along the Route were initially identified by reviewing NWI Maps (Figure 15). The USFWS uses aerial photographs as a basis for NWI maps. The NWI map provides guidance in determining areas to be evaluated for wetland characteristics, but should not be used as the sole basis for wetland determinations.

The Corridor was field inspected mid-November 2004 and April 2005. A formal wetland delineation of the Route was completed on June 7 and 8, 2005. Wetlands in the Corridor represent typical glacial prairie pothole wetlands. Wetlands range in size from isolated basins less than a few hundred square feet to large lakes covering 200 acres. The vast majority of wetlands in the Corridor are emergent, but wetland acreage is split between lacustrine and emergent wetlands (Table 16). No riverine or floodplains wetlands were found in the Corridor. The NWI wetland types and their acreages within the Corridor are presented in Table 16. The NWI Map in Figure 15 and the Approximate Pole Location Maps (Figure 17) identify wetlands in the Corridor.

The Route avoids many of the wetlands identified in the Corridor. The NWI wetlands along the Route are all Palustrine emergent wetlands (Table 17). No lacustrine, riverine or floodplain wetlands were identified along the Route. PPM has completed a wetland delineation to verify the presence and type of wetlands along the Route (Appendix C.1).

Some wetlands in farmed areas may have been drained for agriculture, but this practice appears rare in this area. Flooded farm buildings and roadways in the area indicate a rising water table in the Corridor. This suggests that effective wetland conversion to farmland in the Corridor would be difficult. The isolated topography of most of the wetlands within the Corridor also makes wetland drainage complicated.

Table 16
NWI Wetland Types and Acreages in Corridor

Wetland Acreages (by type)		
Cowardin Classification	**Count**	**Acres[1]**
Palustrine Emergent Temporarily Flooded (PEMA)	341	626.9
Palustrine Emergent Seasonally Flooded (PEMC)	260	362.6
Palustrine Emergent Semipermanently Flooded (PEMF)	24	82.1
Palustrine Aquatic Bed Semipermanently Flooded (PABF)	26	110.4
Palustrine Forested to Emergent Seasonally Flooded (PFO/EMC)	1	1.9
Lacustrine Littoral Aquatic Bed Semipermanently Flooded to Intermittently Exposed (L2ABF, L2ABG)	9	535.8
Total	**661**	**1719.7**

Table 17
NWI Wetland Types and Acreages Along Route

Wetland Acreages (by type)		
Cowardin Classification	**Count**	**Acres[1]**
Palustrine Emergent to Aquatic Bed Semipermanently Flooded (PEM/ABF)	3	3.41
Palustrine Emergent Temporarily Flooded (PEMA)	7	1.17
Palustrine Emergent Seasonally Flooded (PEMC)	3	3.33
Palustrine Emergent Seasonally Flooded Partially Drained/Ditched (PEMCd)	2	7.91
Total	**15**	**15.82**

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

5.13.2 Impacts

5.13.2.1 Corridor

In general, the transmission line will be designed to span, and thus avoid, wetland areas. Wetlands over 1,000 feet in length may require that transmission structures be placed in wetlands. Each structure would result in 100 ft^2 of permanent impact.

During construction there is the possibility of sediment reaching surface waters as the ground is disturbed by excavation, grading and construction traffic. Once the Project is completed, it will have no impact on surface water quality.

5.13.2.2 Proposed Route

PPM has conducted a wetland delineation to assure impacts to wetlands are avoided to the extent practicable. An initial review of the preliminary layout indicates that one wetland along the proposed Route cannot be spanned using the proposed transmission line design. Wetlands over 1,000 feet in length, which is the maximum span of the proposed transmission line design, may require that transmission structures be placed in wetlands. The wetland located in Section 33 of Torgerson township cannot be spanned due to this limitation. A wetland delineation of the Route indicates that this wetland is too large to span. The wetland is within USACE jurisdiction. As stated above, PPM intends to span all wetlands to the extent practicable and of the 15.82 acres of wetlands along the Route, only 100 ft^2 (0.01 acres) will be impacted. PPM intends to mitigate these impacts as required by the USACE.

5.13.3 Mitigation

5.13.3.1 Corridor

Wetlands will be avoided to the extent practicable during the construction phase of the Project. Most of the wetlands within the Corridor are isolated basins and not under USACE jurisdiction. Wetlands within USFWS easements on private property are under USFWS jurisdiction. If wetland impacts in USFWS easements cannot be avoided, PPM will work with the USFWS to obtain permits for the impact and create required mitigation. If USACE jurisdictional wetland impacts are unavoidable, then a Section 404 and 401 permit application will be submitted to the USACE and State of North Dakota, respectively. Permanent impacts to wetlands and waters will be mitigated according to regulatory requirements.

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

5.13.3.2 Proposed Route

As stated above, any impacts to wetlands will be mitigated according to regulatory requirements. Impacts to the wetland in Section 33 will be mitigated in accordance with USACE Section 404 requirements. No wetland impacts in USFWS easements are anticipated at this time. If unexpected impacts to wetlands arise, PPM will work with the USFWS to obtain permits for the impact and will create the required mitigation.

5.14 VEGETATION

5.14.1 Description of Resources

The Project is located in the Northern Glaciated Plains Ecoregion. The native vegetation is transitional between tall and shortgrass prairie. The potential natural vegetation in the tallgrass/midgrass prairie includes western wheatgrass, green needlegrass, big and little bluestem, blue grama grass, and forbs such as purple cornflower, lead plant and pasque flower. There are numerous temporary and seasonal wetlands with vegetation that includes cattails, cordgrass, rushes and sedges. Native tree cover in the Corridor and along the Route would have been limited to lake margins and would have been dominated by aspen and bur oaks.

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

Based on a review of aerial photographs, land use database information, USFWS database information and a visit to the Corridor and Route, it was determined that the majority of the land area is agricultural land use. Table 10 (Section 5.2.1) identifies current land use based on the USFWS database. Fifty-five

percent of the land use within the Corridor is cropland and hayland. Undisturbed grassland is previously disturbed or previously cropped upland that has been seeded back into some type of grass mixture, but is currently undisturbed. The undisturbed grassland is frequently enrolled in a USDA program, such as the Conservation Reserve Program (CRP). This undisturbed status is only temporary in nature and after the contract expires the land may become cropland again. Approximately six percent of the Corridor is former cropland that is now enrolled in CRP. Native grasslands are 27 percent of the Corridor and are primarily used for grazing livestock. The native grasslands include remnant native prairie of various quality dependent on grazing pressure and herbicide applications to control weed species. Approximately twelve percent of the Corridor is wetland, lake, open water, or riparian area.

Sixty-nine percent of the land use within the Route is cropland and hayland. Approximately three percent of the Route is undisturbed cropland that is now enrolled in CRP. Native grasslands are 24 percent of the Route and are primarily used for grazing livestock. The native grasslands include remnant native prairie of various quality dependent on grazing pressure and herbicide applications to control weed species. Approximately four percent of the Route is wetland, lake, open water or riparian area.

The principal crop in Pierce County is wheat. Other crops include corn, oats, barley, flax, sunflower, canola, alfalfa and hay. Grasslands are used for range and pasture of cattle. Heavily grazed range contains Kentucky bluegrass, quack grass and brome grasses. Lightly grazed or undisturbed range contains native prairie species. CRP land is typically covered by brome grasses, orchard grass and alfalfa. CRP may also be planted in native grasses such as big bluestem, little bluestem and Indian grass. Land is typically put into CRP for 10-year cycles. Additional information on agriculture and farming can be found in Section 5.9.

The USFWS North Dakota Land Cover Classification does not classify any of the land in the Corridor or Route as forested, but did classify 619.8 acres of the Corridor and 0.1 acres of the Route as "open water, lake or riparian". Small isolated windrows and homestead groves were found throughout the Corridor and Route. Typical tree species in forested areas include bur oak, cottonwood, aspen, green ash, box elder, American elm, silver maple and introduced conifer species.

There are no State or Federal grasslands within the Corridor. The USFWS does have WPAs adjacent to the Corridor that include wetlands and grasslands. In addition to the WPAs, the USFWS also has wetland easements throughout the Corridor and along the Route on private lands. These lands are identified in Figure 8.

5.14.2 Impacts

5.14.2.1 Corridor

Permanent impacts to vegetation will occur at each structure location. Temporary impacts will occur around each pole and along the easement as the transmission line is constructed.

5.14.2.2 Proposed Route

It is anticipated that approximately 71 structures will be required for the Project which is dependent on the length of approximately 9.5 miles and average spans of 660 feet. Approximately 7100 ft^2 (0.2 acres) of permanent impacts are anticipated due to structure placement. Temporary impacts will occur during construction and will include ground disturbance by construction equipment around each structure and along the right-of-way as the line is constructed. These impacts are anticipated to be approximately 29 acres. The Route will impact five wooded areas. Approximately 1.87 acres of woodland impacts is anticipated.

Temporarily disturbed areas will be reseeded per USFWS and NRCS recommendations to blend in with existing vegetation.

5.14.3 Mitigation

5.14.3.1 Corridor

PPM will work closely with the USFWS during micrositing to minimize impacts to vegetation along the Route. PPM will conduct a pre-construction inventory of existing wetlands, native prairie and forests. PPM will avoid impacts to USFWS WPAs and work with the USFWS to avoid or minimize impacts to wetlands and native grasslands within USFWS easements. PPM will work to avoid and to minimize impacts to existing trees and shrubs. If impacts to individual trees and shrubs cannot be avoided, these resources will be mitigated at a ratio of 2:1 and will be kept alive for five years.

If impacts are proposed within USFWS wetland easements, then the USFWS will perform a compatibility analysis and, if acceptable, will issue a Special Use (temporary impact) or Right-of-way Permit (permanent impact). PPM would follow permit conditions for restoration and replacement.

If jurisdictional wetland impacts are proposed, then a Section 404 and 401 permit application will be submitted to the USACE and State of North Dakota, respectively. Permanent impacts to jurisdictional wetlands and waters will be mitigated according to USACE requirements.

PPM will use BMPs during construction and operation of the transmission line to protect topsoil and adjacent resources and to minimize soil erosion. Practices may include containing excavated material, protecting exposed soil, stabilizing restored material and revegetating rangelands with native species.

5.14.3.2 Proposed Route

See above, Section 5.14.3.1.

5.15 WILDLIFE

5.15.1 Description of Resources

Information on the existing wildlife in the Corridor was obtained from a variety of sources including observations during field visits and information from the GFD, North Dakota Parks and Recreation, and

USFWS. PPM hired Western EcoSystems Technology, Inc (WEST) to conduct evaluation of avian resources for the associated wind farm (Appendix C.5).

Wildlife in the Corridor consists of birds, mammals, fish, reptiles, amphibians and insects, both resident and migratory, which utilize the Corridor habitat for forage, migratory stopover, breeding and/or shelter. Species present in the Project vicinity are associated with agricultural fields, pasture grasslands and wetland areas. Common mammals in the project vicinity include raccoon, mink, skunk, weasel, white-tailed deer, coyote, red fox, badger, porcupine and rabbit. During field visits to the Corridor fox squirrel (*Sciurus niger*), white-tailed deer (*Odocoileus virginianus*) and longtail weasel (*Mustela frenata*) were observed. Avian species observed during field visits include snow geese (*Chen caerulescens*), black-billed magpie (*Pica pica*), blue jay (*Cyanocitta cristata*), ring-necked pheasant (*Phasianus colchicus*), sharp-tailed grouse (*Tympanuchus phasianellus*), hairy woodpecker (*Dendrocopos villosus*), bald eagle (*Haliaeetus leucocephalus*) and common raven (*Corvus corax*).

5.15.2 Impacts

5.15.2.1 Corridor

Raptors, waterfowl and other bird species may be affected by the construction and placement of the transmission lines. Avian collisions are a possibility after the completion of the transmission line. Waterfowl are typically more susceptible to transmission line collision, especially if the line is placed between agricultural fields that serve as feeding areas, or between wetlands and open water, which serve as resting areas. Generally, the most difficult part of the structure for the bird to see is the shield wire.

Additionally, large birds, such as raptors, could potentially be impacted by new transmission lines through electrocution. Electrocution occurs when birds with large wingspans come in contact with either two conductors or a conductor and a grounding device.

5.15.2.2 Proposed Route

See above, Section 5.15.2.1.

5.15.3 Mitigation

5.15.3.1 Corridor

The following measures will be used, to the extent practicable, to help avoid potential impacts to wildlife along the Route during transmission line design and operation:

- H-frame structures will be used as the primary structure design for the transmission line. H-frame structures put the conductor wires in parallel, making them easier for birds to see.
- The proposed design for the H-frame structures will exceed the recommended safe clearances of 60 inches required for raptors. PPM proposes an H-frame design using suspension insulators with a clearance of approximately 84 inches.
- The proposed transmission line will be designed to meet Avian Power Line Interaction Committee (APLIC) raptor-safe design standards.

- PPM is working with the GFD, WEST and the USFWS to identify any areas that may require marking transmission line shield wires and/or to use alternate structures to reduce collisions.
- PPM is conducting preconstruction inventories of wetlands, native prairies and woodlands in the vicinity of the proposed transmission line and associated facilities to minimize impacts.
- PPM will avoid or minimize disturbance of individual wetlands or drainage systems during construction and operation of the Project.
- PPM will protect or replace existing trees and shrubs if impacted at a 2:1 ratio at the site.
- PPM will maintain sound water and soil conservation practices during construction and operation of the Project to protect topsoil and adjacent resources and to minimize soil erosion. To minimize erosion during and after construction, North Dakota BMPs for erosion and sediment control (SN 19389 9/99) will be utilized. These practices include: Temporary Seeding, Permanent Seeding, Mulching, Filter Strips, Erosion Blankets, Grassed Waterways, and Sod Stabilization.
- PPM will revegetate non-cropland and pasture areas with seeding mix as recommended by the USFWS and NRCS.
- PPM will inspect and control noxious weeds in the vicinity of the transmission line and associated facilities immediately after construction and periodically for the life of the project.

5.15.3.2 Proposed Route

See above, Section 5.15.3.1.

5.16 RARE AND UNIQUE NATURAL RESOURCES

5.16.1 Description of Resources

The USFWS, GFD and North Dakota Parks and Recreation departments were contacted to review the Corridor for threatened and endangered species and unique habitats. In response to a request for a project review, the USFWS identified the following federally-listed threatened and endangered species for Pierce County:

- Whooping Crane (Endangered)
- Bald Eagle (Threatened)
- Piping Plover (Threatened)

Ms. Karen Kreil of the USFWS Endangered Species program in Bismarck, North Dakota, identified the piping plover as the most significant federally-listed species in Pierce County. There are several piping plover critical habitats in Pierce County, but no site is located within the Corridor. In addition, areas in Pierce County are used by whooping cranes that congregate during migration. Mr. Stan Kohn of the GFD maintains a listing of whooping crane sightings in the state. He stated that Pierce County has more sightings of migratory whooping cranes in the fall than the spring. The whooping crane sightings are spread out across the county where the birds utilize wetlands and shallow lakes. Areas that the whooping

cranes use more frequently in Pierce County include Round Lake, located west approximately nine miles from the Corridor and Route , and Horseshoe Lake, located approximately five miles from the Corridor and seven miles from the Route southeast of the Corridor.

The GFD reviewed the Corridor and identified native prairie habitats as potential areas of concern. PPM will conduct a pre-construction inventory of native prairie habitats and will attempt to avoid high quality prairie areas.

The North Dakota Parks and Recreation Department maintains a Natural Heritage Inventory Database (NHID), which is the most complete source of data on North Dakota's rare, endangered or otherwise significant plant and animal species, plant communities and other natural features. No threatened and endangered species or unique habitats were identified within the Corridor, however they did state that there is a lack of survey data in the area. (Appendix D)

5.16.2 Impacts

5.16.2.1 Corridor

No impacts to rare and unique natural resources are anticipated.

5.16.2.2 Route

No impacts to rare and unique natural resources are anticipated.

5.16.3 Mitigation

5.16.3.1 Corridor

Mitigative measures will not be necessary, since no impacts are anticipated to rare and unique natural resources.

5.16.3.2 Route

A pre-construction inventory of existing wetlands, native prairie, and woodlands will be conducted along the Route. PPM will avoid the resources identified to the extent practicable. No additional mitigative measures are proposed.

5.17 SUMMARY OF ROUTE IMPACTS

Table 18 summarizes the resources that will be impacted as a result of the construction of the transmission line and the appropriate mitigation.

Table 18
Summary of Route Impacts and Mitigation

Resource	Impact	Mitigation
Demographics	Socioeconomic impacts are primarily positive due to increased expenditures during construction and the long term benefits of an increased tax base of the county due to property taxes. A nominal amount of land will be permanently removed from production due to the construction of the Project.	Impacts are primarily positive, so no mitigation is proposed for socioeconomic impacts. Impacts to landowners will be minimized to the extent practicable.
Land Use	Approximately 0.2 acres of land will be impacted due to the construction of the transmission line. Approximately 3 acres of land will be impacted by the Project substation. Land use is primarily agriculture and will remain in agriculture land use since the land under or adjacent to the line can still be used by the landowner.	PPM will work with landowners and regulatory agencies to minimize impacts of the Project.
Public Services	No impacts are anticipated.	The transmission system will be constructed according to the configuration identified by MISO to mitigate any potential impacts. Impacts to existing public services will be avoided to the extent practicable.
Human Health and Safety	No impacts are anticipated.	PPM will follow "prudent avoidance" methods to minimize EMF exposure and any potential impacts to human health. If proper safeguards are implemented, no additional mitigation is required.
Noise	The noise sensitive land uses along the Route are the residences near transmission line. The noise level at 300 feet from the existing and proposed lines is between 38 and 40 dBA. Noise impacts are nominal. No impacts to noise sensitive land uses are anticipated.	No mitigative measures are proposed. PPM will adhere to the avoidance criteria requirement of having a buffer of 500 feet from a residence. This will mitigate any potential impacts due to noise.
Visual	The transmission line will be evident to individuals traveling on Highways 2 and 17 as well as residences and landowners that live in close proximity to the Route.	The Route minimizes the number of residences impacted by the line. The Route will parallel Xcel Energy's existing transmission line and will line up with existing structures to the extent practicable.
Cultural and Archaeological	No impacts to previously identified cultural resources are anticipated.	PPM has completed a Class I Cultural Resources Inventory for the Corridor and Route. PPM will conduct a Class III inventory along the proposed Route.
Recreational Resources	Impacts to recreational resources are primarily visual, and limited to individuals using the resources.	The Route will follow existing transmission line routes and will avoid direct impacts to recreational areas.

Resource	Impact	Mitigation
Land Based Economies	A total of approximately 0.2 acres of land will be permanently impacted by the transmission line construction. Approximately 29 acres of temporary impacts are anticipated. The Project Substation will occupy approximately 3 acres of land. Approximately 1.9 acres of woodlands/windrows will be impacted.	PPM will work with landowners to minimize impacts to their land. Prime farmland will be avoided to the extent practicable.
Soils	A total of approximately 0.2 acres of land will be permanently impacted by the transmission line construction. Approximately 29 acres of temporary impacts are anticipated. The Project Substation will occupy approximately 3 acres of land.	BMPs for erosion and sediment control will be utilized to minimize wind and water erosion along the Route. Only land needed for the transmission line structures will be permanently impacted. Temporarily disturbed areas will be restored.
Geologic and Groundwater Resources	No impacts to geologic and groundwater resources are anticipated.	No mitigative measures are necessary.
Surface Water and Floodplain Resources	No impacts are anticipated to intermittent streams and drainageways.	To minimize impacts during construction an NPDES permit and SWPPP will be prepared and submitted to the North Dakota of Health.
Wetlands	Wetland delineation indicates a wetland in Section 33 of Torgerson Township will be impacted. Approximately 100 ft^2 of this wetland will be impacted due to the placement of a single structure in the wetland. This wetland is of a width too great for the proposed structures to span. The wetland is within USACE jurisdiction.	PPM will mitigate impacts according to USACE requirements. All additional wetlands will be avoided to the extent practicable.
Vegetation	A total of approximately 0.2 acres of land will be permanently impacted by the transmission line construction. Approximately 29 acres of temporary impacts are anticipated. The Project Substation will occupy approximately 3 acres of land. Approximately 1.9 acres of impact is anticipated for woodlands along the Route.	PPM will work with the USFWS to minimize impacts. PPM will avoid existing trees and shrubs as practicable. PPM will use BMPs during construction and operation to minimize impacts. Impacts to individual trees or shrubs will be replaced at a ratio of 2:1 and will be monitored for survival for five years. Temporarily disturbed areas will be reseeded per USFWS and NRCS recommendations.
Wildlife	Impacts to wildlife populations are expected to be minimal. Potential avian and bat collisions may occur, but are anticipated to be relatively small.	A variety of mitigative measures will be implemented, as discussed in Section 5.15.3.
Rare and Unique Natural Resources	Impacts to rare and unique natural resources are not anticipated.	No mitigative measures are necessary.

6.0 PUBLIC COORDINATION

Keeping the public informed on the status of the Project is a key component to its success. Principal stakeholders in the Project are landowners that have entered into easement agreements with PPM. PPM has provided written Project updates to the landowners and will continue to do so as it moves forward. In addition, PPM recently hosted a landowner meeting to provide an update on, and to answer questions about, the Project.

PPM has also met with Pierce County Commissioners representing the Project area and staff to inform them of the Project, discuss local permits and answer questions. PPM will continue to meet with County officials as the Project moves forward and PPM seeks a conditional use permit from the County.

PPM has met with Pierce County area State Legislators to inform them of the Project. In addition, PPM has been working with key State agencies including the Department of Commerce, the Land Department and the GFD to inform them of the Project and to address areas of interest particular to each department.

PPM has also been working with key Federal agencies that might have an interest in the Project including the United States Fish and Wildlife Service.

PPM is committed to keeping key stakeholders engaged in the Project as it moves forward. PPM expects to host another landowner meeting before the PSC public hearing.

7.0 IDENTIFICATION OF REQUIRED PERMITS/APPROVALS

The Federal and State permits or approvals that have been identified as potentially being required for the construction and operation of the Project are shown in Table 19.

Table 19
Possible Permits and Approvals

Agency	Type of Approval	Status*	Need
Federal Approvals			
USFWS	Compatibility Analysis of Disturbed Easements	3	If constructing in wetlands within wetland easements or in grassland easements, then compatibility analysis by USFWS is required.
	Right of Way Permit	3	If use is compatible, then a Right of Way Permit is required for permanent disturbance in wetlands within wetland easements or in grassland easements.
	Special Use Permit	3	If use is compatible, then a Special Use Permit is required for temporary disturbance in wetlands within wetland easements or in grassland easements.
USACE	Section 404 Permit	2	Permit required for fill in jurisdictional waters of the US. Based on review by USACE, the wetland impact in Section 33 of Torgerson Township will require approval.
Environmental Protection Agency	Spill Prevention Control and Countermeasure (SPCC) Plan	2	Required if the substation facility has greater than 1320 gallons of oil. A copy of the plan will be maintained on file with the substation's owner/operator and will be reviewed by the certifying engineer every five years.
BNSF Railroad	Temporary Occupancy Permit	2	Required for any geotechnical studies required for the project.
	Wire Line Crossing or Longitudinal Communication and Electric Permit	2	Required for a project that crosses or is within the railroad right-of-way.
State of North Dakota			
Public Services Commission	Waiver of Procedures and Time Schedules	1	Included herein.
	Certificate of Corridor Compatibility	1	Included herein.
	Route Permit	1	Included herein.
North Dakota Department of Health	401 Water Quality Certification	2	Required for fill in jurisdictional waters of US. The wetland impact in Section 33 of Torgerson Township will require approval.
	NPDES Permit: General Construction Storm Water	2	Required for disturbance of over 1 acre of land. Must prepare a Storm Water Pollution Prevention Plan (SWPPP).

Agency	Type of Approval	Status*	Need
North Dakota Division of Emergency Management	Emergency Planning and Community Right-to-Know Act (EPCRA) Tier II report	2	Required for owner/operators of facilities containing hazardous materials. A copy of the report must be filed annually by March 1st.
SHPO	Section 106 Compliance Approval	3	Compliance with Section 106 of the NHPA is required if a Project is considered a Federal undertaking (i.e. Federal funding, etc.) Need for this compliance is not anticipated at this time due to the lack of a Federal undertaking.
North Dakota Highway Patrol	Overheight/Overweight Permit	2	Permit required for hauling construction equipment and materials on State Highways.
North Dakota Department of Transportation	Road Approach/Access Permit	2	Permit required for construction of access roads from State Highways.
	Utility Permit/Risk Management Documents	2	Permit required for utility crossings on State Highway right-of-way.
Local Permits			
Pierce County	Conditional Use Permit	1	Permit required for project construction.
	Haul Road Agreement	2	Permit required for hauling construction equipment and materials on County Roads.
	Utility Permit	2	Permit required for utility crossings on County road right-of-way.

* Status Explanation:

1 Applied – Decision Pending

2 Will Apply Once Certificate and Route Permit is Received

3 Final Layout will Determine Whether Permit/Approval is needed

8.0 FACTORS CONSIDERED

The North Dakota Energy Conversion and Transmission Facility Siting Act lists 11 factors to guide the commission in evaluation of the Corridor and Route.

8.1 PUBLIC HEALTH AND WELFARE, NATURAL RESOURCES, AND THE ENVIRONMENT

The preceding sections discuss the research and investigations relating the effects of the proposed facility on public health and welfare, natural resources, and the environment. The effects and mitigation in relation to the Corridor and Route are discussed in the impact and mitigation of Section 5.0. Impacts evaluated in the Corridor and Route are minor.

8.2 TECHNOLOGIES TO MINIMIZE ADVERSE ENVIRONMENTAL EFFECTS

PPM will utilize the most recent technologies that minimize impacts to the environment. The Corridor study and consequently the Route structures proposed for the project are the most appropriate technologies to minimize adverse environmental effects. This is evident in the minimal environmental effects identified in this application associated with the project.

8.3 POTENTIAL FOR BENEFICIAL USES OF WASTE ENERGY

This factor is not applicable to this project.

8.4 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS OF THE ROUTE

Unavoidable adverse environmental effects include the visual impacts and physical impacts to the land (primarily agricultural land) associated with the Project. PPM will implement measures as described in the environmental analysis herein and as identified by regulatory agencies to minimize these unavoidable adverse environmental effects.

8.5 ALTERNATIVES TO THE PROPOSED CORRIDOR OR ROUTE

Alternatives to the proposed Corridor were not evaluated. The Corridor that was studied was selected to convey energy generated from the Rugby Wind Farm to the Rugby Substation.

Alternatives to the Route were considered, but rejected due to the exclusion and avoidance criteria within the Route. The proposed Route presented in this application minimizes and avoids impacts to the exclusion, avoidance, and selection criteria.

8.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF NATURAL RESOURCES FOR THE CORRIDOR OR ROUTE

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

Construction resources that will be used include aggregate resources, concrete, steel, and hydrocarbon fuel. These resources will be utilized to construct the Project. During construction vehicles will be traveling to and from the site, utilizing hydrocarbon fuels.

8.7 DIRECT AND INDIRECT ECONOMIC IMPACTS OF THE PROPOSED FACILITY

Direct economic impacts include the impacts associated with up to 0.2 acres of agricultural land being removed from production due to the construction of the transmission line and associated facilities. In general, agricultural areas surrounding each structure can still be farmed, and landowners will be compensated for the land occupied by the transmission line and associated facilities.

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

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

8.8 EXISTING DEVELOPMENT PLANS OF THE STATE, LOCAL GOVERNMENT AND PRIVATE ENTITIES AT OR IN THE VICINITY OF THE CORRIDOR AND ROUTE

No conflicts are anticipated with existing State and Local government and private entities' development plans.

8.9 EFFECT OF ROUTE ON CULTURAL RESOURCES

PPM has reviewed cultural resources information on file at the SHPO for the Corridor and Route and prepared the Class I Cultural Resources Inventory. A review of 14 documented studies and additional records at the SHPO identified one previously recorded archaeological resource and one archaeological site lead within one mile of the proposed transmission line Corridor (Table 14). There are no previously identified cultural resources within the project Corridor or Route.

PPM is committed to minimize impacts to these resources and will avoid these resources and any additional resources identified throughout the life of the project. PPM continues to consult with the SHPO, Mr. Grant, and Mr. Littleghost in anticipation of the Class III inventory. Many of the potential archaeological resources in the area may be avoided due to the nature of transmission line construction, where the line can be constructed to avoid sensitive areas by moving proposed structure locations and spanning those areas. In the event that an impact cannot be avoided, PPM would determine the nature of the impact and consult with the SHPO on whether or not the resource was eligible for listing in the National Register of Historic Places (NRHP). Mitigation for project-related impacts on NRHP-eligible archaeological resources may include an effort to minimize project impacts on the resource and/or additional documentation through data recovery.

If the Class III cultural resources inventories should determine that such a plan is appropriate, PPM would also develop a discovery plan to be in place should previously unknown archaeological resources or human remains be inadvertently encountered during the project. The plan would outline the framework for handling such discoveries in an efficient and legally compliant manner. The discovery plan may include the following topics: construction contractor training, identification of resources in the field, contact information for PPM-designated professionals to address a discovery, procedures for avoidance, and associated tasks in the event of work stoppage in a construction area. With regard to a discovery of human remains, procedures would be followed to ensure that the appropriate authorities would become involved quickly and in accordance with Local and State guidelines.

There are no anticipated impacts to paleontological resources because the site is covered with over 100 feet of glacial sediments overlying the Cretaceous Fox Hills Formation.

8.10 EFFECT OF ROUTE ON BIOLOGICAL RESOURCES

PPM has implemented measures to avoid and minimize effects to biological resources at the proposed site. The impact of the Project on wildlife is expected to be minimal. The site will be designed to minimize impacts to avian species.

8.11 PROBLEMS RAISED BY AGENCIES

Agencies were contacted to comment on the Project and the proposed Rugby Wind Farm. The summary of comments received below apply to the proposed transmission line Corridor. Other comments were received in regard to the Rugby Wind Farm, and those comments are summarized in the Rugby Wind Farm Application, which was filed concurrent with this application.

8.11.1 North Dakota Game and Fish Department

The GFD reviewed the Project site for wildlife concerns. Their primary concern is the disturbance of native prairie. (Appendix D) PPM proposes to survey the site for native prairie and will work with the GFD, NRCS, and USFWS to restore disturbed areas. Restoration may include reseeding the area with approved NRCS and USFWS seed mixes.

8.11.2 U.S. Fish and Wildlife Service

Concerns of the USFWS focused on migratory birds, USFWS property interests, wetland, grassland, and woodland resources, and threatened and endangered species. In relation to migratory birds, the USFWS asked that overhead power lines be constructed in accordance with the current guidelines for preventing raptor electrocutions. PPM will coordinate with the USFWS to identify areas of concern and will implement mitigation measures to minimize impacts to migratory birds as required. In addition, the proposed line design implements the suggested 60-inch clearance for raptor species.

PPM has obtained the information for the wetland and grassland easements leased by the USFWS. PPM proposes to work closely with the USFWS to minimize impacts to these lands. Habitats within the project site such as native prairie and wetlands were highlighted as USFWS areas of concern. USFWS wetland easements are held throughout the project site. Any direct impacts to wetlands or grasslands within the respective USFWS easements will result in a compatibility assessment from local USFWS staff. The process will consider the magnitude of the impact, the type or quality of the habitat which is impacted, and the feasibility of avoiding the impact. If compatibility is found, a right-of-way permit will be issued for the impact. The USFWS also recommended a series of mitigative measures to minimize impacts to existing habitats in their letter to PPM (Appendix D). PPM will implement these measures as they are applicable to the project. The proposed Route currently avoids all wetlands on USFWS property interests.

8.11.3 North Dakota SHPO

The SHPO recommends that a Class I cultural resources inventory be completed for areas that may be impacted by the project. They also stated that a Class III cultural resources inventory may also be necessary. PPM has completed the Class I cultural resources inventory. Fourteen cultural resources reports were identified for the site boundaries. A review of these studies and additional records at the SHPO identified one previously recorded archaeological resource and two archaeological site leads (Table 14).

PPM is committed to minimize impacts to these resources and will avoid these resources and any additional resources identified throughout the life of the project. PPM continues to consult with the SHPO, and regional native American tribes in anticipation of the Class III inventory. Many of the potential archaeological resources in the area may be avoided due to the nature of transmission line construction, where the line can be constructed to avoid sensitive areas by moving proposed structure locations and spanning those areas. In the event that an impact cannot be avoided, PPM would determine the nature of the impact and consult with the SHPO on whether or not the resource was eligible for listing in the National Register of Historic Places (NRHP). Mitigation for project-related impacts on NRHP-

eligible archaeological resources may include an effort to minimize project impacts on the resource and/or additional documentation through data recovery.

If the Class III cultural resources inventories should determine that such a plan is appropriate, PPM would also develop a discovery plan to be in place should previously unknown archaeological resources or human remains be inadvertently encountered during the project. The plan would outline the framework for handling such discoveries in an efficient and legally compliant manner. The discovery plan may include the following topics: construction contractor training, identification of resources in the field, contact information for PPM-designated professionals to address a discovery, procedures for avoidance, and associated tasks in the event of work stoppage in a construction area. With regard to a discovery of human remains, procedures would be followed to ensure that the appropriate authorities would become involved quickly and in accordance with Local and State guidelines.

8.11.4 North Dakota Geological Survey

Information regarding geologic resources specific to the Project were provided. No problems were identified (Appendix D).

8.11.5 North Dakota Parks and Recreation Department

The Natural Heritage Inventory had no records within the Project Site. The North Dakota Parks and Recreation Department (NDPRD) stated the project would not affect State park lands or land and water conservation fund recreation projects. The NDPRD recommended impacted areas be revegetated with native species (Appendix C.7 and C.8). PPM is committed to working with the NDPRD in conjunction with the USFWS, NRCS, and GFD to seed disturbed areas with appropriate seed mixes.

8.11.6 North Dakota Office of Attorney General

The Attorney General's Office was asked to comment on the Project. The Attorney General and members of his staff are prohibited from giving legal advice, opinions, or assistance to private businesses (Appendix D).

8.11.7 North Dakota Department of Commerce

No problems were identified. A Letter of Clearance was given to the Project – State Application Identifier No.: ND050202-0039 (Appendix D).

8.11.8 North Dakota Department of Health

The North Dakota Department of Health was asked to review the project with respect to environmental impacts. The Department of Health believes the environmental impacts will be minor and can be controlled by proper construction methods. Appendix D is their letter which provides comments and guidance on fugitive dust emissions, degradation of waterways, storm water management, and noise. PPM will implement these measures, as appropriate.

8.11.9 North Dakota Department of Transportation

The North Dakota Department of Transportation asked that PPM obtain the appropriate permits and risk management documents from the Devils Lake District office (Appendix D).

8.11.10 North Dakota State Water Commission

The State Water Commission asked that waste material be disposed of properly. No floodplain was identified in the Project site (Appendix D). In the NPDES permit required for the Project, PPM will address and implement proper disposal of waste materials.

8.11.11 Natural Resources Conservation Service

The NRCS did not identify any concerns with the Project. Since there are no Federal funds, the Farmland Protection Policy Act (FPPA) does not apply. The NRCS encouraged PPM to consider the purposes of FPPA in the Site Selection (Appendix D). Temporarily disturbed areas will be reseeded per USFWS and NRCS recommendations to blend in with existing vegetation.

In addition, PPM has considered the FPPA in the location of the line and selection of structures. The proposed route does cross prime farmland. However, the impacts are nominal. If all the structures for the line were placed in prime farmland, approximately 0.2 acres of prime farmland would be permanently removed from production. This would affect significantly less than 0.1% of the yearly production of the top five commodities in Pierce County.

8.11.12 North Dakota State Land Department

The State Land Department identified school trust lands that they own within the proposed Project site. Easement agreements or a permit form the Land Board will be required for the use of those lands (Appendix D). PPM has been in correspondence with the State Land Department. Easement agreements and permits will be acquired, as necessary.

8.11.13 U.S. Army Corps of Engineers

The USACE made a preliminary determination that there are jurisdictional waters as defined by the USACE within the Project Site in Section 33, T157N, R72W; Section 6, T156N, R72W; and Section 1, T156N, R73W (Appendix D). The wetland in Section 33 of Torgerson Township will be impacted by the proposed Project. PPM will obtain permits through the USACE and North Dakota Department of Health in accordance with Sections 404 and 401 of the Clean Water Act, respectively. PPM will also mitigate the impact as required by these regulatory bodies. No additional issues were raised.

8.11.14 Aeronautics Commission

PPM sent a letter to the Aeronautics Commission January, 25, 2005 (Appendix D). No response has been received.

8.11.15 North Dakota Department of Agriculture

PPM sent a letter to the North Dakota Department of Agriculture January, 25, 2005 (Appendix D). No response has been received

8.11.16 North Dakota Department of Human Services

PPM sent a letter to the North Dakota Department of Human Services January, 25, 2005 (Appendix D). No response has been received

8.11.17 North Dakota Department of Labor

PPM sent a letter to the North Dakota Department of Labor January, 25, 2005 (Appendix D). No response has been received

8.11.18 North Dakota Department of Career and Technical Education

PPM sent a letter to the North Dakota Department of Career and Technical Education January, 25, 2005 (Appendix D). No response has been received

8.11.19 North Dakota Governor

PPM sent a letter to the North Dakota Governor John Hoeven January, 25, 2005 (Appendix D). No response has been received

8.11.20 North Dakota Indian Affairs

PPM sent a letter to North Dakota Indian Affairs January, 25, 2005 (Appendix D). No response has been received

8.11.21 North Dakota Office of Management and Budget

PPM sent a letter to the North Dakota Office of Management and Budget January, 25, 2005 (Appendix D). No response has been received

8.11.22 North Dakota Soil Conservation Committee

PPM sent a letter to the North Dakota Soil Conservation Committee January, 25, 2005 (Appendix D). No response has been received

8.11.23 Pierce County Soil Conservation District

PPM sent a letter to the Pierce County Soil Conservation District January, 25, 2005 (Appendix D). No response has been received

9.0 QUALIFICATIONS OF CONTRIBUTORS TO SITING STUDY

NAME PROJECT ROLE	EDUCATION AND PROFESSIONAL EXPERIENCE
MICHELLE BISSONNETTE Vice President, Senior Environmental Consultant HDR Engineering	Ms. Bissonnette supervises the Environmental and Resource Management Department and manages environmental assessment and permitting efforts as well as designs, manages, and conducts land reclamation and wetland restoration activities. She develops site-specific aesthetic assessments, designs visual improvement plans, and oversees revegetation plans. She is also responsible for developing computer-aided design graphics for presentations. As an environmental consultant, Ms. Bissonnette is responsible for researching compliance requirements for federal state and local permits. She works closely with regulatory agencies on utility and transportation related projects. She has worked on a variety of utility projects from power generation to transmission and distribution as well as wind, pipeline, and combustion turbine projects. She has also worked on a number of roadway, railroad and river corridor projects. B.S., Landscape Architecture, University of Minnesota, 1982 Foreign Studies/French Minor, University of Grenoble, France, 1977
SARAH EMERY, PG Senior Environmental Scientist HDR Engineering	Ms. Emery is a Senior Environmental Scientist with over eleven years of experience as an environmental consultant. She is experienced in wetland delineation, permitting, and mitigation; biological resource inventories; NEPA/environmental permitting; Phase I environmental assessments; and hydrogeology and remedial investigation of contaminant impacts to soil and ground water. She is experienced with resource evaluation and micrositing at utility-scale wind facilities. Registered Professional Geologist, Minnesota, No. 30677, 1999 M.S., Geological & Related Sciences (Geology), University of MN Twin Cities, 1996 M.S., Natural Resources (Forestry), University of MN Twin Cities, 1994 B.S., Environmental Sciences/Studies (Fisheries and Wildlife), Michigan State University, 1985
BRUCE MOREIRA Environmental Scientist HDR Engineering	Mr. Moreira has three years of experience in wetland delineation, GIS systems, regulatory documentation, and project management. He specializes in wetland delineation, GIS mapping and data collection, plant ecology, database construction/support, and natural resource management. He has a basic knowledge of AutoCAD systems and file transfer between GIS and CAD programs. He has field experience with Trimble, Leica, CMT and Garmin GPS units and their maintenance. M.S., Forestry, Department of Forest Resources, University of Minnesota, 2001 B.A., Biology, Reed College, Portland, Oregon, 1997
ANGELA PINER Environmental Scientist HDR Engineering	Ms. Piner is currently an Environmental Scientist with HDR. She has four years of experience with environmental permitting and two years of academic research. She has experience permitting under Sections 401 and 404 of the Clean Water Act and conducting wetland delineations. Ms. Piner also assists senior scientists and project managers with project research and report writing. B.S., Biological Sciences, California Polytechnic State University, San Luis Obispo, 1999
CRAIG RASMUSSEN, P.E., PTOE Project Manager, Transportation HDR Engineering	Mr. Rasmussen specializes in traffic engineering with emphasis on operations analyses / capacity modeling, multi-agency studies, safety studies, and preparation of construction documents. He has gained increasingly progressive responsibility with project delivery on a variety of projects often combining transportation elements of highway and rail. B.S., Civil Engineering, University of North Dakota, 1999 Professional Engineer, 2003 (Minnesota No. 42711, North Dakota No. 5130) Professional Traffic Operations Engineer, 2003 (No. 1156)

NAME PROJECT ROLE	EDUCATION AND PROFESSIONAL EXPERIENCE
SCOTT REED Senior Environmental Scientist HDR Engineering	Mr. Reed has over twelve years of experience in managing environmental projects including Environmental Assessments, Environmental Assessment Worksheets, wetland and water resource permitting, Phase I/Phase II Environmental Site Assessments, Drilling Investigations, Remedial Investigations, and the development and implementation of Response Action Plans and Corrective Actions for transportation projects. Mr. Reed has extensive experience with state and federal agency regulatory programs. MBA., Environmental Sciences/Studies (Environmental Management Concentration), University of Minnesota System, 2002 B.S., Geological & Related Sciences (Geology), University of Minnesota System, 1991
BETH REGAN, CIH Environmental Scientist HDR Engineering	Ms. Regan has more than 14 years professional consulting experience in the environmental health and safety field. This includes 12 years of environmental laboratory management and analytical quality control experience. Ms. Regan is a certified industrial hygienist, and she is responsible for researching and performing industrial hygiene, environmental acoustics and environmental compliance services. Ms. Regan also has project experience in mobile and stationary source noise monitoring and modeling. Her experience includes extensive use of the Federal Transit Authority (FTA) and the Federal Railroad Administration (FRA) Noise and Vibration Impact Assessment Methodologies, the Federal Highway Administration Traffic Noise Model (TNM) and spreadsheet models for stationary noise source assessment. Certified Industrial Hygienist, No. 8779 CP, 2004 B. A., Biology, Augustana College, Sioux Falls, South Dakota, 1987
DAN SCHMIDT GIS Manager HDR Engineering	Mr. Schmidt is responsible for Geographic Information Systems (GIS) development in civil, environmental, and architectural areas. He works with ArcGIS, ArcView, and a variety of system support software. He provides development of GIS databases, spatial analysis, GPS data collection and analysis, and mapping services. Mr. Schmidt has extensive experience in GIS evaluation and micrositing of utility-scale wind projects. M.A., Geography – Geographic Information Systems, Western Illinois University, 1994 B.A., Geography, University of Illinois at Chicago, 1991
TIM CASEY, QEP Environmental Specialist HDR Engineering	Mr. Casey is HDR's Environmental Acoustics Program Manager and has over ten years of experience leading HDR's Environmental Acoustics efforts. He specializes in noise and vibration monitoring and modeling for stationary and mobile sources including railroads, highways, combustion turbines, diesel generators, pumps, industrial and municipal installations, etc. Extensive use of the FHWA Stamina 2.0/Optima model, FTA transit noise and vibration analysis methodologies, and PC-based GIS technology. Additional training and experience on FHWA Traffic Noise Model (TNM) 1.0. Mr. Casey's experience includes presentations at public meetings, before city councils, and expert witness testimony for projects in locations throughout the United States and Puerto Rico. Mr. Casey holds the professional certification of Qualified Environmental Professional (QEP). Bachelor of Science, Biological/Life Sciences, Saint Xavier University, 1988 Associate of Science, Science, Valley Community College, 1986
JANE GORDEN Environmental Sciences Administrative Assistant HDR Engineering	Ms. Gorden has over 24 years of administrative experience. During this time she has assisted in research, interviews, data collection and documentation for 20 Phase I Environmental Site Assessments. She has also contributed in the completion of several environmental assessments, impact statements, noise and air analysis reports and various other environmental reports. Bachelor of Arts, English Language & Literature, University of Minnesota System, 1980

NAME PROJECT ROLE	EDUCATION AND PROFESSIONAL EXPERIENCE
CAROLINE STEVERMER Environmental Sciences Administrative Assistant HDR Engineering	Ms. Stevermer has over 20 years of administrative experience. She specializes in copy editing. For more than eight years, she worked on the editorial page production staff of a major metropolitan daily newspaper. Bachelor of Arts, History of Art, Bryn Mawr College, 1977.
TIM SECK Manager, Midwest Renewables PPM Energy	Mr. Seck is responsible for Midwest business development activities at PPM including new power project development. He has over 10 years of experience in the energy industry including two years at Kenetech Windpower and most recently eight years with Great River Energy. At Great River Energy, Mr. Seck was responsible for wind energy procurement including the 100 MW Trimont project and permitting/siting of transmission lines, natural gas plants and proposed thermal projects. Bachelor of Arts, St. Olaf College, 1989. Juris Doctor, William Mitchell College of Law, 1995.
JAY HALEY President EAPC	Mr. Haley has been involved in wind energy off and on since 1983. He spent 6 years as the Director of Engineering for an Aerospace firm and then 10 years as a Research Engineer for the Energy and Environmental Research Center at the University of North Dakota. Currently Mr. Haley is a Partner with EAPC Architects Engineers in Grand Forks, ND, and is recognized as one of the states leading wind energy experts. He has provided wind energy consulting services for a number of clients in North Dakota, South Dakota, Minnesota, Michigan, Illinois, Utah, and Idaho. Mr. Haley is a member of the North Dakota Wind Coordinating group, Wind Interests of North Dakota group, National Wind Coordinating Committee, and American Wind Energy Association; and Co-chair of the Energy Cluster for North Dakota's New Economy Initiative and Vice Chairman of the North Dakota Renewable Energy Partnership, and Founding Chairman of the Wind Energy Council.
KEVIN ROMULD Mechanical Engineer EAPC	Mr. Romuld has recently been involved in wind energy and prior to that he was designing HVAC systems for commercial facilities. He spent 5 years as a Lead Engineer for the Boeing Company in Seattle, WA and then 10 years as a Partner for a general contracting firm in Grand Forks, ND. Currently Mr. Romuld is a Mechanical Engineer for the firm EAPC Architects Engineers in Grand Forks, ND and aspires to become an expert in wind energy. This past year he consulted with clients on a number of wind projects located in North Dakota, Minnesota, South Dakota, Michigan, Kansas, Illinois, and Idaho. Kevin also provides support and training to users of WindPRO, a world leader in wind farm design software. Kevin has helped clients site and install wind-monitoring stations to collect wind data. He also does data analysis and correlations, develops wind resource maps, performs wind turbine comparisons, tests wind turbine park layouts, estimates turbine wake losses, capacity factors and annual energy production. Bachelor of Science, Mechanical Engineering, University of North Dakota

10.0 REFERENCES

Aircraft Owners and Pilots Association (AOPA) Airport Directory 2003-2004.

Avian Power Line Interaction Committee (APLIC). 1996. Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996. Edison Electric Institute and the Raptor Research Foundation. Washington, D.C.

Avian Power Line Interaction Committee (APLIC). 1994. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. Edison Electric Institute. Washington, D.C.

Best Management Practices For Erosion And Sediment Control. North Dakota Department of Health. Division of Water Quality SFN 19389 (09/99)

Bluemle, John P., 1991. The Face of North Dakota. North Dakota Geological Survey, Educational Series 21.

Carlson, C.G. and Freers, T.F. 1975. Geology of Benson and Pierce Counties, North Dakota. North Dakota Geological Survey, Bulletin 59 – Part I, North Dakota State Water Commission, County Ground Water Studies 18 – Part I.

Energy Information Administration. 2002. State Electricity Profiles – North Dakota. Department of Energy. http://www.eia.doe.gove/cneaf/electricity/st_profiles/toc.html. Retrieved 1/27/05.

Fingrid. 2004. Radio and Television Interference. http://www.fingrid.fi/portal/in_english/environment_and_transmission_lines/frequently_asked_questions/radio_and_television_interference. Retrieved 4/13/05.

Flight Planning for General Aviation. http://www.fltplan.com. Retrieved 1/31/05.

Georgia Transmission. Frequently Asked Questions – Will a transmission line interfere with television and radio reception? http://www.gatrans.com/gtcsite/gtc/faqs/?project=&type=global&question=20. Retrieved 4/13/05.

Great River Energy. 2002. Plymouth Maple Grove Power Line Project – Frequently Asked Questions – Will the new line cause television or radio interference? http://www.greatriverenergy.com/projects/lines/pmg/pmg_translineqa.html#P68_7026. Retrieved 4/13/05.

Grover, S. 2002. Economic Impacts of Wind Power in Kittitas County, Final Report. Funded by State of Washington Office of Trade and Economic Development and the Energy Foundation. ECONorthwest. Portland, OR. 20 pp.

Mid-Continent Area Power Pool. 2004. Mid-Continent Area Power Pool Load and Capability Report, Final Draft. St. Paul, MN. pp. III3-III4.

NWCC. 2004. Wind Turbine Interactions with Birds and Bats: A Summary of Research Results and Remaining Questions. Resolve, Inc., Washington D.C., 7 pp.

National Institute of Environmental Health Sciences EMF-RAPID Program Staff, 1999. NIEHS Report on Health Effects from Exposure to Power Line Frequency Electric and Magnetic Fields. Research Triangle Park, NC.

North Dakota Department of Transportation. Pierce County 2002 Map Counts. Bismarck, ND.

North Dakota Department of Transportation. State of North Dakota GIS Base Map Data, Version 1.1a, 2000.

North Dakota Game and Fish Department. Wildlife Management Area Guide. http://www.state.nd.us/gnf/hunting/wildlife.html. Retrieved January 2005.

North Dakota State Water Commission. Data Resources – Site Inventory Retrieval System. http://www.swc.state.nd.us/4DLink2/4dcgi/WellSearchForm. Retrieved January 2005.

North Dakota State Water Commission. Water Permit Retrieval System. http://www.swc.state.nd.us/4DLink7/4dcgi/wpPermitForm. Retrieved March 2005.

Northwest Economic Associates. 2003. Assessing the Economic Development Impacts of Wind Power. National Wind Coordinating Committee. Washington. http://www.nationalwind.org/pubs/economic/econ_final_report.pdf.

PanAero Corporation. 1999. Wind Energy in North Dakota Final Report. Division of Community Service, State of North Dakota. http://www.state.nd.us/dcs/energy/docs/windmark.pdf. Retrieved 1/27/05.

Rugby Municipal Airport. http://www.airnav.com/airport/KRUG. Retrieved 2/1/05.

SMP Electric Cooperative. Sho-Me Dictionary – Radio and Television Interference Noise. http://www.shomepower.com/dict/r/radio_and_television_interferenc.htm. Retrieved 4/13/05.

Theile, J.H., et al. 1978. Soil Survey of Pierce County, North Dakota. United States Department of Agriculture. Washington, D.C. 147 pp.

U.S. Census Bureau. 2000. "Census 2000 Summary File 1. Pierce County, ND; North Pierce UT, Pierce County, ND; Torgerson Township, Pierce County, ND.

U.S. Census Bureau. 2000. Census 2000 Summary File 3. Pierce County, ND; North Pierce UT, Pierce County, ND; Torgerson Township, Pierce County, ND.

U.S. Census Bureau. 2000. Fact Sheet, Lincoln County, MN.

U.S. Census Bureau. American Factfinder. http://factfinder.census.gov/servlet/BasicFactsServlet
U.S. Department of Agriculture. 2003 NRCS SSURGO Soils Data Pierce County

U.S. Department of Agriculture. Geospatial Data Gateway. http://datagateway.nrcs.usda.gov/. Floodplain and watershed data. Retrieved Fall 2005.

U.S. Department of Agriculture, National Agriculture Imagery Program. 2003 NAIP Aerial Photography. Pierce County.

U.S. Department of Agriculture. NRCS STATSGO Statewide Soils Data North Dakota.

U.S. Fish and Wildlife Service. 2003. Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines. Washington. Wind Turbine Siting Working Group.

U.S. Fish and Wildlife Service. North Dakota Land Cover Classification. North Dakota.

U.S. Fish and Wildlife Service. America's National Wildlife Refuge System. http://refuges.fws.gov/. Retrieved January 2005.

U.S. Fish and Wildlife Service. Mountain-Prairie Region – North Dakota. http://mountain-prairie.fws.gov/nd.html. Retrieved January 2005.

USGS. 1998. Ecoregions of North Dakota and South Dakota. http://www.npwrc.usgs.gov/1998/ndsdeco/

11.0 DEFINITIONS

ADT	Average Daily Traffic
ANSI	American National Standards Institute
APE	Area of Potential Effects
ASTM	American Society for Testing and Materials
Asynchronous generator	A cage-wound generator, also called an induction generator, used to generate alternating current.
BMPs	Best Management Practices; prevents soil erosion and sedimentation
Capacity	The capability of a system, circuit, or device for storing electric charge.
Certificate	Certificate of Site Compatibility
Class I Cultural Resources Inventory	Existing data inventory – a large-scale review and compilation of known cultural resource data.
Class III Cultural Resources Inventory	Intensive field inventory – complete surface inventory of a specific area.
Class 5 gravel	Crushed rock used in roadbase.
Commission or PSC	North Dakota Public Service Commission
CRP	Conservation Reserve Program
Corridor Certificate	Certificate of Corridor Compatibility
dBA	A-weighted decibel
Distribution	Relatively low-voltage lines that deliver electricity to the retail customer's home or business.
DOE	US Department of Energy
Electromechanical	Of, relating to, or being a mechanical process or device actuated or controlled electrically; especially being a transducer for converting electrical energy to mechanical energy.
EMF	Electric and Magnetic Field
EPC	Engineering, procurement, and construction
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration

FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FPPA	Farmland Protection Policy Act
Ft	Foot/Feet
GE	General Electric
Gearbox	An assembly of parts including the speed-changing gears and the propeller shaft by which the power is transmitted from an automobile engine to a live axle; the speed-changing gears in such an assembly.
Generator	A machine by which mechanical energy is changed into electrical energy.
Geotechnical	A science that deals with the application of geology to engineering.
GFD	North Dakota Game and Fish Department
Hub	The central part of a circular object (as a wheel or propeller).
Interconnection	To be or become mutually connected.
kV	kilovolt
kW	kilowatt
MW	megawatt
m	meter
m/s	meter per second
MAPP	Mid-Continent Area Power Pool
Micrositing	The process in which the wind resources, potential environmentally sensitive areas, soil conditions, and other site factors, as identified by local, state and federal agencies, are evaluated to locate wind turbines and associated facilities.
MISO	Midwest Independent System Operator
mph	miles per hour
Nacelle	A streamlined enclosure (as for an engine), which houses the gearbox, generator, brake, cooling system and other electrical and mechanical systems.
NDDOT	North Dakota Department of Transportation
NESC	National Electric Safety Code
NDAC	North Dakota Administrative Code

NDCC	North Dakota Century Code
NDPRD	North Dakota Parks and Recreation Department
NHID	Natural Heritage Inventory Database
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O&M	Operations and maintenance facility
Otter Tail	Otter Tail Power Company
PII	Potential Impact Index
Pitch	The action or a manner of pitching; especially an up-and-down movement.
PPA	Power Purchase Agreements
PPM	PPM Energy, Inc.
Project, the	Rugby Wind Farm
PSC or Commission	North Dakota Public Service Commission
PTC	Production Tax Credit
RECs	Recognized Environmental Conditions
Resistance	The opposition offered by a body or substance to the passage through it of a steady electric current.
Rotor	The rotor consists of three blades mounted to a rotor hub.
RD	Rotor Diameter: Diameter of the rotor from the tip of a single blade to the tip of the opposite blade.
ROW	Right-of-Way
rpm	Revolutions per minute
SCADA	Supervisory Control and Data Acquisitions (communications technology)
SHPO	North Dakota State Historic Preservation Office
Step-up transformer	A transformer that increases voltage
Substation	A subsidiary station in which electric current is transformed.

SWPPP	Storm Water Pollution Prevention Plan
Torque	A force that produces or tends to produce rotation or torsion; also a measure of the effectiveness of such a force that consists of the product of the force and the perpendicular distance from the line of action of the force to the axis of rotation **:** a turning or twisting force.
Transformer	An electrical device by which alternating current of one voltage is changed to another voltage.
Transmission	An assembly of parts including the speed-changing gears and the propeller shaft by which the power is transmitted from an automobile engine to a live axle; the speed-changing gears in such an assembly.
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
UT	Unincorporated Township
WEST	Western EcoSystems Technology, Inc
WMD	Wetland Management District
WPAs	Waterfowl Protection Areas
Yaw	To deviate erratically from a course (as when struck by a heavy sea); especially to move from side to side: to turn by angular motion about the vertical axis.

FIGURES

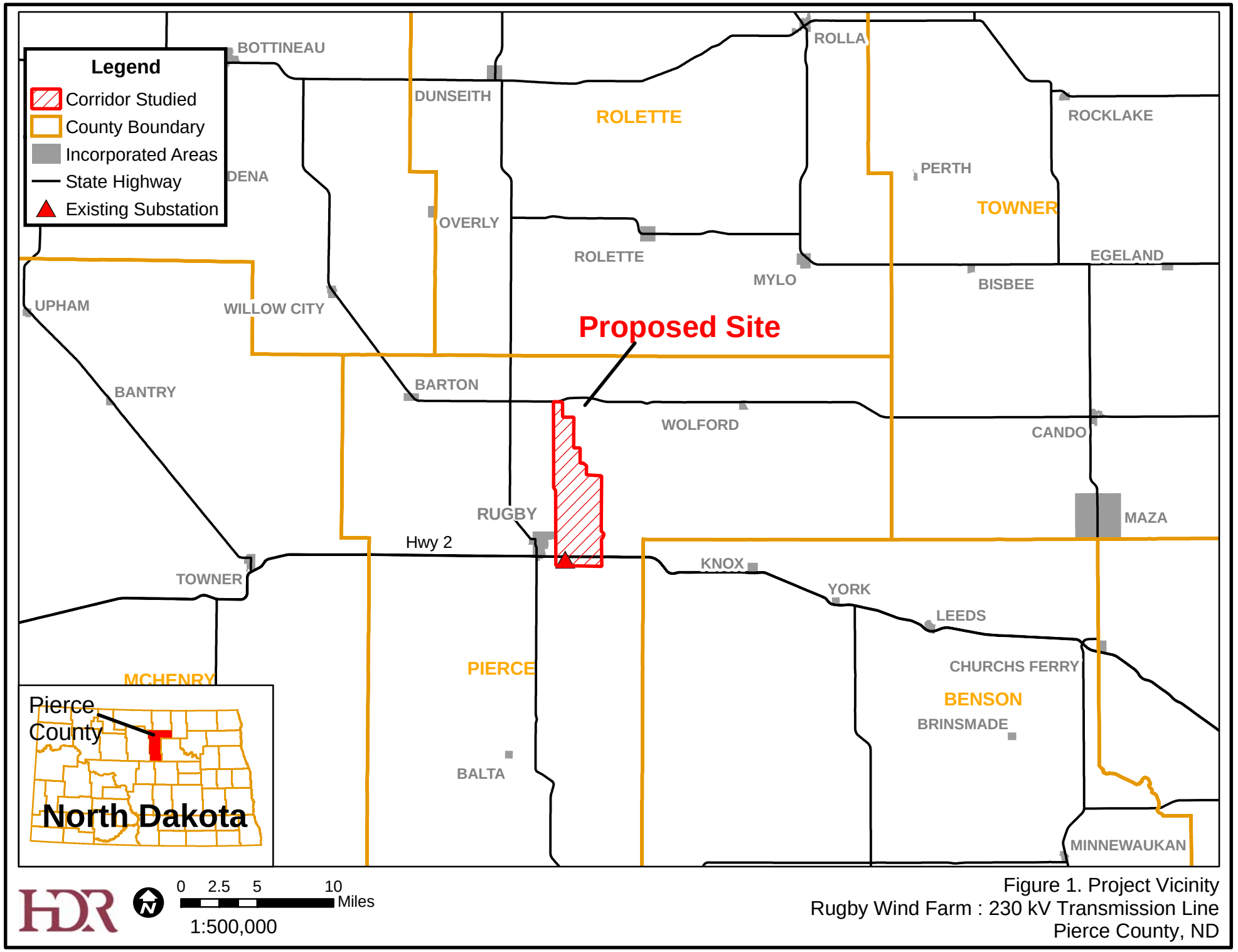


Figure 1. Project Vicinity
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

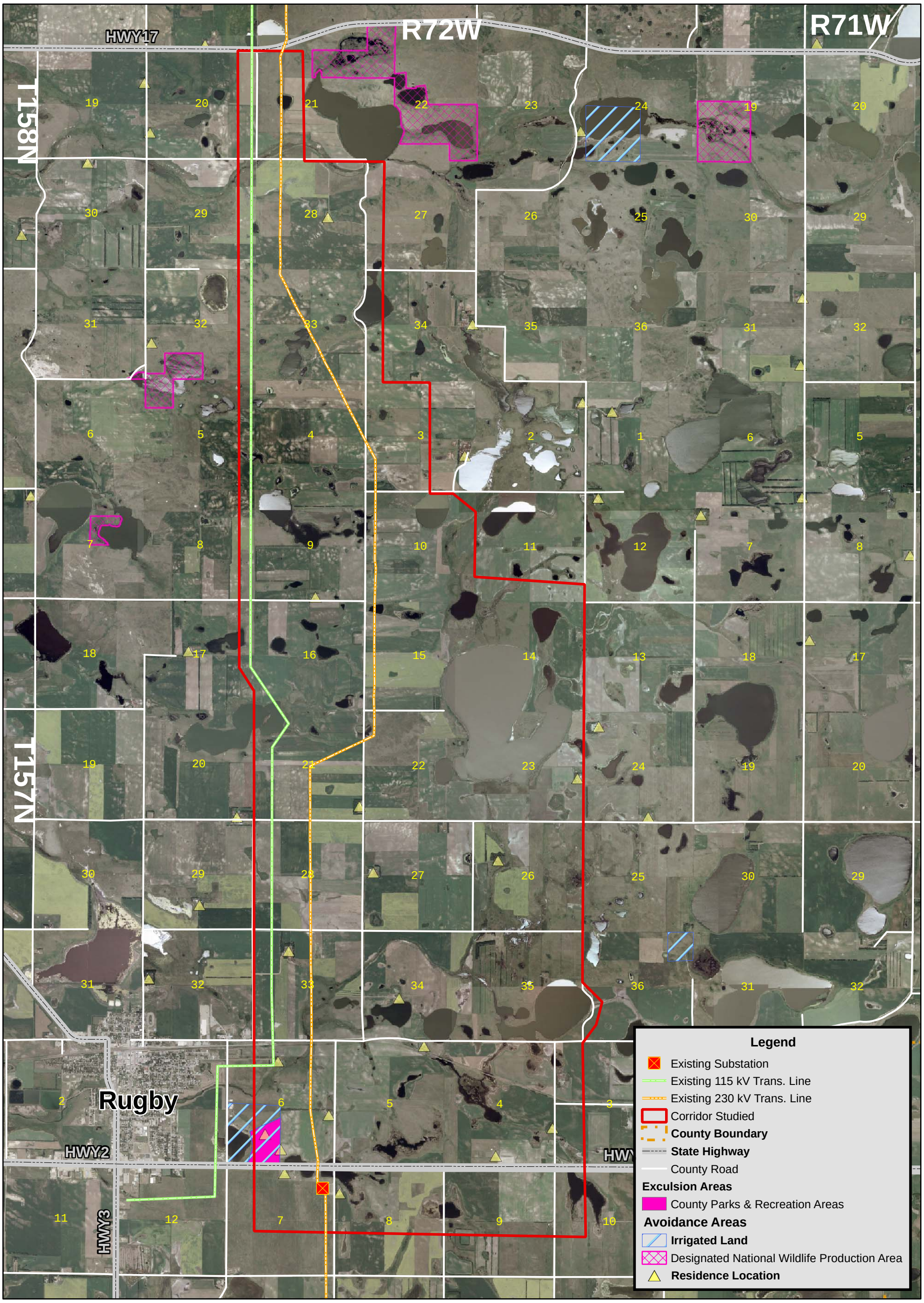


Figure 2. Corridor Exclusion and Avoidance Areas
2003 FSA Aerial Photos
Rugby Wind Farm: 230 kV Transmission Line
Pierce County, ND

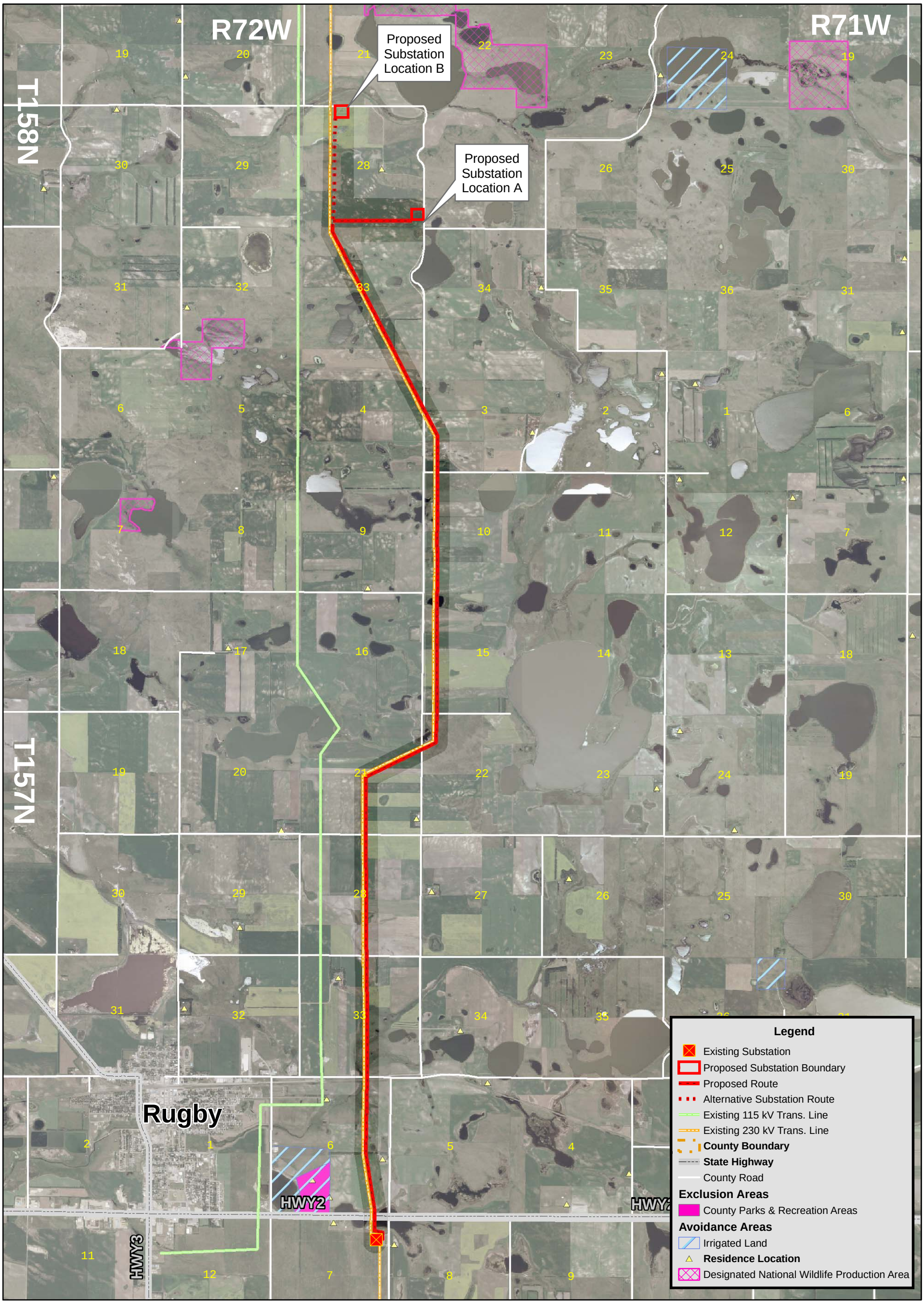


Figure 3. Route Exclusion and Avoidance Areas
2003 FSA Aerial Photos
Rugby Wind Farm: 230 kV Transmission Line
Pierce County, ND

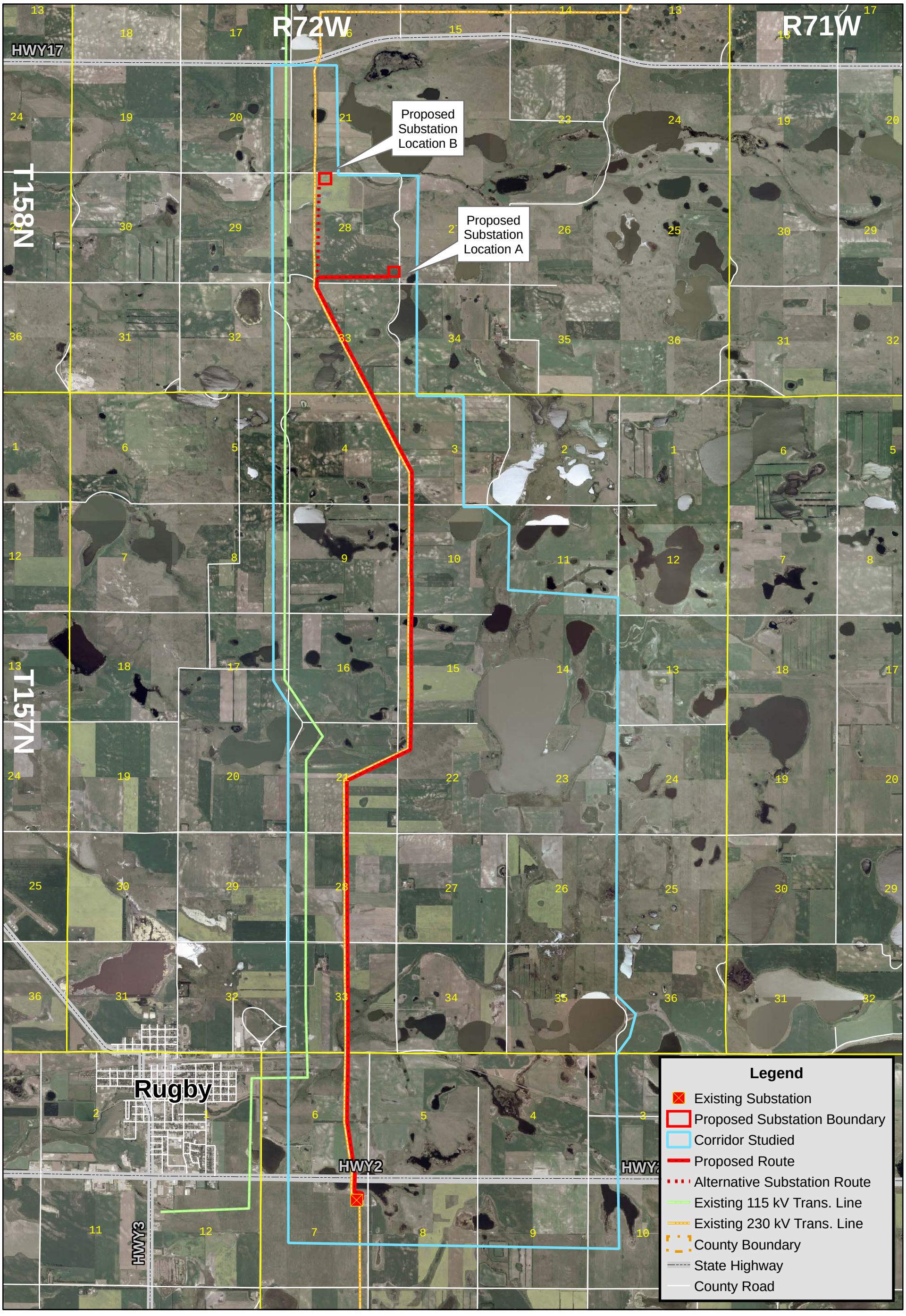


Figure 4. Project Location Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

R72W

R71W

T158N

T157N

T156N

Proposed Substation Location B

Proposed Substation Location A

Rugby

HWY2

HWY3

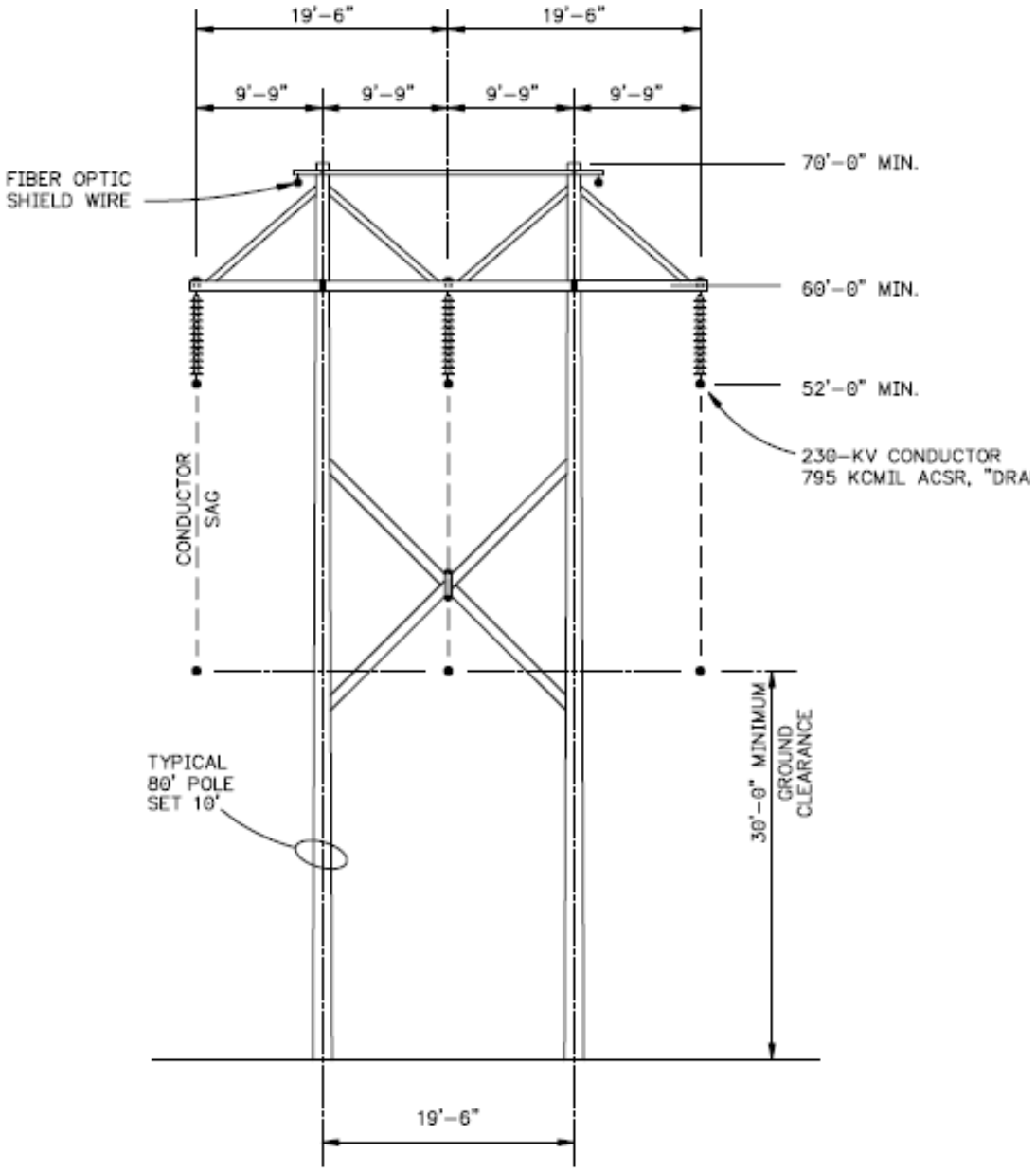
0 0.5 1 2 Miles

Legend

- Existing Substation
- Proposed Substation Boundary
- Proposed Route
- Alternative Substation Route
- Corridor Studied
- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line
- County Boundary
- County Road
- State Highway

HDR

Figure 5. Project Location Map
USGS Topographic Map
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND



NOTE:
BASED ON 700' LEVEL SPANS. VARIATIONS IN TERRAIN MAY REQUIRE
TALLER STRUCTURES IN ORDER TO MAINTAIN THE MINIMUM GROUND CLEARANCE.

FIGURE 1

TYPICAL 230-KV STRUCTURE CONCEPT

H-FRAME CONSTRUCTION

(NOT TO SCALE)

HDR

Figure 6. 230 kV Pole Type Drawing
Rugby Wind Farm: 230 kV Transmission Line
Pierce County, North Dakota

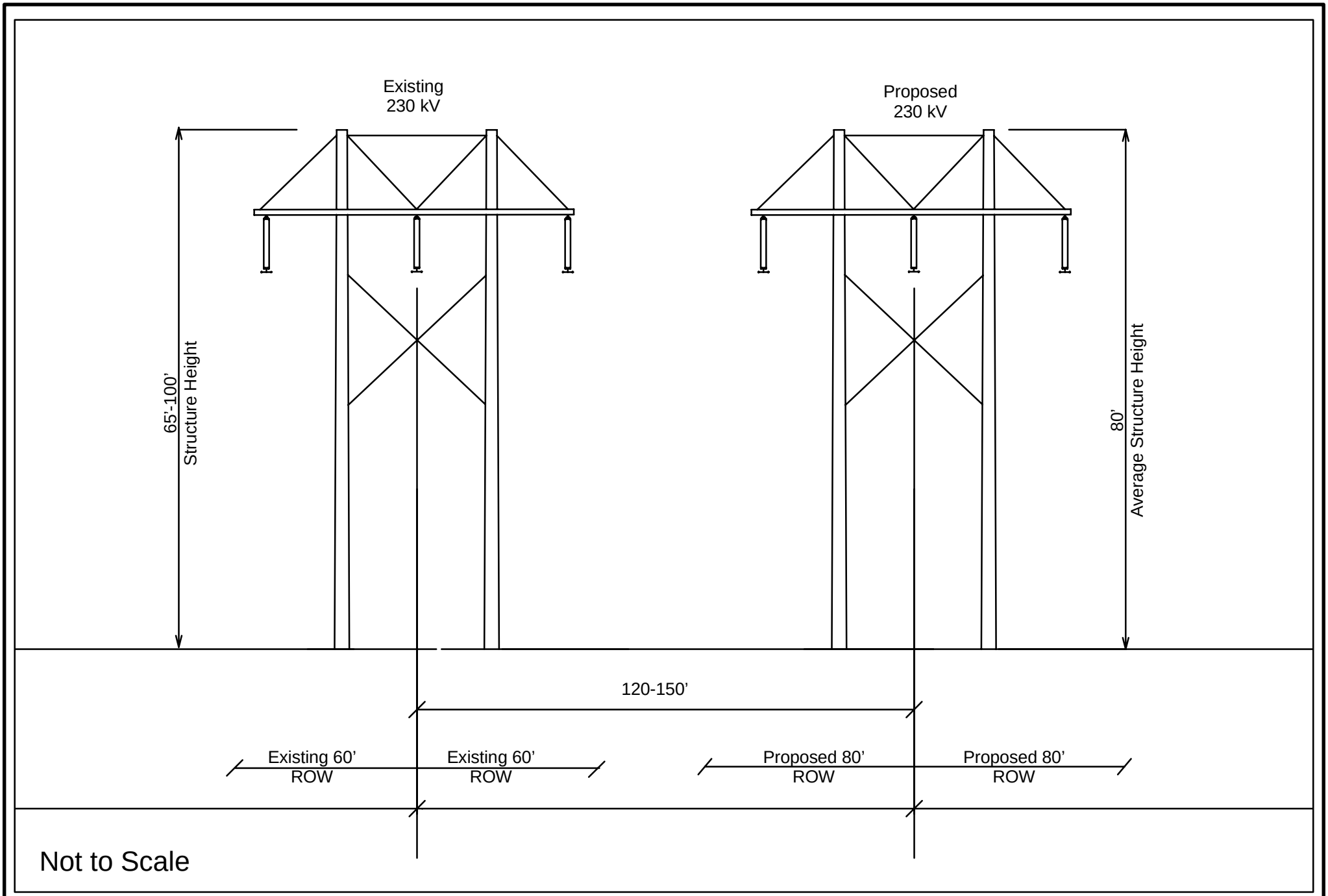


Figure 7. Right of Way Requirements
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

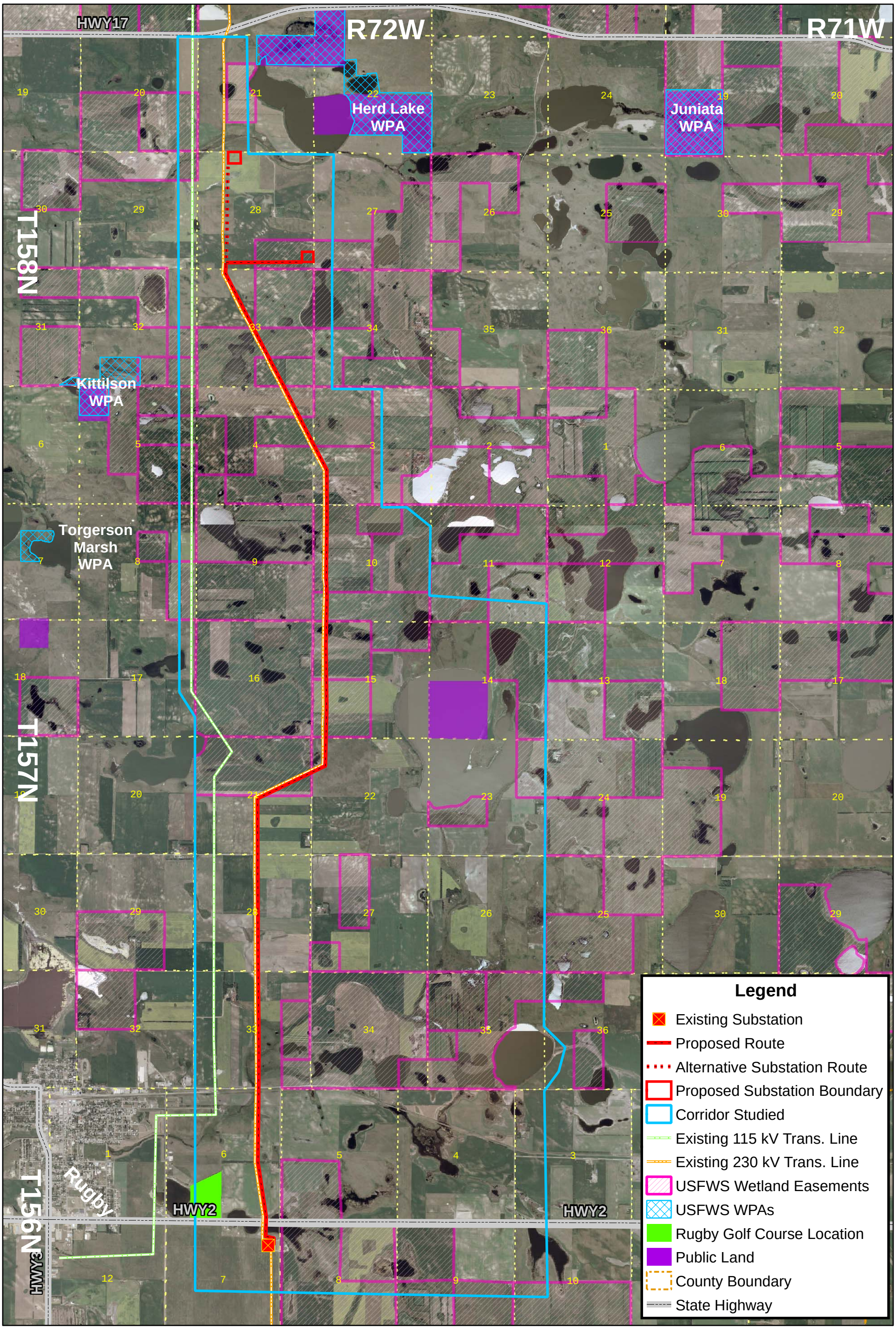


Figure 8. Public Lands & USFWS Easements
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

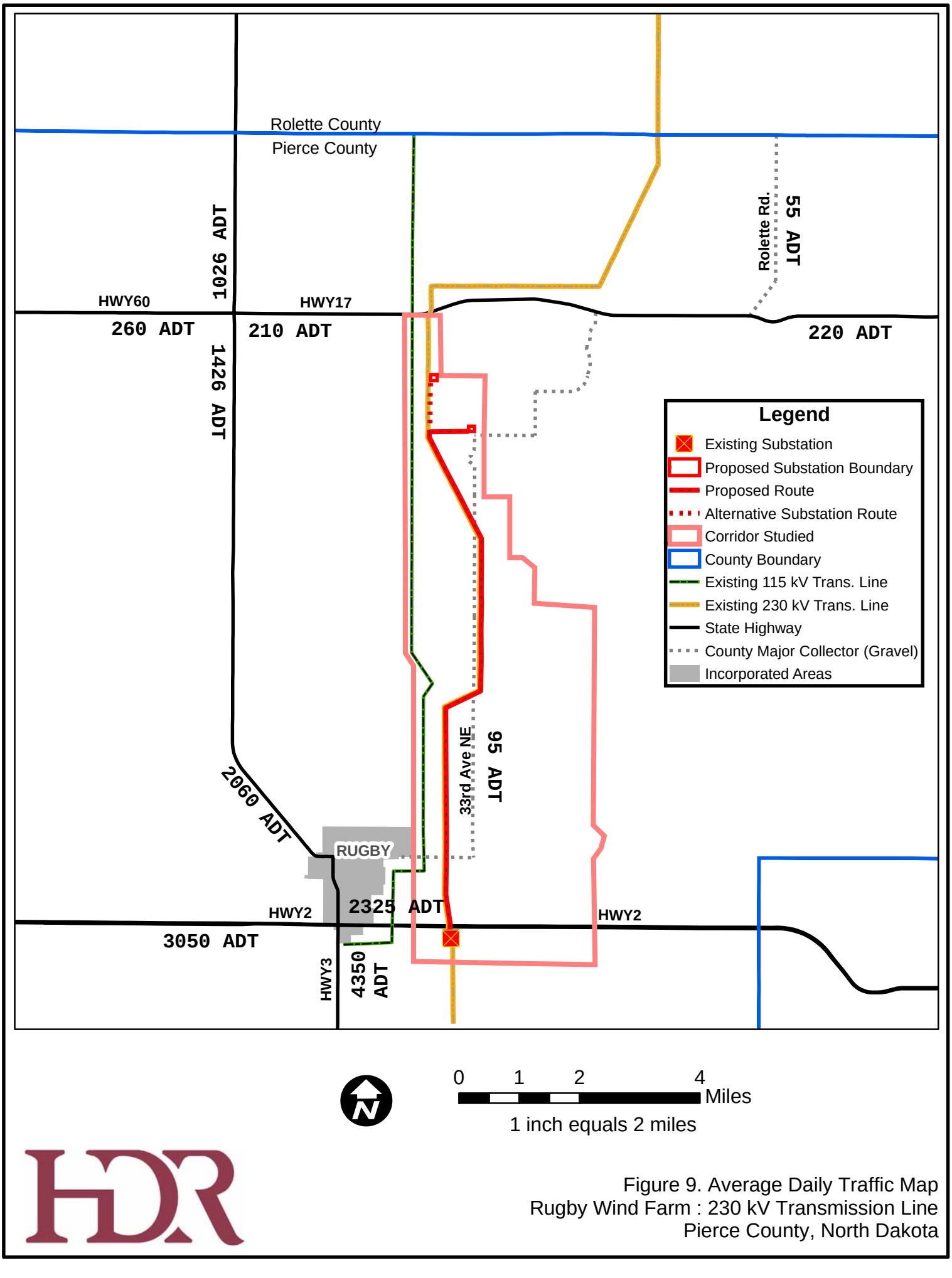


Figure 9. Average Daily Traffic Map
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, North Dakota

Figure 10. Existing Environment
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

Figure 11. Transmission Line Photo Simulation
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

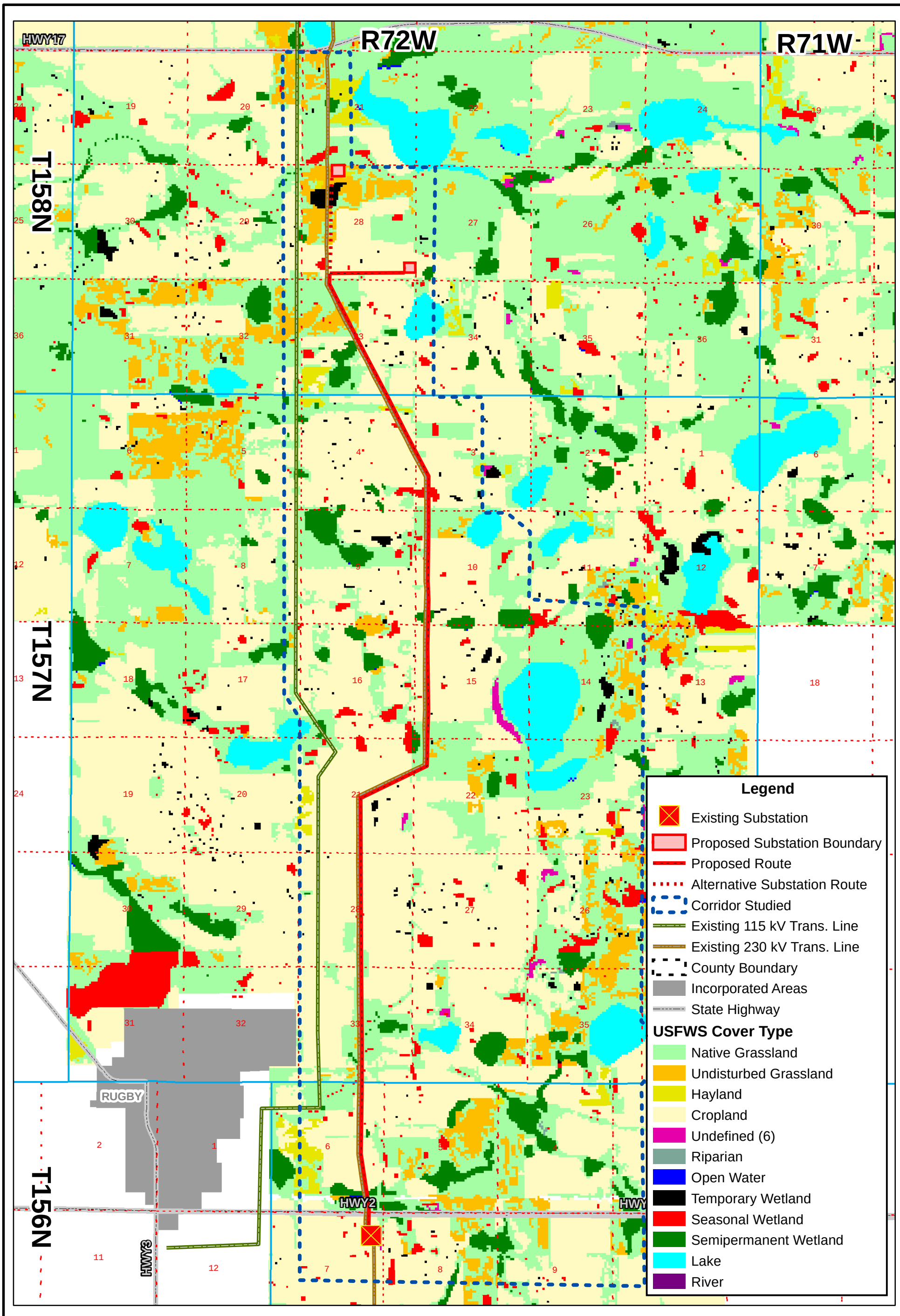


Figure 12. USFWS Land Use Map
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

R72W

HWY17

R71W

T158N

T157N

T156N

RUGBY

HWY2

HWY2

HWY3

0 0.5 1 2 Miles

Legend

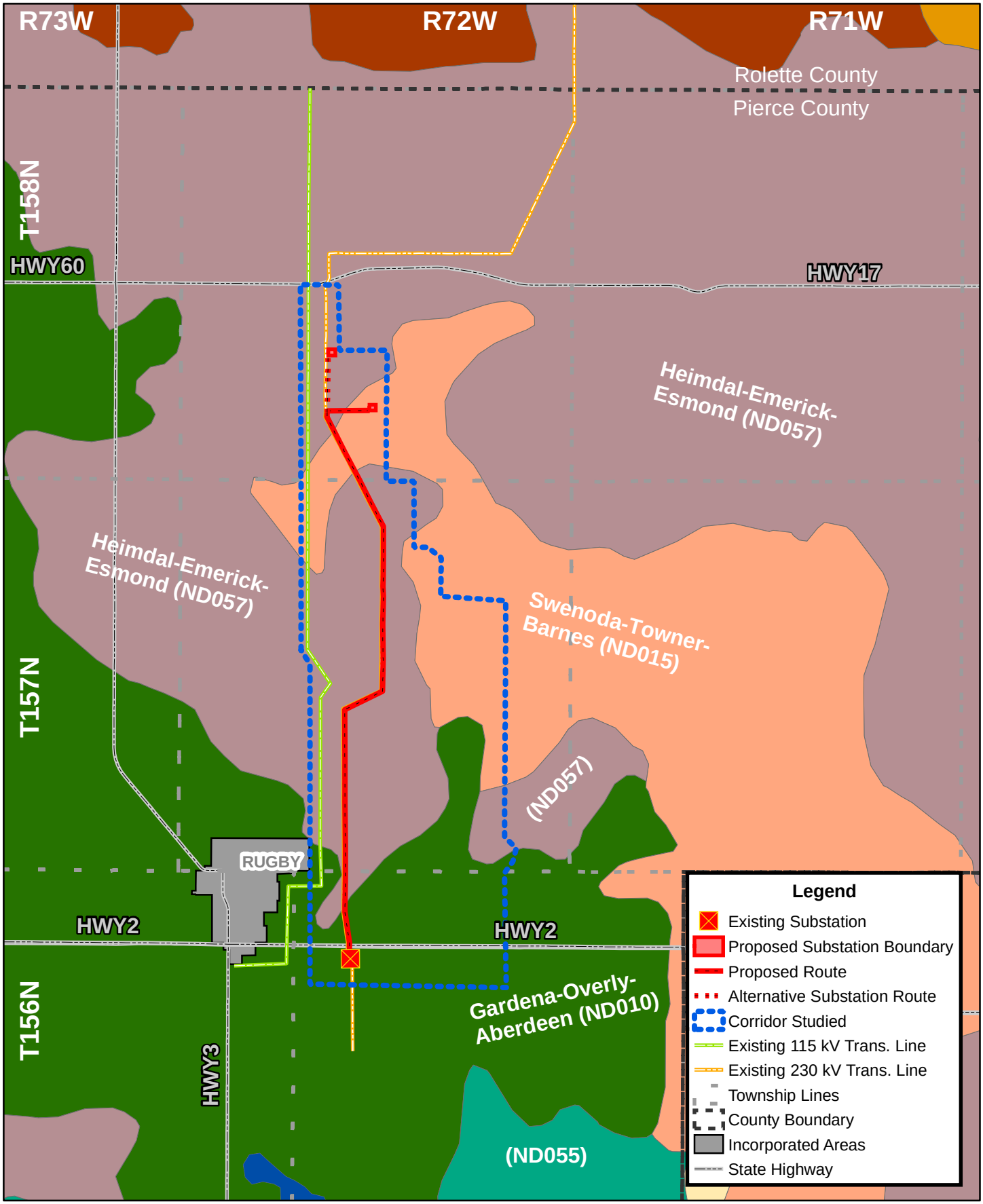
- Existing Substation
- Proposed Route
- Alternative Substation Route
- Proposed Substation Boundary
- Corridor Studied
- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line
- County Boundary
- Sections
- Township Boundaries
- Incorporated Areas
- State Highway

SSURGO Soils Data

- No Classification
- Prime Farmland
- Not Prime Farmland
- Prime Farmland if Drained

HDR

Figure 13. Prime Farmland Soil Distribution Map
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND



0 0.5 1 2 Miles

1 inch equals 2 miles

HDR

Figure 14. State Soils Associations Map
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

R72W

R71W

T158N

T157N

T156N

Rugby

Legend

- Existing Substation
- Proposed Substation Boundary
- Proposed Route
- Alternative Substation Route
- Corridor Studied
- Existing 115kV Trans. Line
- Existing 230kV Trans. Line
- Irrigation Permits

Rugby Streams

- Intermittent Stream (USGS)
- Intermittent Stream (County)

NWI Wetlands

- Lacustrine
- Palustrine Aquatic Bed
- Palustrine Emergent
- USFWS WPAs
- Township Lines
- County Boundary

0 0.5 1 2 Miles

HDR

Figure 15. National Wetlands Inventory, Surface Waters and Irrigation Permits Map
USGS Topographic Map
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

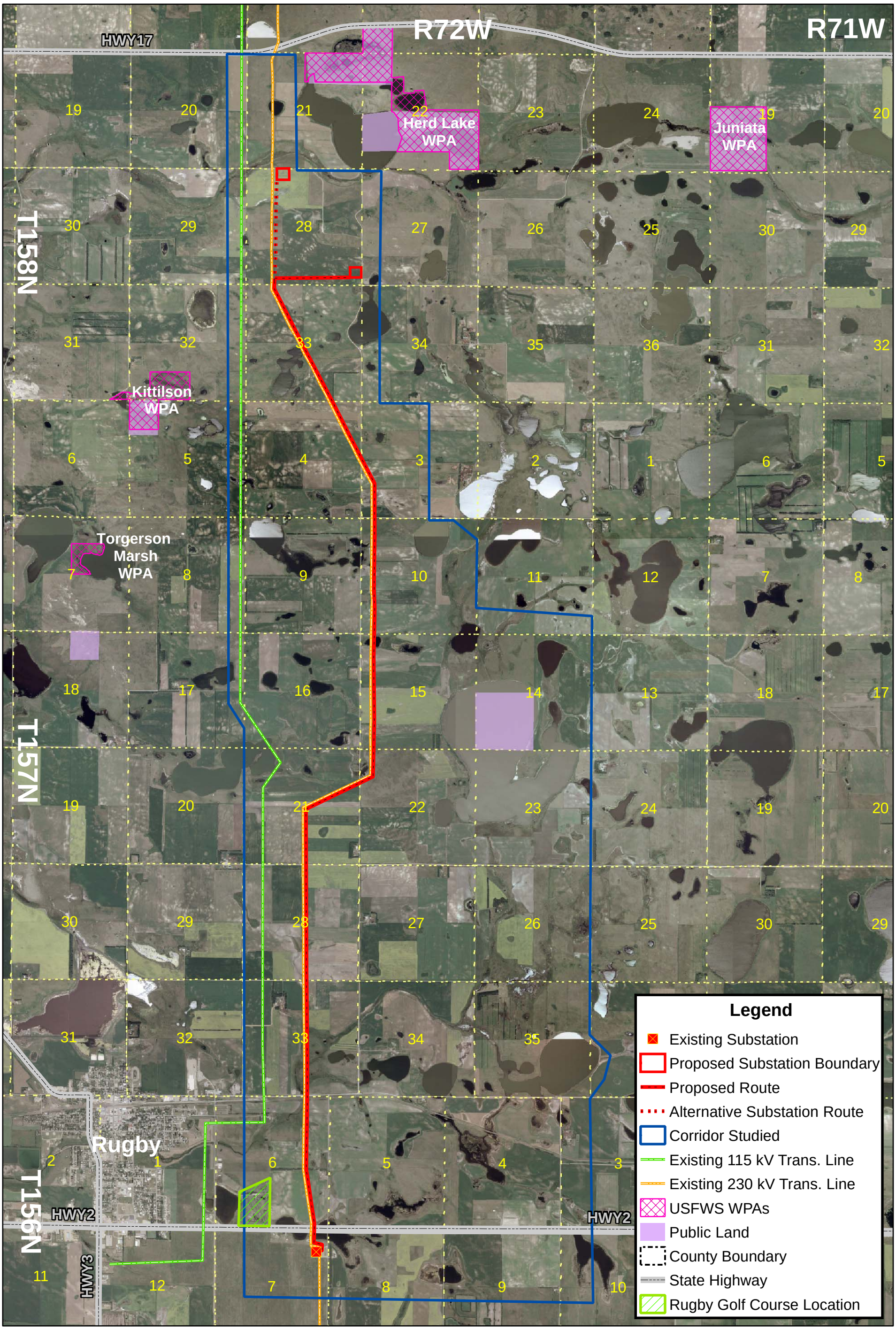
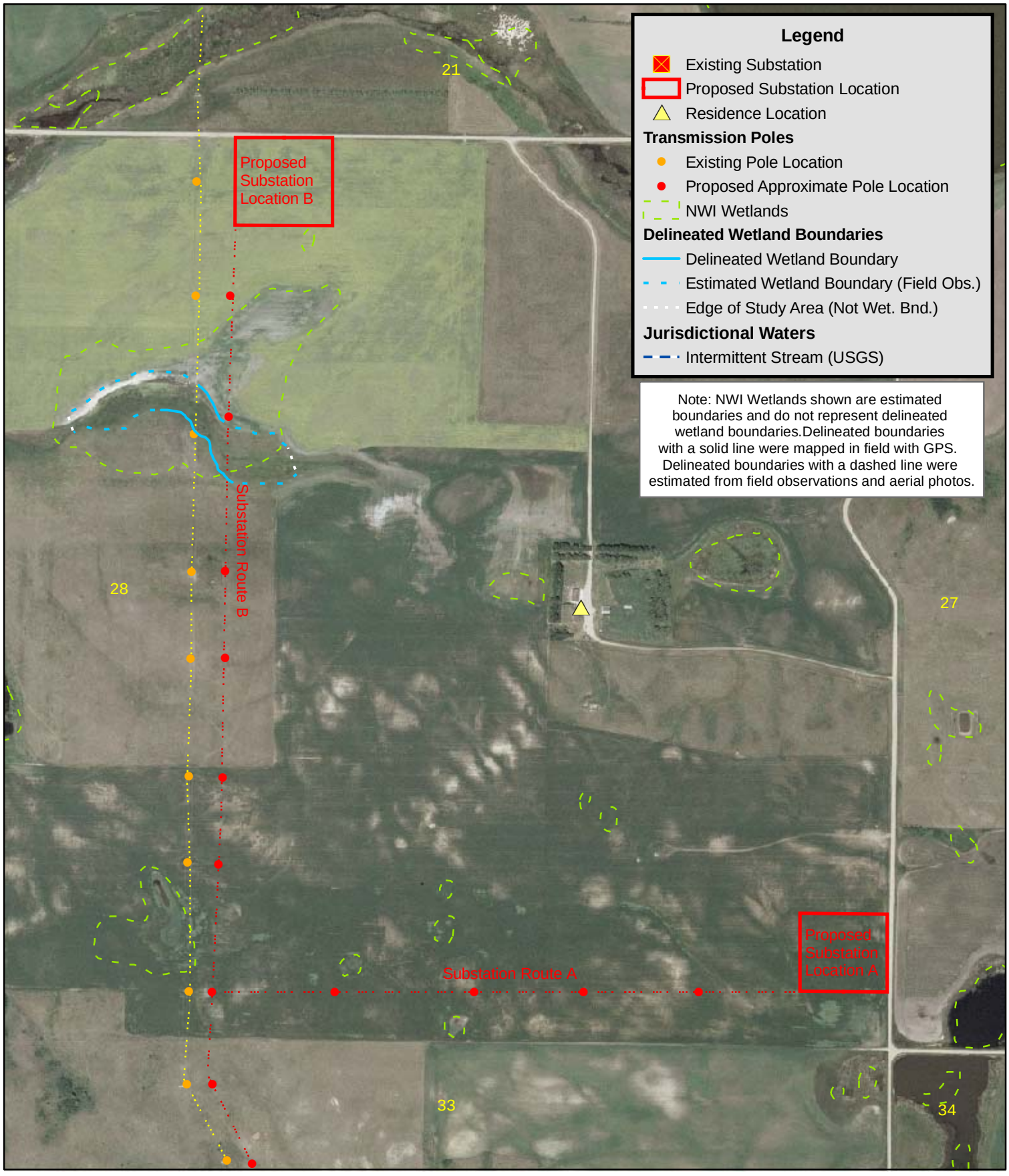


Figure 16. Public Lands Potentially Available for Recreation
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

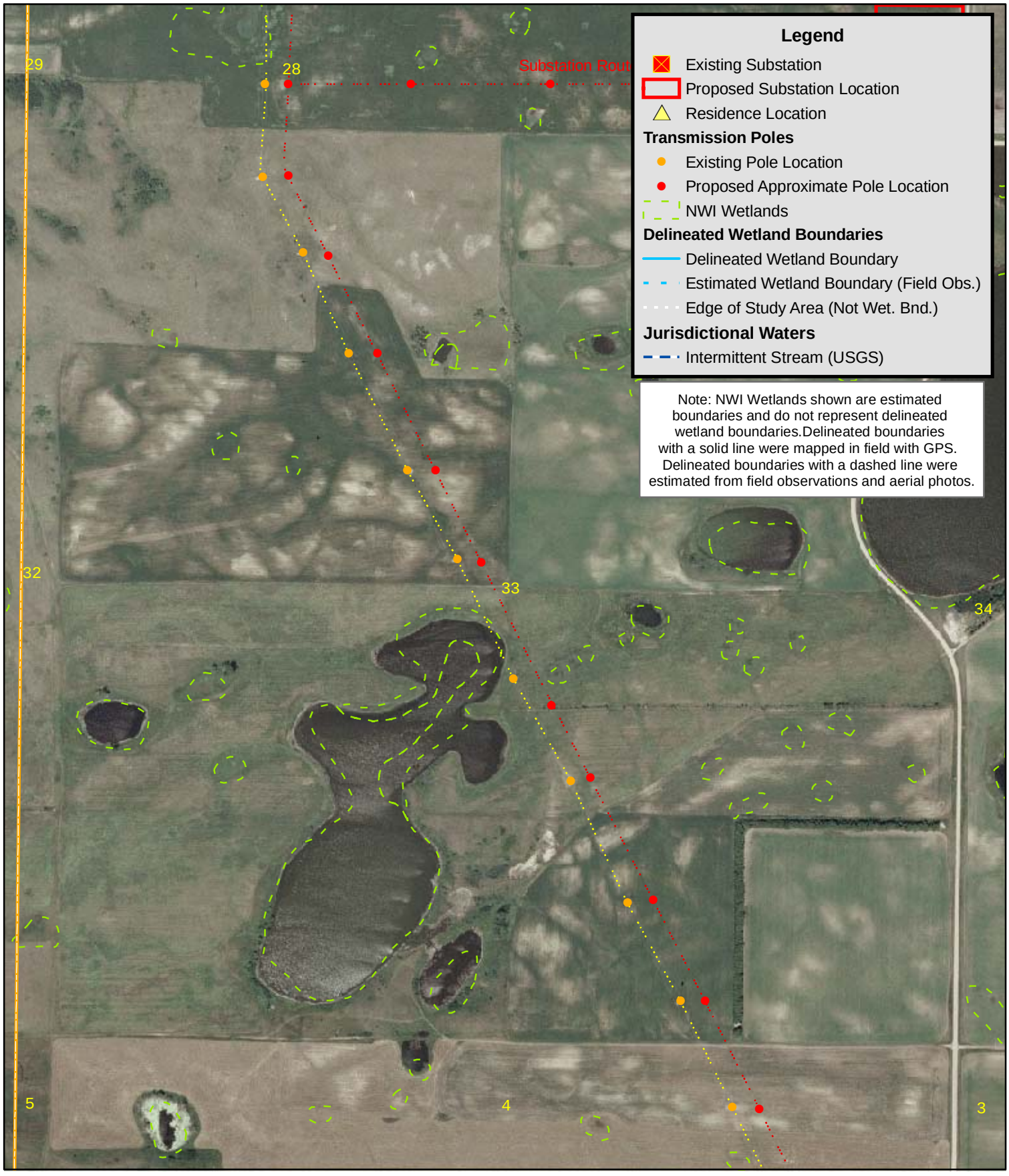


0 250 500 1,000 Feet

1 inch equals 750 feet

Approximate Pole Location Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

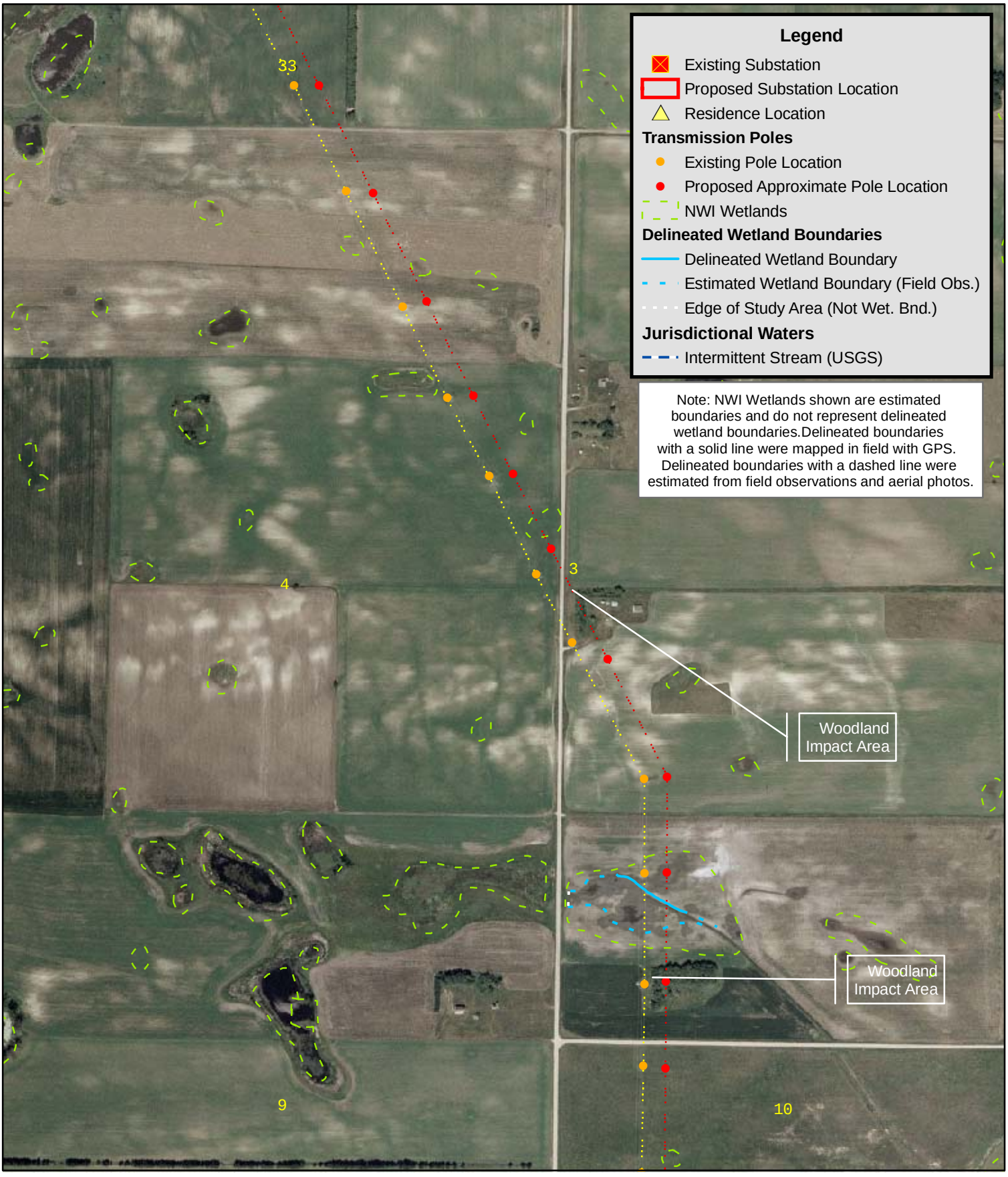
Figure 17A



HDR

Approximate Pole Location Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

Figure 17B

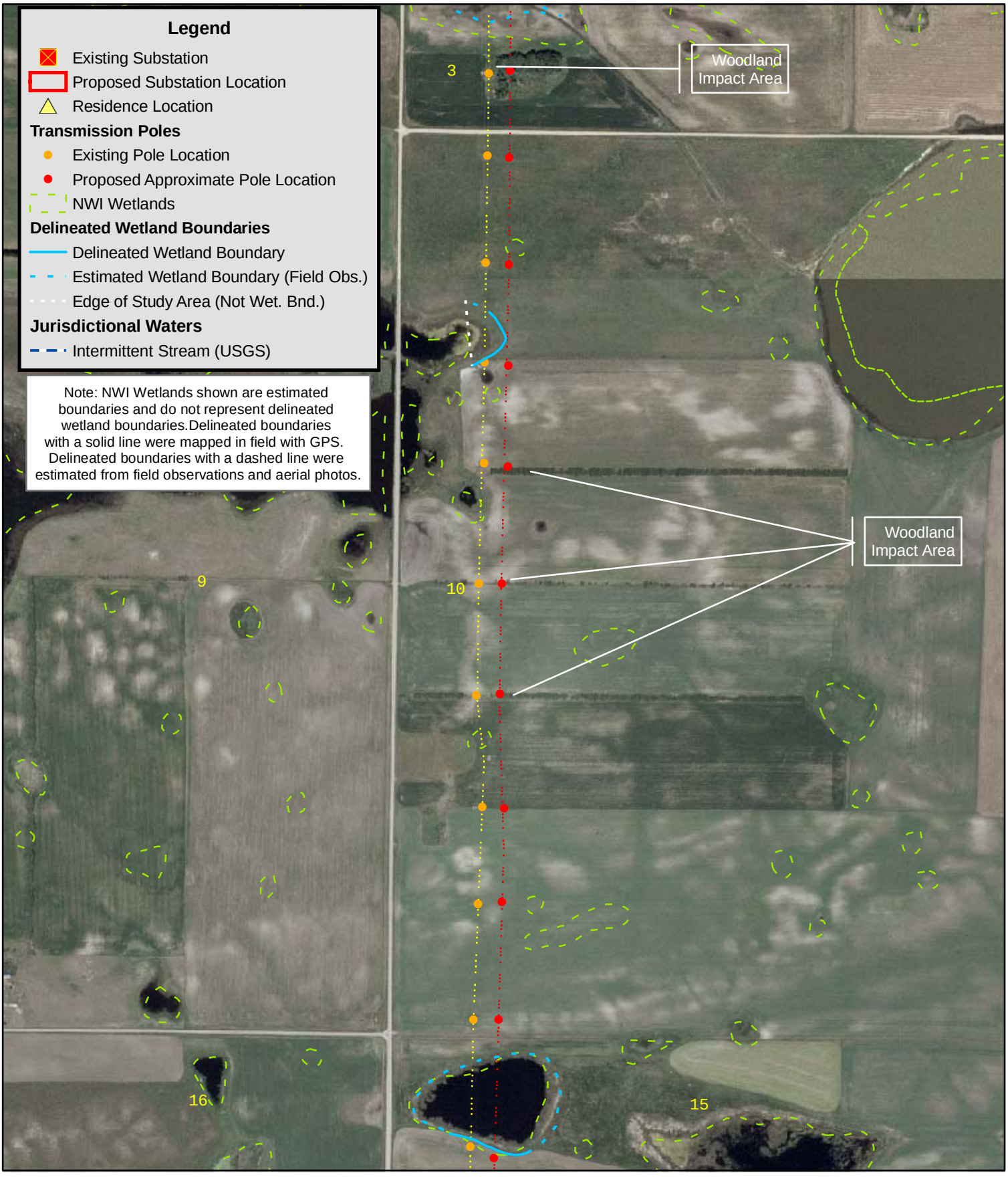


0 250 500 1,000 Feet

1 inch equals 750 feet

Approximate Pole Location Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

Figure 17C

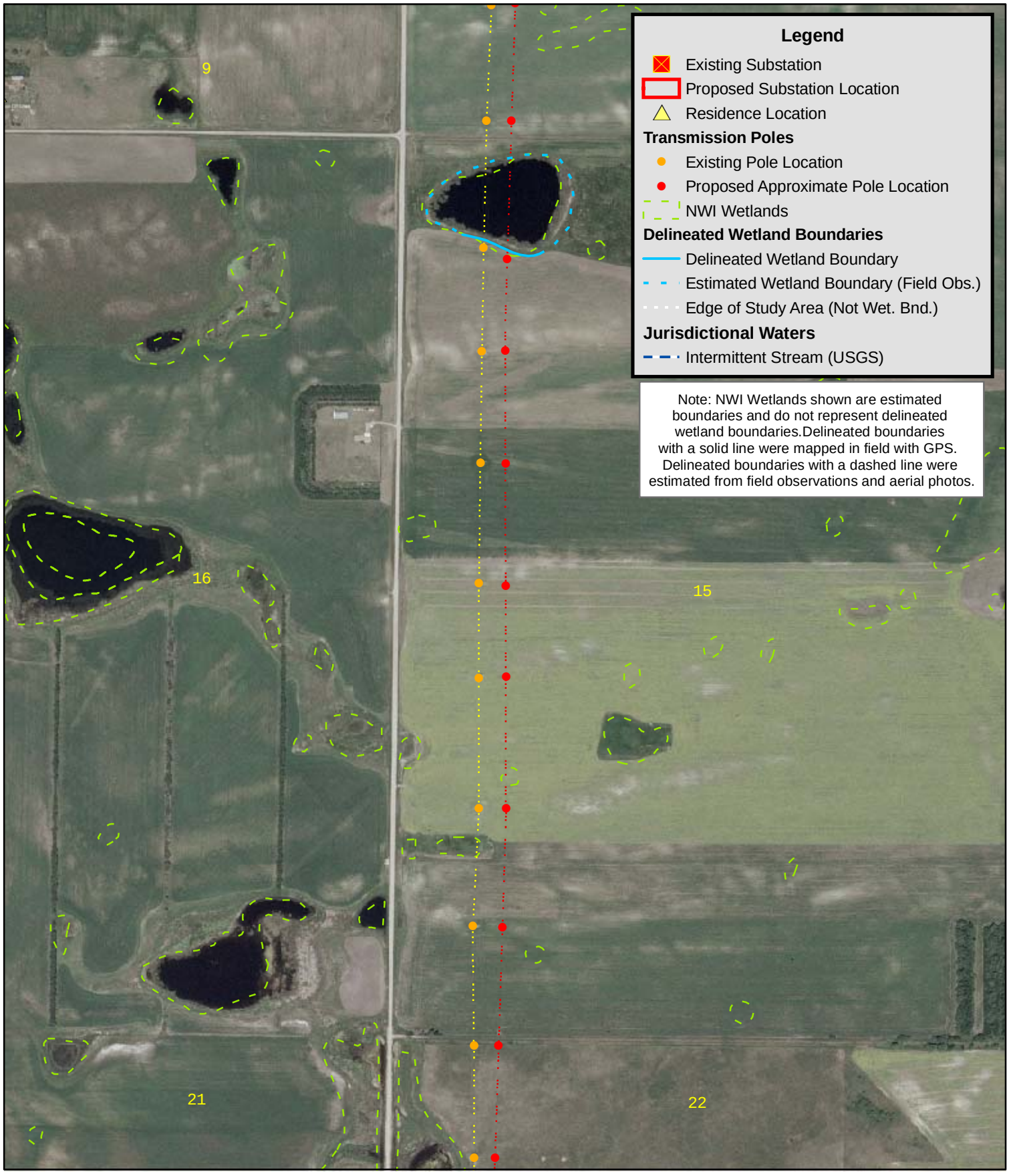


0 250 500 1,000 Feet

1 inch equals 750 feet

Approximate Pole Location Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

Figure 17D

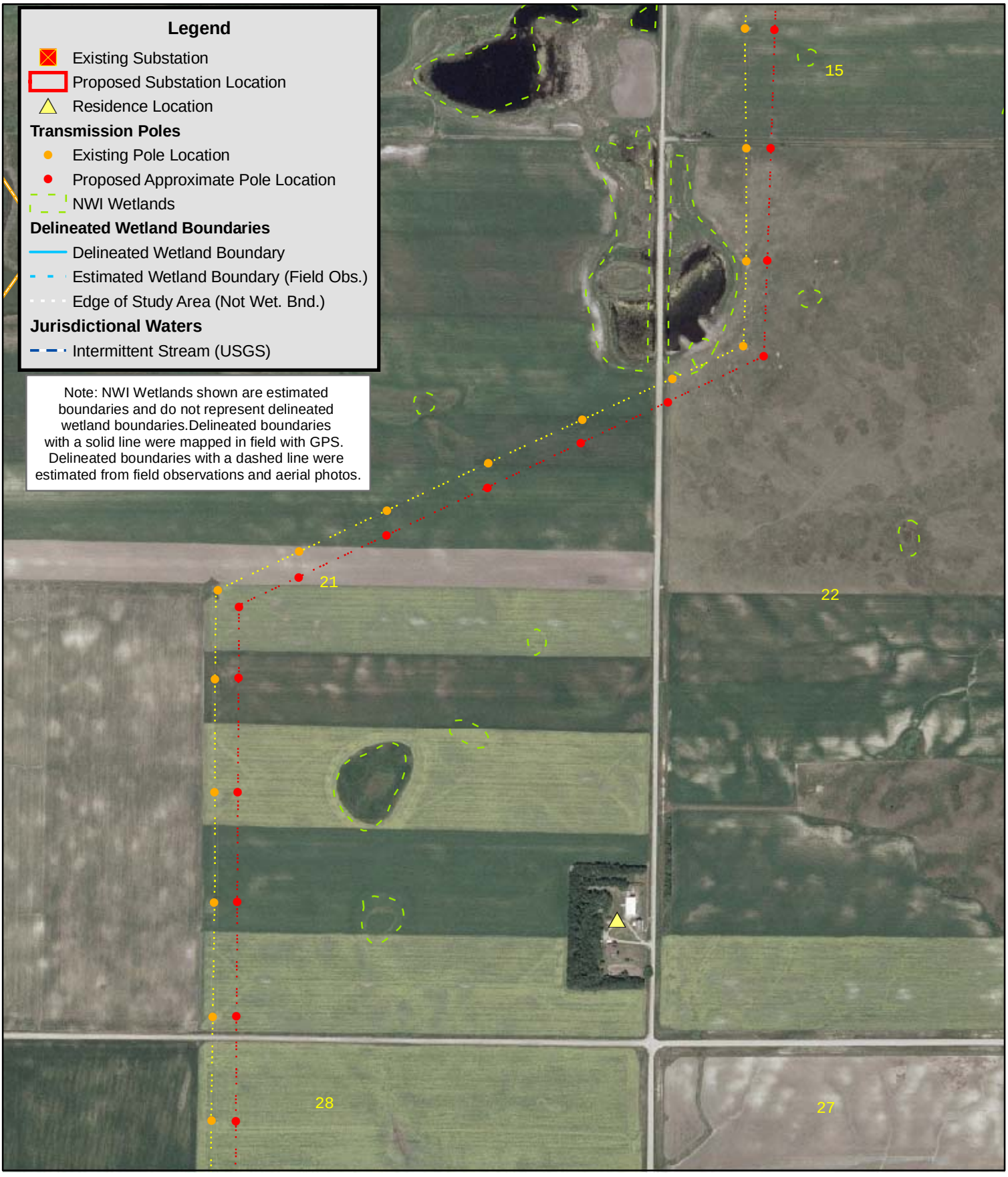


0 250 500 1,000 Feet

1 inch equals 750 feet

Approximate Pole Location Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

Figure 17E

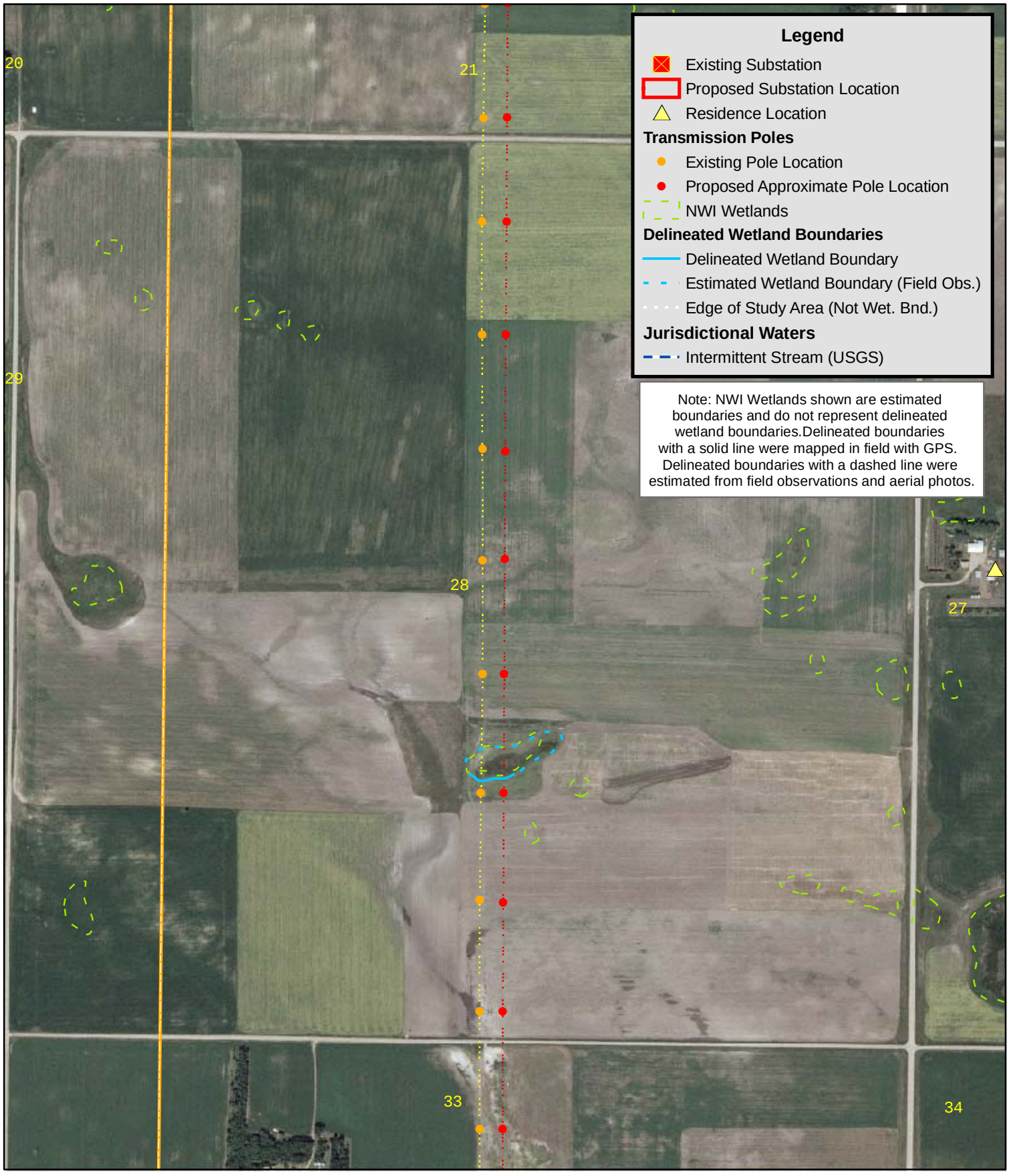


0 250 500 1,000 Feet

1 inch equals 750 feet

Approximate Pole Location Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

Figure 17F



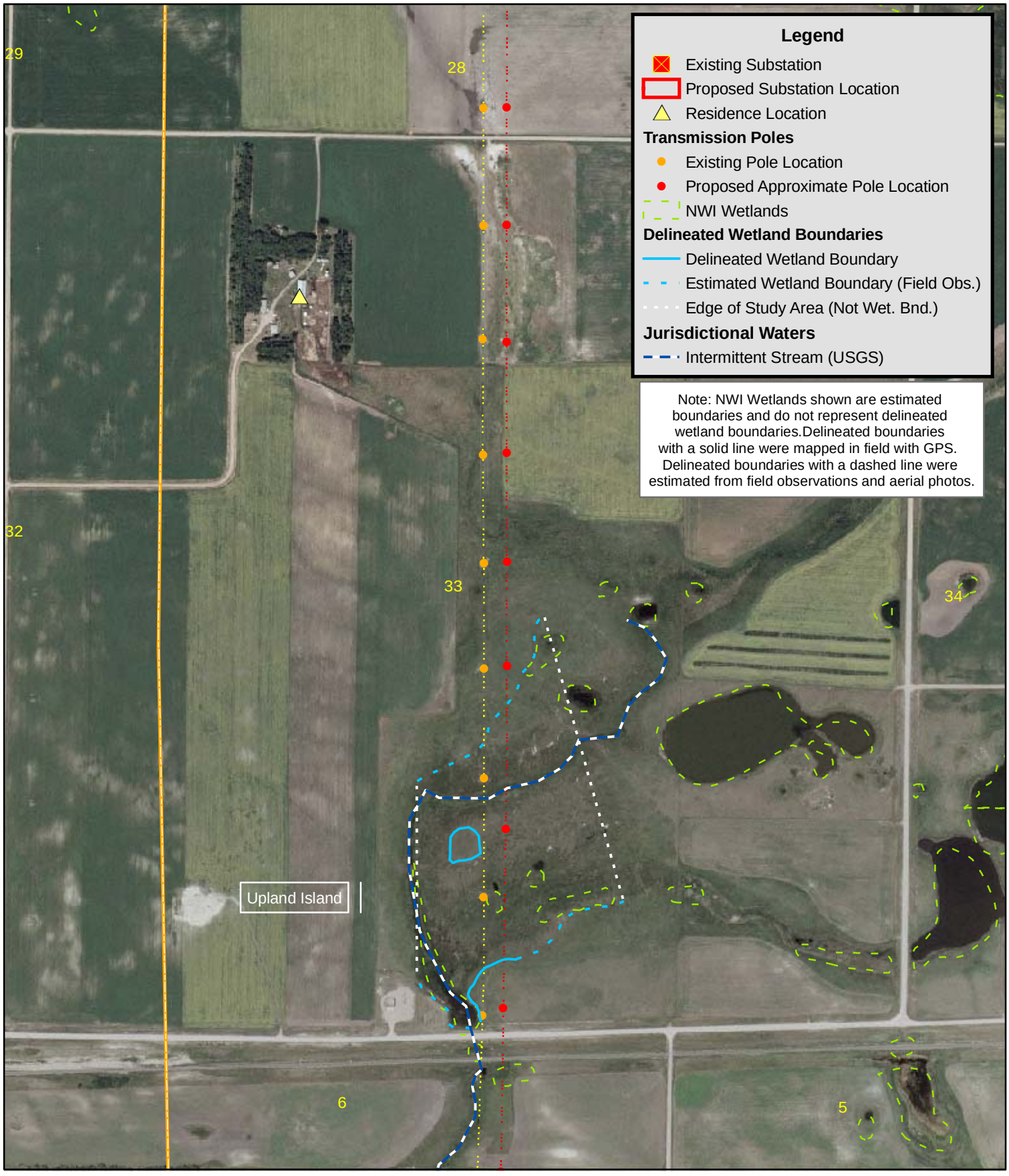
HDR

0 250 500 1,000 Feet

1 inch equals 750 feet

Approximate Pole Location Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

Figure 17G

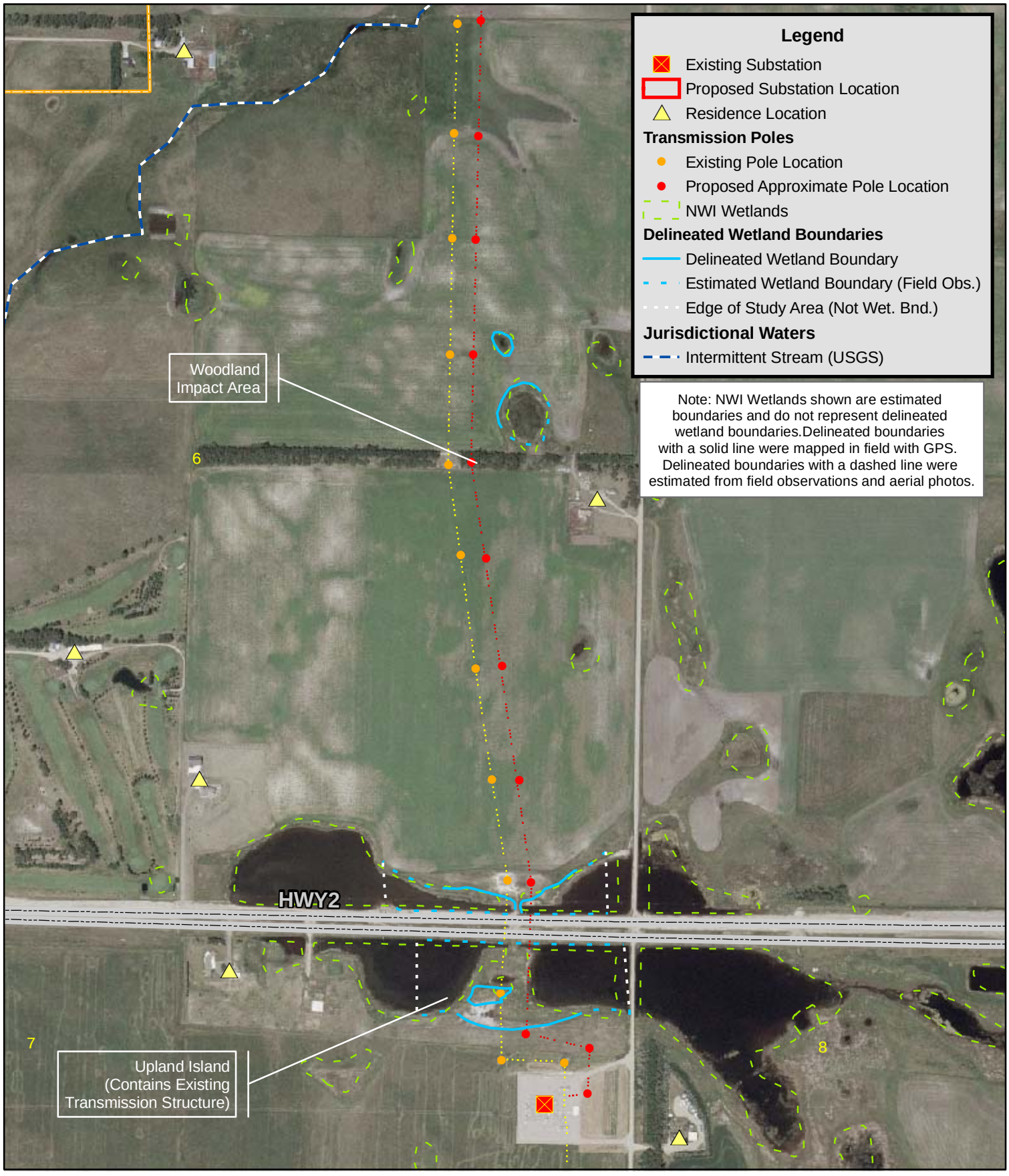


0 250 500 1,000 Feet

1 inch equals 750 feet

Approximate Pole Location Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

Figure 17H



HDR

0 250 500 1,000 Feet

1 inch equals 750 feet

Approximate Pole Location Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

Figure 17I

APPENDIX A

PPM Energy Policy

PPM Energy
A ScottishPower Company

"People & the Environment First"

It is PPM Energy's policy that safety of people and conservation of the environment come first in the conduct of our operations. We are committed to a safe and healthy workplace that promotes a zero accident culture in which no one is harmed in association with our business. We are committed to be an environmentally conscious company that promotes development of clean energy production and storage with minimal adverse environmental effects. Finally, we are committed to continuous improvement to identify and control risks so that our performance meets our high expectations. Therefore, relative to environment, health, and safety, ("EHS") issues, all organizations and individuals will:

- Operate in compliance with or exceed all EHS governmental laws, regulations, ordinances, standards and permit requirements, and established ScottishPower Group policies and standards;
- Ensure all employees are involved in our EHS programs with appropriate training and communication to work responsibly, make decisions to carry out their duties, and to be accountable for the results;
- Provide a structure that ensures effective EHS management throughout the business with risks, impacts, and legal requirements controlled through appropriate actions and governance;
- Ensure that EHS goals and stretch targets are set, communicated to all employees, and performance monitored to promote continuous improvement;
- Work to proactively prevent incidents, accidents, and environmental damage before these occur by sustainable actions and process improvements at all locations;
- Promote the health and wellness of our employees by identifying and controlling workplace health risks, promoting work-life balance, and encouraging employees and their families to be proactive about their health through communication, activities, and the provision of robust health insurance.
- Require that contractors and others associated with our operations comply with our EHS requirements, and never be asked to perform anything unsafe or in violation of environmental laws;

.

- Ensure that public safety, security of our people and assets, conservation, and environmental stewardship are fundamental to our operations;
- Design, construct, and operate facilities in ways that minimize their negative EHS impacts, and maximize their positive EHS contribution, as available technology and conditions permit;
- Play a leading role in the development of a renewable energy market through strategic relationships with industry, regulatory bodies, and other external stakeholders, with open communication that maintains their confidence in our commitment to EHS in our operations;

This policy commits the company to its core belief, which is integral to our business philosophy and success, that an excellent environmental, health, and safety culture amongst all employees will deliver superior performance that protects our employees, contractors, the public, and the environment.

Terry Hudgens
President and CEO
August 2004

APPENDIX B

Design Data Report

PPM Energy
A ScottishPower Company

RUGBY WIND FARM
PIERCE COUNTY, NORTH DAKOTA

DESIGN DATA REPORT

Project

- Approximately 9.5 mile transmission line.
- Final layout and structure types to be completed after design is finalized.

Transmission Line

GENERAL SPECIFICATIONS

Voltage	230 kV
Average Height	80 feet
Capacity	400 MW
Operating Capacity	150 MW
Average Span Length	660 feet
Structure Type	H-frame tangent structures
Minimum Conductor Size	795 kcmil Aluminum Core Steel Reinforced (ACSR)
Shield Wire	3/8 inch
Right-of-Way	170 feet wide, 85 feet of right-of-way on each side of structure centerline
Average Pole Depth	9.5 to 11.5 feet
Average Pole Diameter	2.5 to 3 feet
Foundation Type	Direct imbed

Associated Facilities

GENERAL SPECIFICATIONS

Project Substation	
Substation Voltage	230 kV/34.5 kV substation
Approximate Substation Footprint	3 acres
Right-of-Way to be acquired (includes operation and maintenance building)	10 acres
Equipment	One 230/34.5 kV transformer, switchgear and control house, circuit breakers, surge arrestors, ring bus
Rugby Substation Improvements	
Equipment	A fourth 230 kV circuit breaker will be added to the existing three-breaker ring bus

APPENDIX C

Studies

APPENDIX C.1

Wetland Deliniation Report

Wetland Delineation Report for

Rugby Wind Farm

Transmission Route

Pierce County, North Dakota

June 15, 2005

Prepared for:

Prepared by:

HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Table of Contents

List of Figures

List of Tables

List of Appendices

1.0 EXECUTIVE SUMMARY

PPM Energy, Inc. (PPM) is proposing to construct a utility-scale wind farm, the Rugby Wind Farm (the Project), in Pierce County, North Dakota. The Project will be approximately 150 megawatts (MW) in size, consisting of up to 100 wind turbine generators. A 9.5 mile, 230 kV transmission line is proposed between the Project Substation located in Section 28 of Spring Lake Township and the existing Rugby Substation located in Section 7 of Meyer Township.

HDR Engineering, Inc. (HDR) conducted a wetland determination for PPM along the proposed transmission route located between the proposed Project Substation and the existing Rugby Substation. The proposed transmission route parallels the existing 230 kV transmission line and will be located approximately 120 to 150 feet east of the existing line. PPM will attempt to match placement of transmission structures to minimize the disturbance to agricultural lands.

The wetland determination was conducted using a combination of two methods: "Routine Determination, Onsite Inspection Unnecessary" and "Routine Determination, Onsite Inspection Necessary" outlined in the *1987 Corps of Engineers Wetlands Delineation Manual* (USACE, 1987). Initially the route was evaluated for wetlands using offsite tools, including aerial photographs, soil survey maps, and National Wetland Inventory (NWI) maps. The entire route was field inspected and specific on-site wetland delineations were conducted on June 7 and 8, 2005.

HDR conducted the Onsite Inspection Unnecessary analysis and determined that the proposed approximate pole locations along the route avoid many of the identified wetlands by spanning the feature. An onsite wetland inspection was conducted in areas where wetlands were identified along the route in the vicinity of proposed approximate pole locations. HDR delineated ten wetlands along the proposed transmission route. PPM will span and avoid wetland impacts to the extent practicable. Based on the field review of the Onsite Inspection Unnecessary determinations and the 10 field wetland delineations, it appears that PPM is avoiding placing transmission structures in wetlands along the entire route, except for one proposed approximate structure in the wetland located in Section 33 in Torgerson Township. The wetland in Section 33 is approximately 1,500 feet wide; thus an impact is anticipated due to the 1,000 ft design limitation between structures.

The wetland in Section 33 is a jurisdictional water; permanent and temporary fill activities will require Section 404 review and permit approval by the US Army Corps of Engineers (USACE) prior to construction. In addition, impacts to jurisdictional waters also require review and Section 401 approval by the North Dakota Department of Health.

Most of the wetlands within the corridor are isolated basins and not under USACE or North Dakota Department of Health jurisdiction. Wetlands within US Fish and Wildlife Service (USFWS) easements on private property are under USFWS jurisdiction. The wetland delineations within the USFWS easements require USFWS review and approval. If wetland impacts are identified in

USFWS easements that cannot be avoided, then PPM will work with the USFWS to obtain permits for the impact. Permanent impacts to wetlands and waters will be mitigated according to regulatory requirements.

2.0 INTRODUCTION

PPM is proposing to construct a utility-scale wind farm, the Rugby Wind Farm, in Pierce County, North Dakota (Figure 1). The Project will be approximately 150 MW in size, consisting of up to 100 wind turbine generators. A 9.5 mile, 230 kV transmission line is proposed between the Project Substation located in Section 28 of Spring Lake Township and the existing Rugby Substation located in Section 7 of Meyer Township. HDR conducted a wetland delineation of the proposed route on June 7 and 8, 2005. The transmission route location is presented in Table 1 and Figure 2.

Table 1
Transmission Route Location

Township Name	Township	Range	Sections
Meyer	156N	72W	6, 7
Torgerson	157N	72W	3, 4, 10, 15, 21, 22, 28, 33
Spring Lake	158N	72W	28, 33

HDR conducted a wetland determination for PPM along the proposed transmission route located between the proposed Project Substation and the existing Rugby Substation. The proposed transmission route parallels the existing 230 kV transmission line and will be located approximately 120 to 150 feet east of the existing line. PPM will attempt to match placement of structures to minimize the disturbance to agricultural lands. The maximum span of the proposed transmission line design is approximately 1,000 feet and structure placement will be adjusted to minimize the placement of transmission poles in wetlands.

3.0 METHODS

The transmission route is primarily cropped agricultural land. The wetland determination was conducted using a combination of two methods: "Routine Determination, Onsite Inspection Unnecessary" and "Routine Determination, Onsite Inspection Necessary" outlined in the *1987 Corps of Engineers Wetlands Delineation Manual* (USACE, 1987).

Potential wetland areas were initially identified within the route using U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, Farm Service Agency (FSA) 2003 color aerial photographs, U.S. Geological Survey (USGS) topographic maps, and the Pierce County Soil Survey. This information was synthesized for the Onsite Inspection Unnecessary determinations and delineations. In addition, the mapped information on NWI wetlands, hydric soils, and USGS topographic streams was field evaluated by inspecting the site for hydrophytic vegetation and wetland hydrology.

The Onsite Inspection Necessary determinations and delineations focused on areas along the route where the proposed approximate pole locations are near wetlands or waterways identified using off-site methods. HDR personnel surveyed the areas for the three wetland parameters, which are (a) hydric soils, (b) surface or subsurface hydrology, and (c) hydrophytic vegetation. If all three indicators are present during the growing season, then the area is considered a wetland. The onsite delineations were conducted June 7 and 8, 2005. Ten wetland areas were delineated in the proposed route using the Onsite Inspection Necessary procedure.

At each sample plot a soil pit was dug for observation of soil and hydrologic characteristics. The vegetation was analyzed for plant species dominance in a five-foot radius from the sample pit for the herb and shrub layers and in a 30-foot radius for trees. The wetland indicator status of plants was determined using the *USFWS 1988 National List of Plant Species that Occur in Wetlands (Region 4)*, which includes North Dakota. Hydric soil characteristics were identified using methods described in the 1987 manual and the *Hydric Soil Field Guide for the United States* (USDA, NRCS, 2003). Nine wetland determination data sheets were prepared for the project area due to the similarity of wetland characteristics across the site.

Data collection points and the wetland boundaries were mapped using a Trimble GeoXT Global Positioning System (GPS). Using ARCGIS, an accurate delineation map was created from the GPS data providing a permanent record of the onsite delineation wetland boundaries in the project area.

Meteorological conditions on June 7 and 8, 2005 in the Rugby vicinity were extremely wet. On the days of the delineation, it was rainy with a maximum temperature around 64°F. There was a significant amount of surface ponding due to overland flow. Precipitation recorded in Minot, North Dakota for May 9 – June 8, 2005 was 7.88 inches. For the month of May, the normal value is 2.31 inches; for the month of June, 3.15 inches is the average. The rainfall during the month before the

delineation was therefore over double the normal average amount for that time period. Appendix A presents the historic monthly climatic summary for Rugby, North Dakota. The historical precipitation average for the month of June in Rugby is 3.08 inches.

4.0 ROUTINE DETERMINATION, ONSITE INSPECTION UNNECESSARY RESULTS

The following resources were synthesized for the Onsite Inspection Unnecessary determinations and delineations: the USGS topographic quadrangle map (Figure 2), FSA 2003 Aerial Photograph with USFWS NWI Map (Figure 3), and the Pierce County Soil Survey Information (Figure 4).

4.1 NWI Map Review

Wetlands along the route were initially identified by reviewing USFWS NWI Map. The USFWS uses aerial photographs as a basis for NWI maps. The NWI map provides guidance in determining areas to be evaluated for wetland characteristics, but should not be used as the sole basis for wetland determinations. Wetlands along the route represent typical glacial prairie pothole wetlands. The NWI wetlands along the route are all palustrine emergent wetlands. No lacustrine, riverine, or floodplain wetlands were identified along the route. The NWI wetland types and their acreage are presented in Table 2. See Figure 3 for the NWI map of wetland locations.

Table 2
NWI Wetland Types and Acreages Along Transmission Route

Wetland Acreages (by type)		
Cowardin Classification	**Count**	**Acres[1]**
Palustrine Emergent/Palustrine Aquatic Bed, Semipermanently Flooded (PEM/ABF)	3	3.41
Palustrine Emergent Temporarily Flooded (PEMA)	7	1.17
Palustrine Emergent Seasonally Flooded (PEMC)	3	3.33
Palustrine Emergent Seasonally Flooded, Partially Drained (PEMCd)	2	7.91
Total, All Types	15	15.82

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

4.2 Aerial Photography

The FSA aerial photographs were evaluated to review historical (1984 and 1993) and current (2003) site conditions. Based on historical aerial photographs it appears that water levels have been rising and there has been expansion of wetland size in the Project vicinity over the past 20 years. Flooded farm buildings and low maintenance roadways in the area also indicate rising water levels. Wetland drainage is complicated in the Project vicinity by the isolated nature of most of the wetlands. The NWI mapped wetlands in general identify the wetland areas but do not seem accurate based on current site conditions, where the actual wetland area may be smaller or larger than mapped.

4.3 Pierce County Soils

The Pierce County Soil Survey was used to identify the soil units in the proposed transmission route (Figure 4). Hydric soils are mapped in the vicinity of the route in Sections 28 and 33 in Spring Lake Township, Sections 3, 10, 15, 21, 22 and 33 in Torgerson Township, and Sections 6 and 7 in Meyer Township. Table 1 presents a summary of soils mapped for Pierce County in the route and identifies hydric soils and drainage classifications.

Table 3
Pierce County Soils Along Transmission Route

Soil Map Unit	Soil Name	Hydric Soil	Hydric Criteria	Drainage Classification
1	TONKA SILT LOAM	Yes	2B3, 3	Poorly drained
2	PARNELL SILTY CLAY LOAM	Yes	2B3, 3	Very poorly drained
15	BEARDEN SILTY CLAY LOAM, SALINE	No		Somewhat poorly drained
27C	MADDOCK LOAMY FINE SAND, 6-15% SLOPES	No		Well drained
35	EMBDEN FINE SANDY LOAM, 0-3% SLOPES	No		Moderately well drained
36B	EMBDEN-EGELAND FINE SANDY LOAMS, 3-6% SLOPES	No		Moderately well drained
37C	EGELAND FINE SANDY LOAMS, 6-9% SLOPES	No		Well drained
39	SWENODA FINE SANDY LOAM, 0-3% SLOPES	No		Moderately well drained
41B	SWENODA FINE SANDY LOAM, 3-6% SLOPES	No		Moderately well drained
42C	SWENODA FINE SANDY LOAM, 6-9% SLOPES	No		Well drained
57	VALLERS LOAM	Yes	2B3	Poorly drained

Table 3 (Continued)
Pierce County Soils Along Transmission Route

Soil Map Unit	Soil Name	Hydric Soil	Hydric Criteria	Drainage Classification
60	EMRICK LOAM, 0-3% SLOPES	No		Moderately well drained
62	EMRICK-HEIMDAL LOAMS, 0-3% SLOPES	No		Moderately well drained
62B	EMRICK-HEIMDAL LOAMS, 3-6% SLOPES	No		Moderately well drained
62C	HEIMDAL-EMRICK LOAMS, 6-9% SLOPES	No		Well drained
64C	HEIMDAL-ESMOND LOAMS, 3-9% SLOPES	No		Well drained
65	FRAM LOAM, 0-3% SLOPES	No		Somewhat poorly drained
66	GARDENA SILT LOAM, 0-3% SLOPES	No		Moderately well drained
70	GLYNDON SILT LOAM, 0-3% SLOPES	No		Somewhat poorly drained
72	GLYNDON SILT LOAM, SALINE, 0-3% SLOPES	No		Somewhat poorly drained
74	BORUP SILT LOAM	Yes	2B3, 3	Poorly drained
75	BORUP SILT LOAM, SALINE	Yes	2B3	Poorly drained
80	CATHAY LOAM, 0-3% SLOPES	No		Moderately well drained
80B	CATHAY LOAM, 3-6% SLOPES	No		Moderately well drained
88B	ARVILLA SOILS, 0-6% SLOPES	No		Somewhat excessively drained
89C	SIOUX SOILS, 1-15% SLOPES	No		Excessively drained
96	MAUVAIS LOAM, 0-3% SLOPES (AQUENTS)	No		Somewhat poorly drained
100	STIRUM SOILS, 0-3% SLOPES	Yes	2B3, 3, 4	Poorly drained
104	SOUTHAM SOILS, 0-3% SLOPES (AQUOLLS)	Yes	2B3, 3	Very poorly drained

4.4 Field Review

On June 7 and 8, 2005, the mapped information was field evaluated by inspecting the site for hydrophytic vegetation and wetland hydrology. The structure placement along the route avoids many of the identified wetlands by spanning the feature. An onsite wetland inspection was conducted in areas where wetlands were identified along the route in the vicinity of proposed approximate pole locations.

5.0 ROUTINE DETERMINATION, ONSITE INSPECTION NECESSARY RESULTS

The Onsite Inspection Necessary determinations and delineations focused on identified wetlands along the route in the vicinity of proposed approximate pole locations. HDR personnel field surveyed these identified areas for the three wetland parameters, which are (a) hydric soils, (b) surface or subsurface hydrology, and (c) hydrophytic vegetation.

A summary of the wetland data sheets for the route are presented in Table 4. Copies of the data sheets are attached in Appendix C. Nine wetland determination data sheets were prepared for the project area due to the similarity of wetland characteristics across the site. Plots were collected at five wetland locations and four upland locations along the transmission route. Wetland boundaries were GPS delineated on 10 wetlands.

Table 4
Wetland Determination Data Sheet Summary

Plot Number	Plot Location	Hydrophytic Vegetation	Hydric Soils	Wetland Hydrology	Wetland Determination
1	NE1/4, S7, T156N, R72W	Yes	Yes	Yes	Yes
2	NE1/4, S7, T156N, R72W	Yes	Yes	Yes	Yes
3	NE1/4, S7, T156N, R72W	No	No	No	No
4	NW1/4, S28, T158N, R72W	Yes	Yes	Yes	Yes
5	NW1/4, S28, T158N, R72W	No	No	Yes	No
6	SW1/4, S3, T157N, R72W	Yes	Yes	Yes	Yes
7	SW1/4, S3, T157N, R72W	No	Yes	No	No
8	SE1/4, S33, T157N, R72W	Yes	Yes	Yes	Yes
9	SE1/4, S33, T157N, R72W	No	Yes	No	No

The onsite wetland inspection is presented below in the order from the north end of the route at the Project Substation in Section 28 of Spring Lake Township to the south end of the route at the Rugby Substation in Section 7 of Meyer Township. Photographs of the wetlands are presented in Appendix D.

Section 28, T158N, R72 W (Figures 5 and 6): A wetland delineation was conducted on the wetland located in the northwest quarter of the section. Plots 4 (wetland) and 5 (upland) were evaluated to define the wetland boundary in the vicinity of the transmission route. The NWI mapped wetland is larger than the actual wetland. The wetland vegetation consisted primarily of reed canary grass (*Phalaris arundinacea*) and cattails (*Typha latifolia*), with sedge species (*Carex* sp.) scattered throughout. The soil at Plot 4 was gleyed coarse silt, consistent with the mapped unit of Glyndon silt loam. There were two inches of standing water at the wetland plot site. The vegetation at Plot 5 consisted

of Kentucky blue grass (*Poa pratensis*) and some reed canary grass. The soil was very dark loam, consistent with the mapped unit of Swenoda fine sandy loam. The soil was saturated at a depth of four inches.

The preferred substation site is Project Substation A, located in the southeast quarter of the section. The alternate substation site is Project Substation B, located in the northwest quarter of the section. If Project Substation B location is selected, then structure placement should avoid the delineated wetland. Small isolated wetlands were observed along the transmission route for the Project Substation B. The proposed approximate pole locations along the east-west route from Project Substation B do not impact those NWI mapped wetlands. USFWS has a wetland easement in the southern half of the southeast quarter of the section.

Section 33, T158N, R72 W (Figure 7): The proposed approximate pole locations along the transmission route do not impact the NWI mapped wetland basins in the section. USFWS has wetland easements for the entire section, except the northwest quarter.

Section 4, T156N, R72 W (Figure 8): The proposed approximate pole locations along the transmission route do not impact the NWI mapped wetland basins in the section. USFWS has wetland easements along the entire route in Section 4.

Section 3, T156N, R72 W (Figures 8 and 9): A wetland delineation was conducted on the wetland located in the southwest quarter of the section. Plots 6 (wetland) and 7 (upland) were evaluated to define the northern wetland boundary in the vicinity of the transmission route. The NWI mapped wetland is larger than the actual wetland. The vegetation at Plot 6 consisted of reed canary grass and curled dock (*Rumex crispus*). The soil was gleyed silt loam, consistent with the mapped unit of Tonka silt loam. There were four inches of standing water at Plot 6. At Plot 7, the vegetation consisted of reed canary grass, curled dock, dandelions (*Taraxacum officinale*), and scattered oats (*Avena sp.*). The soils were dark silty loam, consistent with the mapped soil unit, Tonka silt loam. The soil was not saturated within the upper 16 inches. The proposed approximate pole locations along the transmission route do not impact the delineated wetland basin. USFWS has wetland easements along the entire route in Section 3.

Section 10, T157N, R72 W (Figure 10): The proposed approximate pole locations along the transmission route do not impact the NWI mapped wetland basins in the section. The wetland boundary in the northwest quarter of the section was delineated and the PPM proposed approximate pole location is upland of the wetland boundary. Several of the transmission structures will be placed in existing windrows at the landowner request to minimize the impact to row cropping. USFWS has wetland easements along the entire route in Section 10.

Section 15, T157N, R72 W (Figure 11): The proposed approximate pole locations along the transmission route do not impact the NWI mapped wetland basins in the section. The southern

wetland boundary in the northwest quarter of the section was delineated and the PPM proposed approximate pole location is upland of the wetland boundary. USFWS has wetland easements along the entire route in Section 15.

Section 22, T157N, R72 W (Figure 12): The proposed approximate pole locations along the transmission route do not impact the NWI mapped wetland basins in the section. The wetland boundary in the northwest quarter was observed and the PPM proposed approximate pole location is upland of the wetland boundary. USFWS has no wetland easements along the route in Section 22.

Section 21, T157N, R72 W (Figure 12): The route through Section 21 is upland. The proposed approximate pole locations along the transmission route do not impact the NWI mapped wetland basins in the section. USFWS has wetland easements for part of the route in the northern half of Section 21.

Section 28, T157N, R72 W (Figure 13): The proposed approximate pole locations along the transmission route do not impact the NWI mapped wetland basins in the section. The wetland boundary in the southeast quarter of the section was delineated and the PPM proposed approximate pole location is upland of the wetland boundary. Recent excavation has occurred at the southeast portion of this wetland, and it is assumed that the resulting basin will develop wetland characteristics. USFWS has no wetland easements in Section 28.

Section 33, T157N, R72 W (Figures 14 and 15): A wetland delineation was conducted on the wetland located in the southeast quarter of the section. Plots 8 (wetland) and 9 (upland) were evaluated to define the wetland boundary in the vicinity of the transmission route. The NWI mapped wetlands are smaller than the delineated wetland area. The vegetation at Plot 8 consisted mainly of sedges, with cattails scattered throughout. The soil was a gleyed silt loam, consistent with the mapped unit of Borup silt loam. There were four inches of standing water at Plot 8. The vegetation at Plot 9 consisted of Kentucky blue grass, dandelions, Canadian goldenrod (*Solidago canadensis*), and field sow thistle (*Sonchus arvensis*). The soil was a dark silty clay loam that was consistent with the mapped unit, Borup silt loam. The soil was not saturated within the upper 16 inches.

The proposed approximate pole locations along the transmission route do not impact the NWI mapped wetland basins in the section. However, the delineated wetland in the southeast quarter would include one proposed approximate pole location within the wetland boundary. USFWS has no wetland easements along the route in Section 28.

The USACE has identified an intermittent stream that flows in Section 33, T157N, R72W; Section 6, T156N, R72W; and Section 1, T156N, R73W as a jurisdictional water (Appendix E). Nexus to the jurisdictional water occurs when wetland is within the ordinary plane of high water, a contiguous wetland, or contiguous hydric soil. The delineated wetland is adjacent to the jurisdictional water and

fill activities in the wetland would require regulatory review and approval by the USACE, under Section 404 of the Clean Water Act, and the North Dakota Department of Health, under Section 401 of the Clean Water Act.

Section 6, T156N, R72 W (Figure 16): The proposed approximate pole locations along the transmission route do not impact the NWI mapped wetland basins in the section. Wetland boundaries in the northeast and southeast quarters of the section were delineated and the PPM proposed approximate pole locations are upland of the wetland boundaries. USFWS has no wetland easements along the route in Section 6.

Section 7, T156N, R72 W (Figures 16 and 17): A wetland delineation was conducted on the wetland located in the northeast quarter of the section. Plots 1 and 2 (both wetland), and 3 (upland) were evaluated to define the wetland boundary in the vicinity of the transmission route. The NWI mapped wetlands are smaller than the delineated wetland. The vegetation at Plots 1 and 2 consisted of reed canary grass, Kentucky blue grass, field sow thistle, Canadian goldenrod, yellow sweet clover (*Melilotus officinalis*) and silverweed (*Potentilla anserina*). The soil was a gleyed silt, consistent with the mapped soil unit of Borup silt loam. The soil was saturated at the surface at these Plots. At Plot 3, the vegetation consisted generally of Kentucky blue grass and sweet yellow clover, with scattered Russian olive trees (*Eleagnus angustifolia*). The soil was a dark silty loam, and did not match the mapped soil profile (Glyndon silt loam); it is possible that the soil in this area of upland is fill material. The soil was not saturated within the upper 16 inches.

The proposed approximate pole locations along the transmission route do not impact the delineated wetland in the section. USFWS has no wetland easements along the route in Section 6.

6.0 CONCLUSIONS

PPM will span and avoid wetland impacts to the extent practicable. Based on the field review of the Onsite Inspection Unnecessary determinations and the 10 wetland delineations, it appears that PPM is avoiding placing transmission structures in wetlands along the entire route, except for one proposed approximate structure in the wetland located in Section 33 in Torgerson Township. The wetland in Section 33 is approximately 1,500 feet wide, thus an impact is anticipated due to the approximate 1,000 ft design limitation between transmission structures. This wetland is a jurisdictional water; permanent and temporary impacts will require Section 404 review and permit approval by the USACE prior to construction. Fill activity in Section 33 will be reviewed by the USACE for Nationwide 12 (Utility Line Activity) and Nationwide 33 (Temporary Construction, Access and Dewatering) Permits. There is a 0.5 acre fill limit for use of Nationwide 12 Permit. In addition, impacts to jurisdictional waters also require review and Section 401 approval by the North Dakota Department of Health.

Most of the wetlands within the corridor are isolated basins and not under USACE or North Dakota Department of Health jurisdiction. Wetlands within USFWS easements on private property are under USFWS jurisdiction. The wetland delineations within the USFWS easements require USFWS review and approval. If wetland impacts are identified in USFWS easements that cannot be avoided, then PPM will work with the USFWS to obtain permits for the impact. Permanent impacts to wetlands and waters will be mitigated according to regulatory requirements.

7.0 REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States*. United States Department of Interior, Fish and Wildlife Service. FWS/OBS-79/31. 103 p.

USGS Northern Prairie Research Center. 2005. Climate of North Dakota. http://www.npwrc.usgs.gov/resource/othrdata/climate

National Weather Service. 2005. June Climate report for Minot, North Dakota. http://www.crh.noaa.gov/data/BIS/CLIBIS

U.S. Army Corps of Engineers. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS, 100 pp. and appendices.

U.S. Department of Agriculture, NRCS. 2003. *Field Indicators of Hydric Soils in the United States – Guide for Identifying and Delineating Hydric Soils, Version 5.01*. G.W. Hurt, P.M. Whited, and R.F. Pringle (eds.). USDA, NRCS in cooperation with the National Technical Committee for Hydric Soil, Fort Worth, TX.

U.S. Department of Agriculture, FSA. 2003 NAIP Aerial*, Pierce County*.

U.S. Department of Agriculture, 1990. *Soil Survey of Pierce County, North Dakota*. United States Department of Agriculture – Soil Conservation Service and North Dakota Agricultural Experiment Station. Washington, D.C. 230 p.

U.S. Department of the Interior, Fish and Wildlife Service. 1997. *National List of Vascular Plant Species that Occur in Wetlands: 1996 National Summary*. St. Petersburg, FL.

U.S. Fish and Wildlife Service. 1988. *National List of Vascular Plant Species That Occur in Wetlands: 1988 National Summary*. United States Department of Interior, Fish and Wildlife Service.

U.S. Fish and Wildlife Service. 1980. N*ational Wetlands Inventory, Rugby and Rugby NW, North Dakota, Quadrangles*. Washington, D.C.

U.S. Geological Survey. 1993. *Digital Raster Graphic, Rugby and Rugby NW, North Dakota, Quadrangles*.

Figures

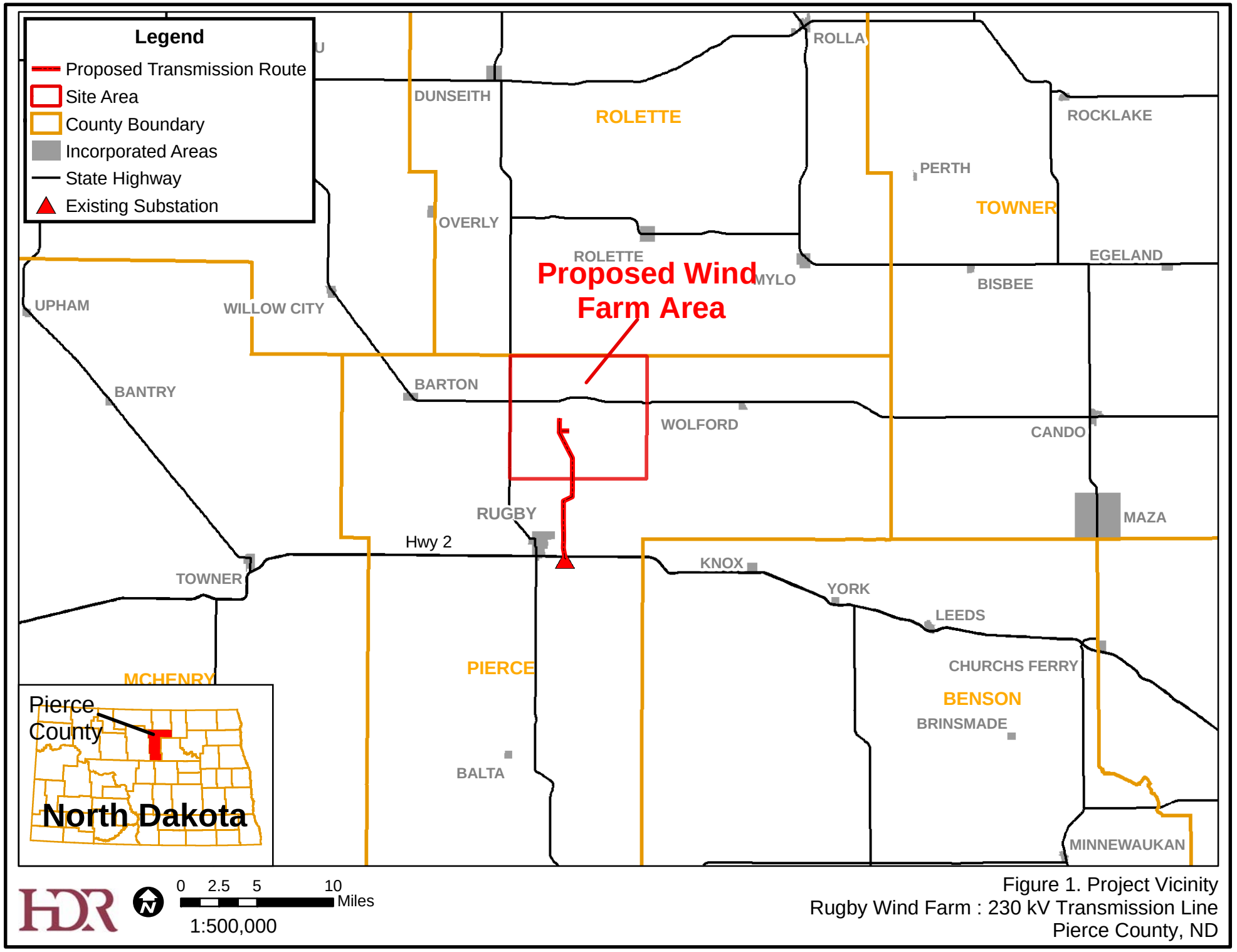


Figure 1. Project Vicinity
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

Hwy 17

R72W

R71W

T158N

T157N

T156N

Rugby

HWY2

HWY3

Legend

- Existing Substation
- Proposed Substation Boundary
- Proposed Route
- Alternative Substation Route
- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line
- County Boundary
- County Road
- State Highway

0 0.5 1 2 Miles

HDR

Figure 2. Project Location Map
USGS Topographic Map
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

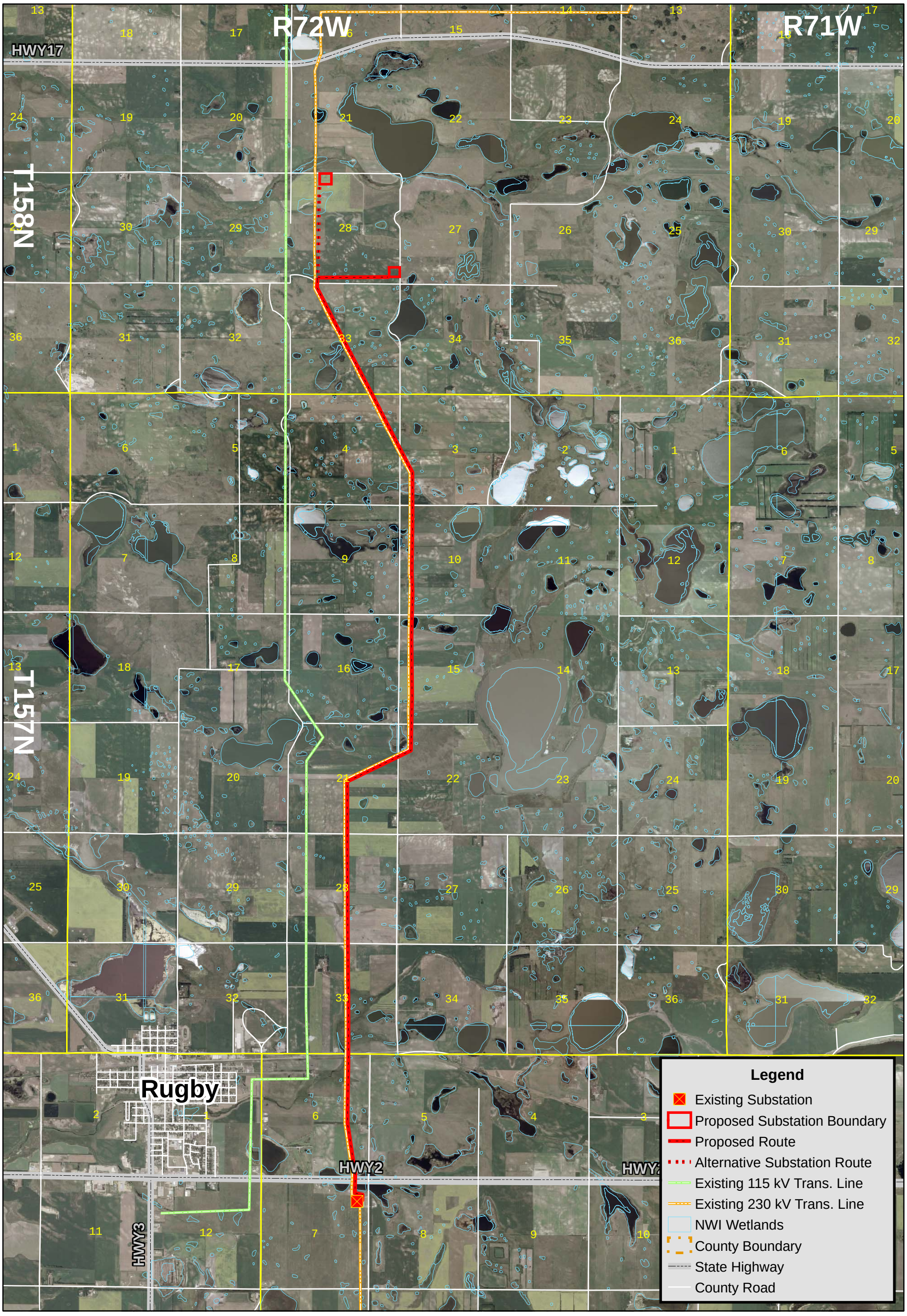


Figure 3. Aerial with NWI Wetlands Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

R72W

North Half

R72W

South Half

T158N

T157N

T156N

Match Line

Match Line

RUGBY

HWY2

HWY2

Legend

- Existing Substation
- Proposed Route
- Alternative Substation Route
- Proposed Substation Boundary
- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line
- Sections
- County Boundary
- Township Boundaries
- Incorporated Areas
- State Highway

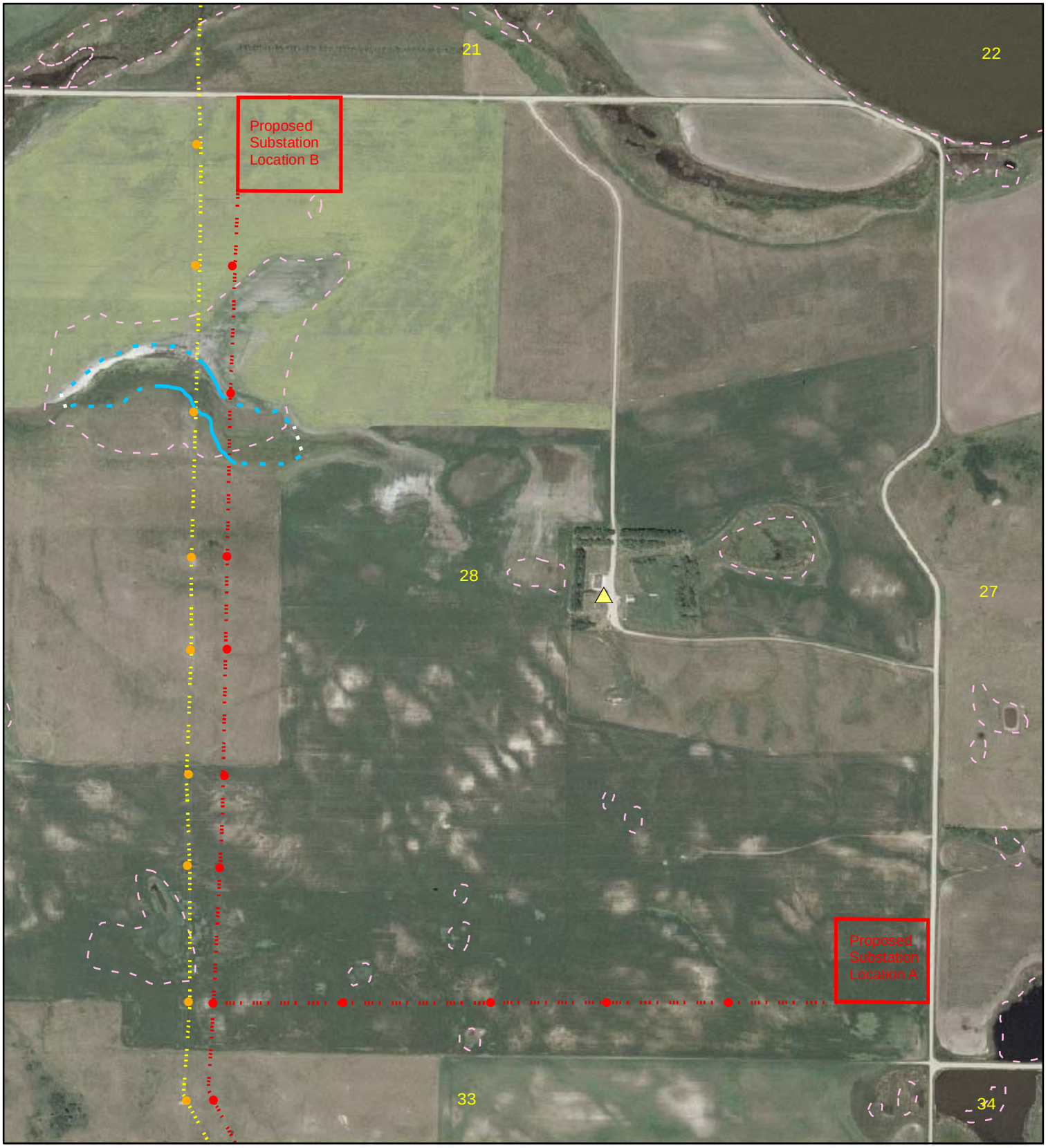
Pierce County Soils

- Hydric Soils
- Non-hydric Soils

0 0.25 0.5 1 Miles

HDR

Figure 4. Pierce County Soils Map
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND



Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Residence Location

0 250 500 1,000 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 5

Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Delineation Plot
- Residence Location

0 250 500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 6

Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Residence Location

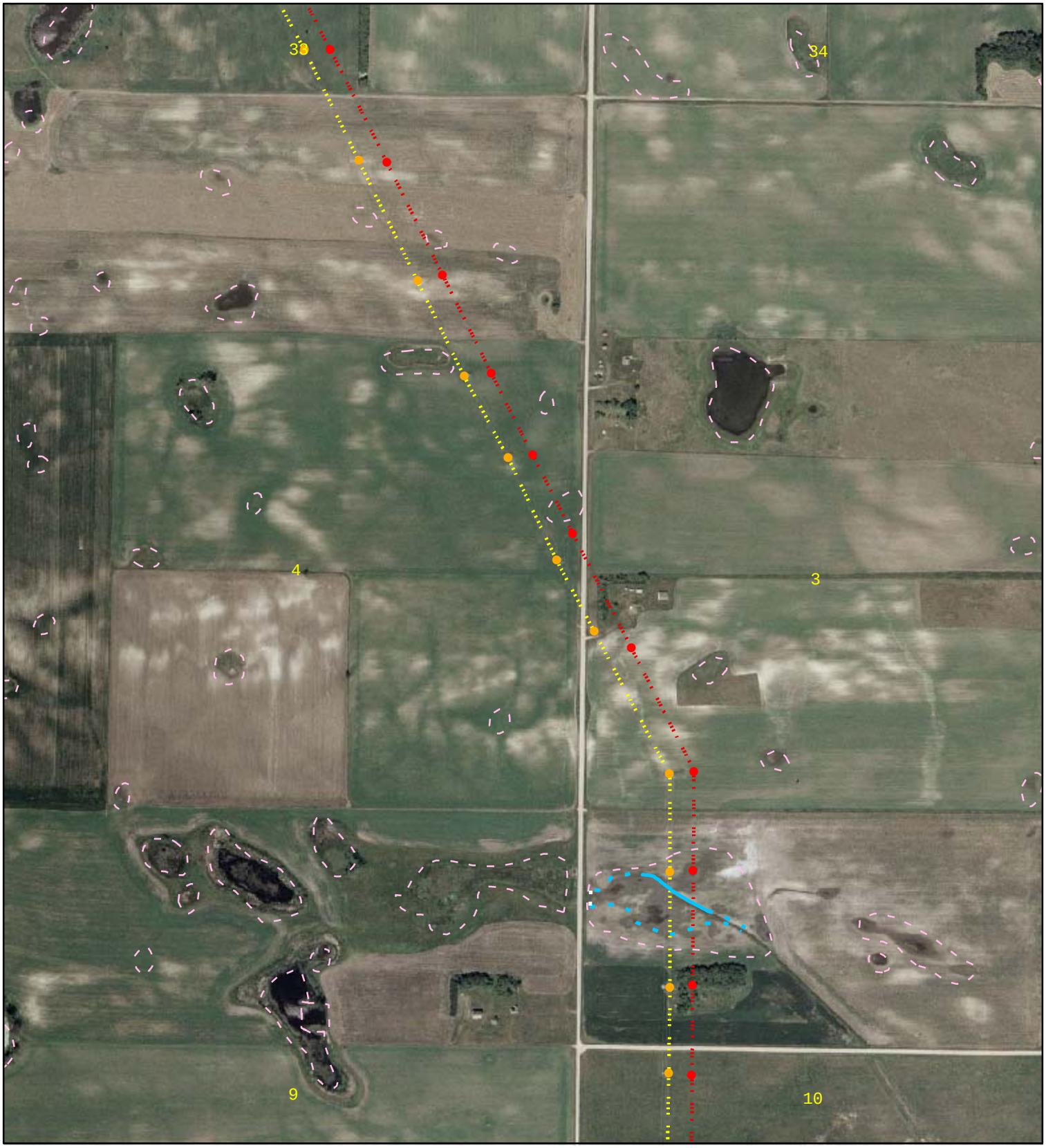
0 250 500 1,000 1,500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 7



Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Residence Location

0 250 500 1,000 1,500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 8

Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Delineation Plot
- Residence Location

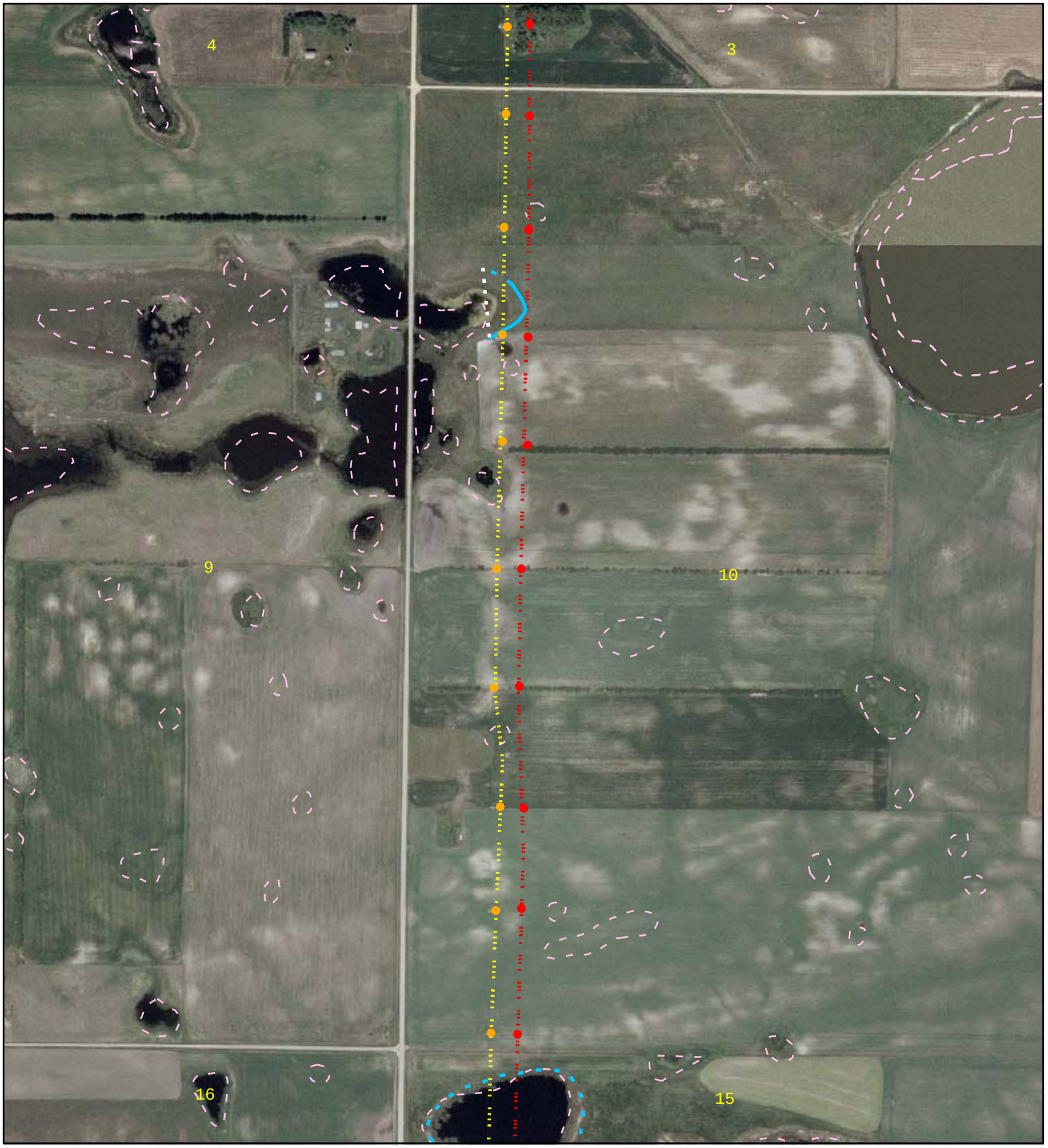
0 250 500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 9



Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Residence Location

0 250 500 1,000 1,500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 10

Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Residence Location

0 250 500 1,000 1,500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 11

Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Residence Location

0 250 500 1,000 1,500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 12

Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Residence Location

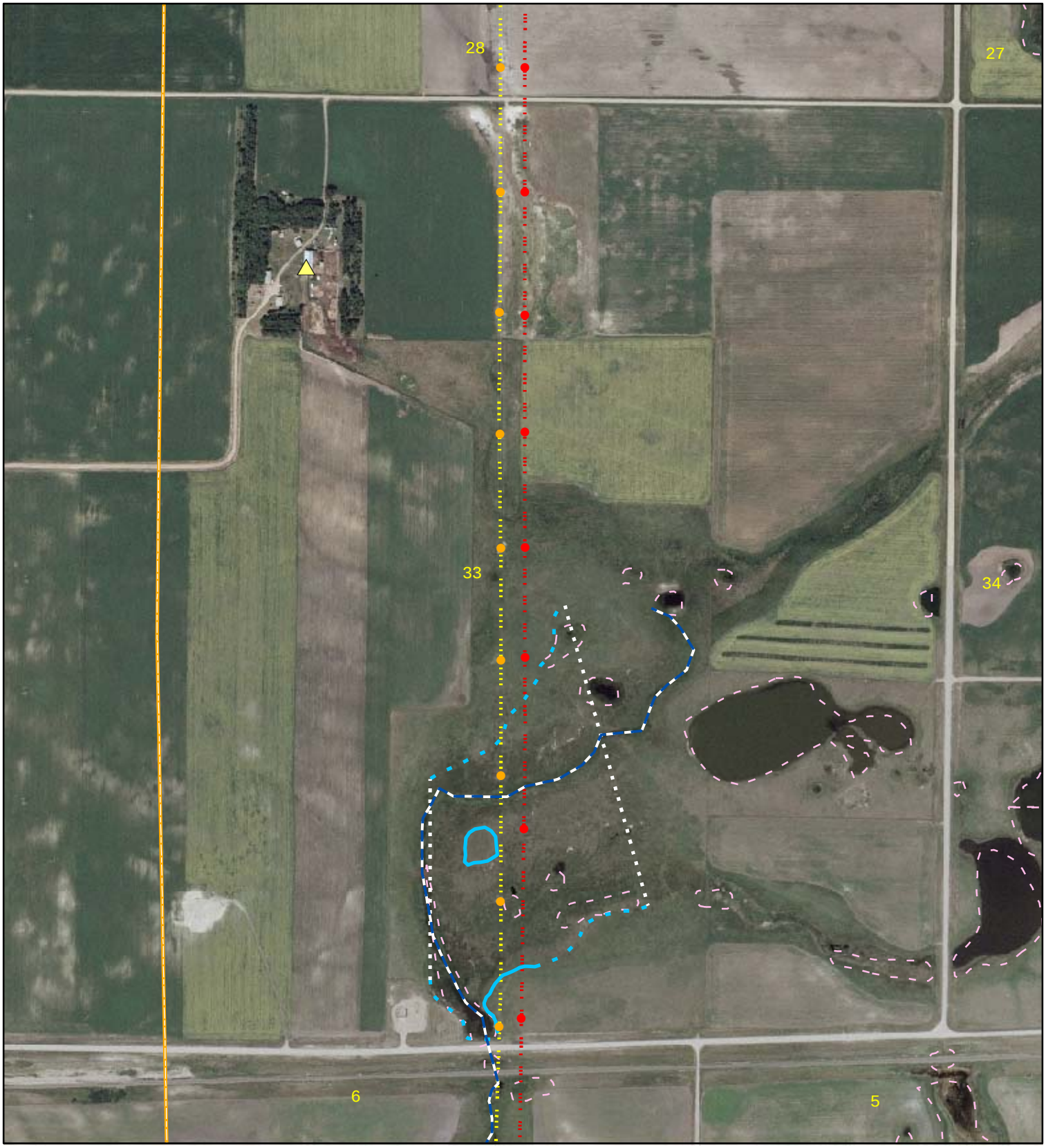
0 250 500 1,000 1,500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 13



Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Residence Location

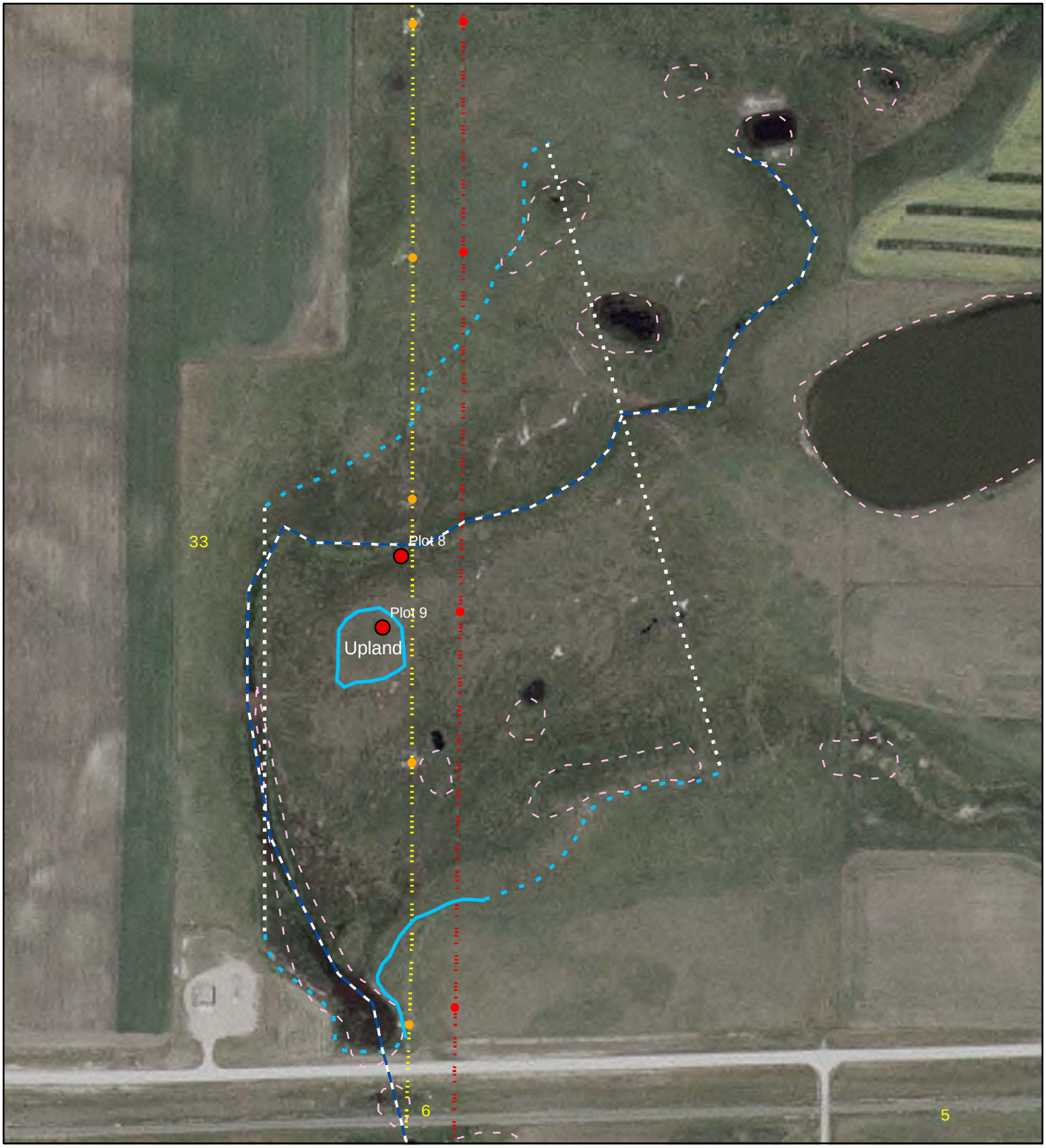
0 250 500 1,000 1,500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 14



Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Delineation Plot
- Residence Location

0 250 500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 15

Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Residence Location

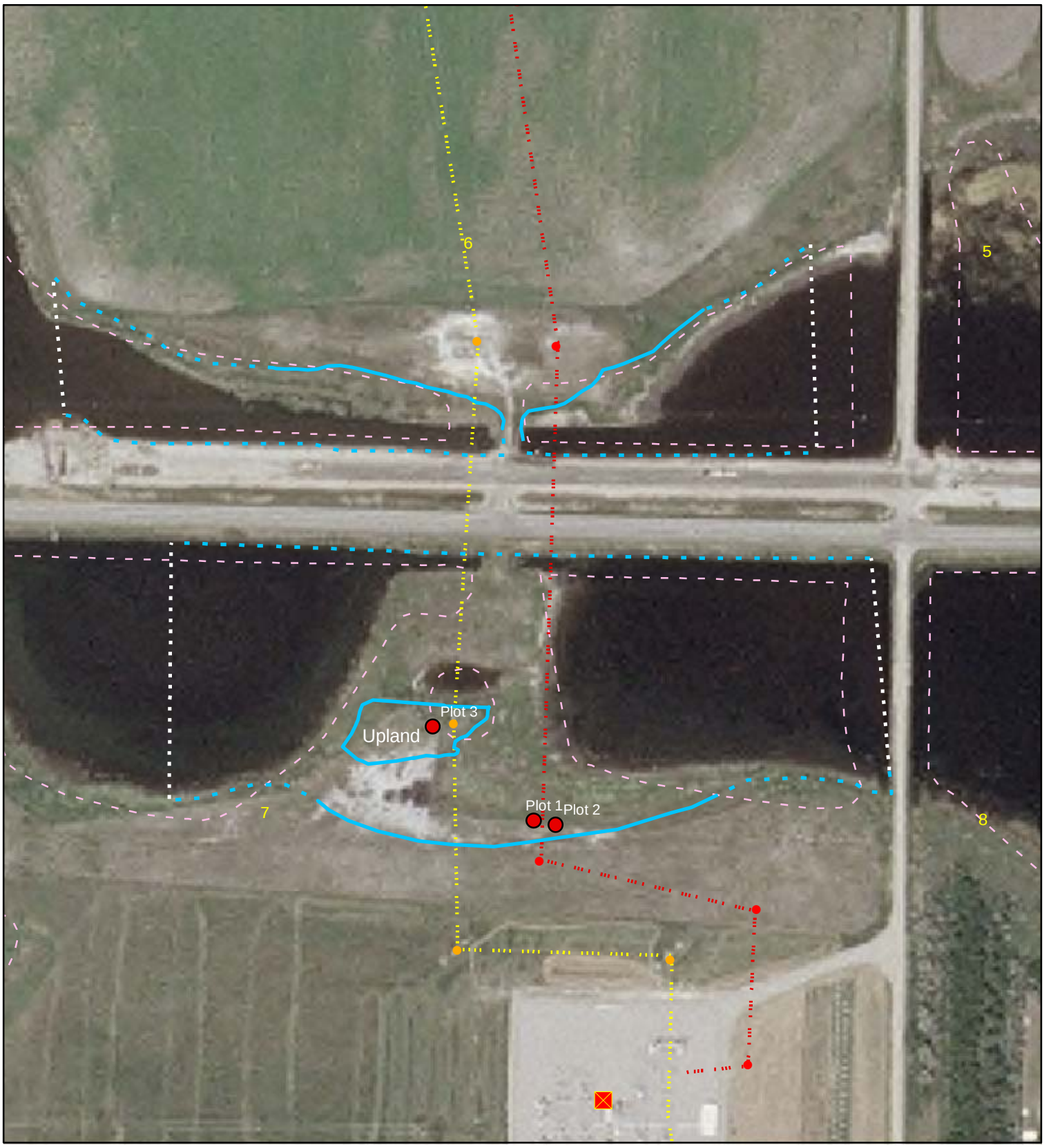
0 250 500 1,000 1,500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 16



Legend

- Proposed Substation Location
- Existing Substation

Transmission Poles

- Existing Pole Location
- Proposed Approximate Pole Location
- Proposed Route

Transmission Line

- Existing 115 kV Trans. Line
- Existing 230 kV Trans. Line

Jurisdictional Waters

- Intermittent Stream (USGS)
- NWI Wetlands

Delineated Wetland Boundaries

- Delineated Wetland Boundary
- Estimated Wetland Boundary (Field Obs.)
- Edge of Study Area (Not Wet. Bnd.)
- Delineation Plot
- Residence Location

0 250 500 Feet

N

Wetland Delineation Map
2003 FSA Aerial Photos
Rugby Wind Farm : 230 kV Transmission Line
Pierce County, ND

HDR

Figure 17

Appendix A
Climatic Data

Daily Climatic Data
Minot, North Dakota Station
May-June 2005

Date	Precipitation (in.)	Maximum Temp. (F)	Minimum Temp. (F)
5/9/05	0.01	55	47
5/10/05	0.00	64	32
5/11/05	0.00	46	21
5/12/05	0.19	42	32
5/13/05	0.03	57	35
5/14/05	0.00	50	33
5/15/05	0.00	62	28
5/16/05	T	69	42
5/17/05	0.01	69	50
5/18/05	0.33	74	54
5/19/05	0.00	82	49
5/20/05	T	80	58
5/21/05	1.60	70	55
5/22/05	0.00	74	50
5/23/05	T	72	50
5/24/05	0.00	73	51
5/25/05	0.00	66	46
5/26/05	T	54	46
5/27/05	T	56	45
5/28/05	0.06	51	40
5/29/05	0.15	67	42
5/30/05	T	67	40
5/31/05	0.28	72	47
6/1/05	3.29	70	50
6/2/05	0.05	71	53
6/3/05	T	77	51
6/4/05	0.00	76	52
6/5/05	0.01	65	53
6/6/05	0.73	74	48
6/7/05	0.66	64	52
6/8/05	0.45	56	50

Monthly Climate Summary
Rugby, North Dakota Station
1971-2000

Element	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Mean °F	5.4	13.6	25.7	42.5	56.4	64.9	69.0	67.9	56.6	44.0	25.2	10.7	18.35
Average Total Precipitation (in)	0.49	0.49	0.8	1.28	2.31	3.08	3.21	2.28	1.96	1.27	0.69	0.5	14.87
Average Total Snowfall (in)	7.9	4.6	4.3	2.7	0.3	0.0	0.0	0.0	0.0	1.3	6.5	5.0	32.6

Appendix B
Hydric Soil Criteria

NATURAL RESOURCES CONSERVATION SERVICE

DEFINITION OF A HYDRIC SOIL:

A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

Hydric soils along with hydrophytic vegetation and wetland hydrology are used to define wetland soils.

HYDRIC SOIL CRITERIA CODES AND DEFINITIONS

1. All Histosols, except Folists, or
2. Soils in the Aquic suborders, great groups, or subgroups, Albolls suborder, Aquisalids, Pachic subgroups, or Cumulic subgroups that are:
    A. Somewhat poorly drained with a water table equal to 0.0 feet (ft) from the surface in the growing season, or
    B. Poorly drained or very poorly drained and have either:
        (1) water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in), or for other soils
        (2) water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or
        (3) water table at less than or equal to 1.0 ft from surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or
3. Soils that are frequently ponded for long durations or very long duration during the growing season, or
4. Soils that are frequently flooded for long duration or very long duration during the growing season.

Appendix C
Wetland Determination Data Sheets

DATA FORM
ROUTINE WETLAND DETERMINATION

		Plot #:	1
Project No.:	9624-164	**Date:**	06-07-05
Applicant/Owner:	PPM Energy	**Site:**	Rugby Transmission line
Plot Location:	Just N of substation, S edge of wetland S of Highway 2	**County:**	Pierce
Topographic Location:	At edge of fringe wetland of lake S of highway	**State:**	ND
Section: NE ¼ Section 7	**Township:** 156 N	**Range:**	72W
Do Normal Circumstances exist on the site?	Yes (No)	**Explain:**	
Are soils, vegetation, hydrology, Significantly disturbed? **N**		**Explain**:	

VEGETATION (* Dominant Plant Species)

	Herb Stratum (100% Total Cover)	% Cover	Ind. Status		Shrub/Sapling Stratum (0% Total Cover) (5' radius)	% Cover	Ind. Status
1.	*Phalaris arundinacea**	15	FACW+	1.			
2.	*Poa pratensis*	5	FAC-	2.			
3.	*Melilotus officinalis**	30	FACU-	3.			
4.	*Sonchus arvensis**	30	FAC	4.			
5.	*Solidago canadensis*	5	FACU	5.			
6.	*Eleocharis obtusa*	2	OBL		**Tree Stratum (0% Total Cover) (30' radius)**	**% Cover**	**Ind. Status**
7.	*Triglochan maritima*	3	OBL	1.			
8.	*Ranunculus anserina*	10	OBL	2.			
9.				3.			

Remarks:

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 2/3 =66%

Hydrophytic Vegetation Criterion Met? (Yes) No **NWI Class (Vegetation = EM, SS, FO):** EM

SOILS

Map Unit Name: Borup silt loam, saline **Drainage Class:** Poorly Drained

Taxonomy: Coarse silty, frigid Typic Calciaquoll **Confirm Mapped Type?** (Yes) No

Depth	Horizon	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Texture, Concretions, Structure, Other
0-16	A	N 2/0	none		Silt

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☒ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Mottled (within 10")
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☒ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Hydric Soil Criterion/Indicators Met? (Yes) No

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators:

- ☐ Inundated
- ☒ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Depth of Inundation:	N/A	(in.)
Depth to Free Water in Pit:	12”	(in.)
Depth to Saturation:	0”	(in.)

Recorded Data Available (aerials, gauge)?

Explain:

Remarks:

Wetland Hydrology Criterion/Indicators Met? (Yes) No

WETLAND DETERMINATION

Is this plot a wetland? (Yes) No

Comments: The plot is in the transitional zone, at S edge of wetland area

Determined by: S Emery & J Pickle

DATA FORM
ROUTINE WETLAND DETERMINATION

		Plot #:	2
Project No.:	9624-164	**Date:**	06-07-05
Applicant/Owner:	PPM Energy	**Site:**	Rugby Transmission line
Plot Location:	Just N of substation, S edge of wetland S of Highway 2 – 100'east of Plot 1	**County:**	Pierce
Topographic Location:	At edge of fringe wetland of lake S of highway	**State:**	ND
Section:	NE ¼ Section 7 **Township:** 156 N	**Range:**	72W
Do Normal Circumstances exist on the site?	(Yes) No **Explain:**		
Are soils, vegetation, hydrology, Significantly disturbed? **N**	**Explain**:		

VEGETATION (* Dominant Plant Species)

	Herb Stratum (100% Total Cover)	% Cover	Ind. Status		Shrub/Sapling Stratum (0% Total Cover) (5' radius)	% Cover	Ind. Status
1	*Phalaris arundinacea*	3	FACW+	1.			
2	*Poa pratensis**	40	FAC-	2.			
3	*Melilotus officinalis*	15	FACU-	3.			
4	*Sonchus arvensis**	20	FAC	4.			
5	*Potentilla anserina**	20	OBL	5.			
6	*Ranunculus cymbalaria*	2	OBL		**Tree Stratum (0% Total Cover) (30' radius)**	**% Cover**	**Ind. Status**
7				1.			
8				2.			
9				3.			

Remarks:

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 2/3 =66%

Hydrophytic Vegetation Criterion Met? (Yes) No **NWI Class (Vegetation = EM, SS, FO):**

SOILS

Map Unit Name: Borup silt loam, saline **Drainage Class:** Poorly Drained

Taxonomy: Coarse silty, frigid Typic Calciaquoll **Confirm Mapped Type?** (Yes) No

Depth	Horizon	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Texture, Concretions, Structure, Other
0-18	A	N 2/0	none		Silt

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☒ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Mottled (within 10")
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☒ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks

Hydric Soil Criterion/Indicators Met? (Yes) No

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators:

- ☐ Inundated
- ☒ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Depth of Inundation:	N/A	(in.)	Explain:
Depth to Free Water in Pit:	16”	(in.)	
Depth to Saturation:	4”	(in.)	

Recorded Data Available (aerials, gauge)?

Remarks:

Wetland Hydrology Criterion/Indicators Met? (Yes) No

WETLAND DETERMINATION

Is this plot a wetland? Yes (No)

Comments: The plot is in the transitional zone, at S edge of wetland area, very edge of wetland/upland

Determined by: S Emery & J Pickle

DATA FORM
ROUTINE WETLAND DETERMINATION

		Plot #:	3
Project No.:	9624-164	**Date:**	06-07-05
Applicant/Owner:	PPM Energy	**Site:**	Rugby Transmission line
Plot Location:	Just N of substation, upland island by existing pole S of Highway 2	**County:**	Pierce
Topographic Location:	At edge of fringe wetland of lake S of highway	**State:**	ND
Section:	NE ¼ Section 7 **Township:** 156 N	**Range:**	72W
Do Normal Circumstances exist on the site?	(Yes) No **Explain:**		
Are soils, vegetation, hydrology, Significantly disturbed? **N**	**Explain**:		

VEGETATION (* Dominant Plant Species)

	Herb Stratum (80% Total Cover)	% Cover	Ind. Status		Shrub/Sapling Stratum (0% Total Cover) (5' radius)	% Cover	Ind. Status
1	*Poa pratensis**	70	FAC-	1.			
2	*Melilotus officinalis**	10	FACU-	2.			
3	*Sonchus arvensis*	5	FAC	3.			
4	*Potentilla anserina*	5	OBL	4.			
5	*Solidago canadensis*	5	FACU	5.			
6	*Taraxicum officinale*	5	FACU	**Tree Stratum (20% Total Cover) (30' radius)**		**% Cover**	**Ind. Status**
7				1.	*Eleagnus angustifolia*	100	FAC-
8				2.			
9				3.			

Remarks:

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0/3 =0%

Hydrophytic Vegetation Criterion Met? Yes (No) **NWI Class (Vegetation = EM, SS, FO):**

SOILS

Map Unit Name: Glyndon silt loam, saline **Drainage Class:** Poorly Drained

Taxonomy: Coarse silty, frigid Aeric Calciaquoll **Confirm Mapped Type?** Yes (No)

Depth	Horizon	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Texture, Concretions, Structure, Other
0-10	A	10YR 3/1	none		Silty loam
10 - 16	C	10YR 4/2	none		Sandy loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Mottled (within 10")
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Soil is in upland island. Possibly is fill, although did not seem overly disturbed. Did not match mapped soil profile.

Hydric Soil Criterion/Indicators Met? Yes (No)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Depth of Inundation:	N/A	(in.)	Explain:
Depth to Free Water in Pit:	> 16"	(in.)	
Depth to Saturation:	> 16"	(in.)	

Recorded Data Available (aerials, gauge)?

Remarks:

Wetland Hydrology Criterion/Indicators Met? Yes (No)

WETLAND DETERMINATION

Is this plot a wetland? Yes (No)

Comments:

Determined by: S Emery & J Pickle

DATA FORM
ROUTINE WETLAND DETERMINATION

		Plot #:	4
Project No.:	9624-164	**Date:**	06-08-05
Applicant/Owner:	PPM Energy	**Site:**	Rugby Transmission line
Plot Location:	At Southern edge of wetland located S of proposed Substation	**County:**	Pierce
Topographic Location:	Isolated basin surrounded by cropped fields	**State:**	ND
Section:	SW ¼ Section 28 **Township:** 158 N	**Range:**	72W
Do Normal Circumstances exist on the site?	(Yes) No **Explain:**		
Are soils, vegetation, hydrology, Significantly disturbed? **N**	**Explain**:		

VEGETATION (* Dominant Plant Species)

	Herb Stratum (100% Total Cover)	% Cover	Ind. Status		Shrub/Sapling Stratum (0% Total Cover) (5' radius)	% Cover	Ind. Status
1	*Phalaris arundinacea**	70	FACW+	1.			
2	*Typha latifolia**	20	OBL	2.			
3	*Carex sp.*	10	FACW	3.			
4				4.			
5				5.			
6					**Tree Stratum (0% Total Cover) (30' radius)**	**% Cover**	**Ind. Status**
7				1.			
8				2.			
9				3.			

Remarks: Carex sp. assumed to be FACW or wetter

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 2/2 =100%

Hydrophytic Vegetation Criterion Met? (Yes) No **NWI Class (Vegetation = EM, SS, FO):** EM

SOILS

Map Unit Name: Glyndon silt loam, 0 – 3% slope **Drainage Class:** Somewhat Poorly Drained

Taxonomy: Coarse silty, frigid Aeric Calciaquoll **Confirm Mapped Type?** (Yes) No

Depth	Horizon	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Texture, Concretions, Structure, Other
0-16"	A	N 2/0	none		Coarse silt

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☒ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Mottled (within 10")
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Hydric Soil Criterion/Indicators Met? (Yes) No

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators:

- ☒ Inundated
- ☒ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Depth of Inundation:	2”	(in.)
Depth to Free Water in Pit:	0”	(in.)
Depth to Saturation:	0”	(in.)

Recorded Data Available (aerials, gauge)?

Explain:

Remarks:

Wetland Hydrology Criterion/Indicators Met? (Yes) No

WETLAND DETERMINATION

Is this plot a wetland? (Yes) No

Comments:

Determined by: S Emery & J Pickle

DATA FORM
ROUTINE WETLAND DETERMINATION

		Plot #:	5
Project No.:	9624-164	**Date:**	06-08-05
Applicant/Owner:	PPM Energy	**Site:**	Rugby Transmission line
Plot Location:	Upland S of wetland located S of proposed substation	**County:**	Pierce
Topographic Location:	On gradual slope upland of wetland basin, surrounded by cropped fields	**State:**	ND
Section:	SW ¼ Section 28 **Township:** 158 N	**Range:**	72W
Do Normal Circumstances exist on the site?	(Yes) No **Explain:**		
Are soils, vegetation, hydrology, Significantly disturbed? **N**	**Explain**:		

VEGETATION (* Dominant Plant Species)

	Herb Stratum (100% Total Cover)	% Cover	Ind. Status		Shrub/Sapling Stratum (0% Total Cover) (5' radius)	% Cover	Ind. Status
1	*Phalaris arundinacea*	10	FACW+	1.			
2	*Poa pratensis**	90	FAC-	2.			
3				3.			
4				4.			
5				5.			
6					**Tree Stratum (0% Total Cover) (30' radius)**	**% Cover**	**Ind. Status**
7				1.			
8				2.			
9				3.			

Remarks:

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0/1 =0%

Hydrophytic Vegetation Criterion Met? Yes (No) **NWI Class (Vegetation = EM, SS, FO):**

SOILS

Map Unit Name: Swenoda fine sandy loam **Drainage Class:** Moderately Well Drained

Taxonomy: Coarse loamy, mixed Pachic Udic Pabloborall **Confirm Mapped Type?** (Yes) No

Depth	Horizon	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Texture, Concretions, Structure, Other
0-8"	A	10YR 2/1	none		Silty loam
8 – 16"	B	10YR 4/1	none		

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Mottled (within 10")
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Hydric Soil Criterion/Indicators Met? Yes (No)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators:

- ☐ Inundated
- ☒ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Depth of Inundation:	N/A	(in.)	Explain:
Depth to Free Water in Pit:	16”	(in.)	
Depth to Saturation:	4”	(in.)	

Recorded Data Available (aerials, gauge)?

Remarks:

Wetland Hydrology Criterion/Indicators Met? (Yes) No

WETLAND DETERMINATION

Is this plot a wetland? Yes (No)

Comments:

Determined by: S Emery & J Pickle

DATA FORM
ROUTINE WETLAND DETERMINATION

		Plot #:	6
Project No.:	9624-164	**Date:**	06-08-05
Applicant/Owner:	PPM Energy	**Site:**	Rugby Transmission line
Plot Location:	N edge of wetland	**County:**	Pierce
Topographic Location:	On gradual slope upland of main wetland basin, surrounded by cropped fields	**State:**	ND
Section: SW ¼ Section 3	**Township:** 157 N	**Range:**	72W
Do Normal Circumstances exist on the site?	(Yes) No	**Explain:**	
Are soils, vegetation, hydrology, Significantly disturbed? **N**		**Explain**:	

VEGETATION (* Dominant Plant Species)

	Herb Stratum (100% Total Cover)	% Cover	Ind. Status		Shrub/Sapling Stratum (0% Total Cover) (5' radius)	% Cover	Ind. Status
1	*Phalaris arundinacea**	80	FACW+	1.			
2	*Rumex crispus*	20	FAC+	2.			
3				3.			
4				4.			
5				5.			
6					**Tree Stratum (0% Total Cover) (30' radius)**	**% Cover**	**Ind. Status**
7				1.			
8				2.			
9				3.			

Remarks:

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 1/1 =100%

Hydrophytic Vegetation Criterion Met? (Yes) No **NWI Class (Vegetation = EM, SS, FO):** EM

SOILS

Map Unit Name: Tonka silt loam **Drainage Class:** Poorly Drained

Taxonomy: Fine, montmorollonitic frigid Argiaquic Argialboll **Confirm Mapped Type?** (Yes) No

Depth	Horizon	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Texture, Concretions, Structure, Other
0-16"	A	N 2/0	none		Silty loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☒ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Mottled (within 10")
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☒ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Hydric Soil Criterion/Indicators Met? (Yes) No

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators:

- ☒ Inundated
- ☒ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Depth of Inundation:	4”	(in.)
Depth to Free Water in Pit:	0”	(in.)
Depth to Saturation:	0”	(in.)

Recorded Data Available (aerials, gauge)?

Explain:

Remarks:

Wetland Hydrology Criterion/Indicators Met? (Yes) No

WETLAND DETERMINATION

Is this plot a wetland? (Yes) No

Comments:

Determined by: S Emery & J Pickle

DATA FORM
ROUTINE WETLAND DETERMINATION

		Plot #:	7
Project No.:	9624-164	**Date:**	06-08-05
Applicant/Owner:	PPM Energy	**Site:**	Rugby Transmission line
Plot Location:	N edge of wetland	**County:**	Pierce
Topographic Location:	Upland – by poles N of wetland 7	**State:**	ND
Section:	SW ¼ Section 3 **Township:** 157 N	**Range:**	72W
Do Normal Circumstances exist on the site?	(Yes) No **Explain:**		
Are soils, vegetation, hydrology, Significantly disturbed? **N**	**Explain**:		

VEGETATION (* Dominant Plant Species)

	Herb Stratum (100% Total Cover)	% Cover	Ind. Status		Shrub/Sapling Stratum (0% Total Cover) (5' radius)	% Cover	Ind. Status
1	*Phalaris arundinacea**	60	FACW+	1.			
2	*Rumex crispus*	10	FAC+	2.			
3	*Taraxacum officinale**	20	FACU+	3.			
4	*Avena sp.*	10	UPL	4.			
5				5.			
6					**Tree Stratum (0% Total Cover) (30' radius)**	**% Cover**	**Ind. Status**
7				1.			
8				2.			
9				3.			

Remarks:

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 1/2 =50%

Hydrophytic Vegetation Criterion Met? (Yes) No **NWI Class (Vegetation = EM, SS, FO):** EM

SOILS

Map Unit Name: Tonka silt loam **Drainage Class:** Poorly Drained

Taxonomy: Fine, montmorollonitic frigid Argiaquic Argialboll **Confirm Mapped Type?** (Yes) No

Depth	Horizon	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Texture, Concretions, Structure, Other
0-12"	Ap	10YR 2/1	none		Silty loam
12 – 18"	A	10YR 3/1	none		Silty clay

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Mottled (within 10")
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☒ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Top 10" are plowed

Hydric Soil Criterion/Indicators Met? (Yes) No

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Depth of Inundation:	N/A	(in.)
Depth to Free Water in Pit:	> 16"	(in.)
Depth to Saturation:	Greater than 12"	(in.)

Recorded Data Available (aerials, gauge)?

Explain:

Remarks: There was surface ponding due to heavy rains. Top 9" of soil was saturated, below that, the soil was not saturated.

Wetland Hydrology Criterion/Indicators Met? Yes (No)

WETLAND DETERMINATION

Is this plot a wetland? Yes (No)

Comments:

Determined by: S Emery & J Pickle

DATA FORM
ROUTINE WETLAND DETERMINATION

		Plot #:	**8**
Project No.:	9624-164	**Date:**	06-08-05
Applicant/Owner:	PPM Energy	**Site:**	Rugby Transmission line
Plot Location:	Wetland surrounding intermittent stream in pastureland	**County:**	Pierce
Topographic Location:	In low area by intermittent stream	**State:**	ND
Section: SE ¼ Section 33	**Township:** 157 N	**Range:**	72W
Do Normal Circumstances exist on the site?	(Yes) No	**Explain:**	
Are soils, vegetation, hydrology,	**Significantly disturbed**? **N**	**Explain**:	

VEGETATION (* Dominant Plant Species)

	Herb Stratum (100% Total Cover)	% Cover	Ind. Status		Shrub/Sapling Stratum (0% Total Cover) (5' radius)	% Cover	Ind. Status
1	*Typha latifolia*	10	OBL	1.			
2	*Carex sp.**	90	FACW+	2.			
3				3.			
4				4.			
5				5.			
6					**Tree Stratum (0% Total Cover) (30' radius)**	**% Cover**	**Ind. Status**
7				1.			
8				2.			
9				3.			

Remarks: Carex sp. assumed to be FACW or wetter

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 1/1 =100%

Hydrophytic Vegetation Criterion Met? (Yes) No **NWI Class (Vegetation = EM, SS, FO):** EM

SOILS

Map Unit Name: Borup silt loam **Drainage Class:** Poorly Drained

Taxonomy: Coarse silty, frigid Typic Calciaquoll **Confirm Mapped Type?** (Yes) No

Depth	Horizon	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Texture, Concretions, Structure, Other
0-16"	A	N 2/0	none		Silty clay loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☒ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Mottled (within 10")
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☒ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Hydric Soil Criterion/Indicators Met? (Yes) No

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators:

- ☒ Inundated
- ☒ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Depth of Inundation:	4”	(in.)
Depth to Free Water in Pit:	0”	(in.)
Depth to Saturation:	0”	(in.)

Recorded Data Available (aerials, gauge)?

Explain:

Remarks:

Wetland Hydrology Criterion/Indicators Met? (Yes) No

WETLAND DETERMINATION

Is this plot a wetland? (Yes) No

Comments:

Determined by: S Emery & J Pickle

DATA FORM
ROUTINE WETLAND DETERMINATION

		Plot #:	9
Project No.:	9624-164	**Date:**	06-08-05
Applicant/Owner:	PPM Energy	**Site:**	Rugby Transmission line
Plot Location:	Upland island, surrounded by wetland	**County:**	Pierce
Topographic Location:	In isolated higher area compared to wetland	**State:**	ND
Section:	SE ¼ Section 33 **Township:** 157 N	**Range:**	72W
Do Normal Circumstances exist on the site?	(Yes) No **Explain:**		
Are soils, vegetation, hydrology, Significantly disturbed? **N**	**Explain**:		

VEGETATION (* Dominant Plant Species)

	Herb Stratum (100% Total Cover)	% Cover	Ind. Status		Shrub/Sapling Stratum (0% Total Cover) (5' radius)	% Cover	Ind. Status
1	*Poa pratensis**	80	FAC-	1.			
2	*Sonchus arvensis*	5	FAC	2.			
3	*Solidago canadensis*	10	FACU	3.			
4	*Taraxicum officinale*	5	FACU	4.			
5				5.			
6					**Tree Stratum (0% Total Cover) (30' radius)**	**% Cover**	**Ind. Status**
7				1.			
8				2.			
9				3.			

Remarks:

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0/1 =0%

Hydrophytic Vegetation Criterion Met? Yes (No) **NWI Class (Vegetation = EM, SS, FO):**

SOILS

Map Unit Name: Borup silt loam **Drainage Class:** Poorly Drained

Taxonomy: Coarse silty, frigid Typic Calciaquoll **Confirm Mapped Type?** (Yes) No

Depth	Horizon	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Texture, Concretions, Structure, Other
0-6"	A	10YR 2/1	none		Clay silt
6 – 16"	A2	10YR 3/2	none		Silty loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☒ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Mottled (within 10")
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☒ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Hydric Soil Criterion/Indicators Met? (Yes) No

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Field Observations:

Depth of Inundation:	NA	(in.)	Explain:
Depth to Free Water in Pit:	> 16"	(in.)	
Depth to Saturation:	> 16"	(in.)	

Recorded Data Available (aerials, gauge)?

Remarks:

Wetland Hydrology Criterion/Indicators Met? Yes (No)

WETLAND DETERMINATION

Is this plot a wetland? Yes (No)

Comments:

Determined by: S Emery & J Pickle

Appendix D
Project Area Photographs

Photo 1: Section 28, Spring Lake Township. View to south along existing line. Wetland present between first and second visible structures.

Photo 2: Section 28, Spring Lake Township. View to northwest. Plot 5 (upland) marked by shovel. Wetland boundary marked by pink flag.

HDR Engineering Inc.

Site Photographs
Rugby Wind Project
PPM Energy, Inc.
Pierce County, North Dakota

Date
6/13/2005

Appendix
D-1

Photo 3: Section 4, Torgerson Township. View to the east. Existing structure is north and upland of wetland boundary.

Photo 4: Section 4, Torgerson Township. View to the east.

HDR Engineering Inc.

Site Photographs
Rugby Wind Project
PPM Energy, Inc.
Pierce County, North Dakota

Date
6/13/2005

Appendix
D-2

Photo 5: Section 3, Torgerson Township. View to south along existing line. Photo taken at north edge of wetland.

Photo 6: Section 10, Torgerson Township. View to the south along existing transmision. line. Wetland is present between first and second visible structures.

HDR Engineering Inc.

Site Photographs
Rugby Wind Project
PPM Energy, Inc.
Pierce County, North Dakota

Date
6/13/2005

Appendix
D-3

Photo 7: Section 28, Torgerson Township. View to east across existing line. Photo taken at south edge of wetland.

Photo 8: Section 28, Torgerson Township. View to the east. New basin excavated into existing wetland.

HDR Engineering Inc.

Site Photographs
Rugby Wind Project
PPM Energy, Inc.
Pierce County, North Dakota

Date
6/13/2005

Appendix
D-4

Photo 9: Section 33, Torgerson Township. View to north along existing transmission line. First visible existing structures are in the wetland.

Photo 10: Section 33, Torgerson Township. View to the south along existing transmission line and toward township road.

HDR Engineering Inc.

Site Photographs
Rugby Wind Project
PPM Energy, Inc.
Pierce County, North Dakota

Date
6/13/2005

Appendix
D-5

Photo 11: Section 6, Meyer Township. View to east just north of Highway 2.

Photo 12: Section 6, Meyer Township. View to the west just north of Highway 2.

HDR Engineering Inc.

Site Photographs
Rugby Wind Project
PPM Energy, Inc.
Pierce County, North Dakota

Date
6/13/2005

Appendix
D-6

Photo 13: Section 7, Meyer Township. View to northwest of existing transmission line crossing Highway 2.

Photo 14: Section 7, Meyer Township. View to the southeast towards substation. Photo taken from upland island, overlooking wetland area.

Appendix E

Letter from US Army Corps of Engineers

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

March 25, 2005

[200560053]

Ms. Michelle Bissonnette – Project Manager
HDR Engineers, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Dear Ms. Bissonnette:

We have reviewed your request for Department of the Army, Corps of Engineers (Corps) jurisdictional wetland determination on a parcel of land located in several Sections in Townships 156, 157 and 158, Range 71, 72, 73 West, Pierce County, North Dakota.

Through Section 404 of the Clean Water Act the Corps regulates the discharge of dredged or fill material into waters of the United States. Waters of the United States may include, but are not limited to, lakes, ponds, rivers, streams, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and vernal pools. Based on the information that you provided to this office, we have made a preliminary determination that Section 33, T157N, R72W; Section 6, T156N, R72W; and Section 1, T156N, R73W appear to contain jurisdictional waters of the United States. Therefore, should the proposed project and/or associated construction activities result in the discharge of dredged or fill material into waters of the United States, a Corps permit may be required. If however, the project and associated work can be accomplished by avoiding impacts to waters of the United States, a Corps permit would not be required.

In order for the Corps to fully review the proposed mitigation project for Section 404 authorization, a completed Corps of Engineers permit application must be submitted to this office. Should construction activities associated with this project result in impacts to waters of the United States, please complete and submit the enclosed permit application to the U.S. Army Corps of Engineers, North Dakota Regulatory Office, 1513 South 12th Street, Bismarck, North Dakota 58504. It is essential to identify all impacts to waters of the United States resulting from the proposed project.

Should you have any questions regarding this determination, please do not hesitate to contact this office at telephone number (701)-255-0015 or at the letterhead address and reference project number 200560053.

Sincerely,

Jason Renschler
Project Manager
North Dakota Regulatory Office

Enclosure

Instructions for Preparing a
Department of the Army Permit Application

Blocks 1 through 4. To be completed by Corps of Engineers.

Block 5. Applicant's Name. Enter the name of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by applicant, if an agent is to be employed.

Block 12. Proposed Project Name or Title. Please provide name identifying the proposed project, *e.g.*, Landmark Plaza, Burned Hills Subdivision, or Edsall Commercial Center.

Block 13. Name of Waterbody. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Project Street Address. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15. Location of Proposed Project. Enter the county and state where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

Block 16. Other Location Descriptions. If available, provide the Section, Township, and Range of the site and / or the latitude and longitude. You may also provide description of the proposed project location, such as lot numbers, tract numbers, or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known.

Block 17, Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site.

Block 18. Nature of Activity. Describe the overall activity or project. Give appropriate dimensions of structures such as wingwalls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

Block 19. Proposed Project Purpose. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20. Reasons for Discharge. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22. Surface Areas of Wetlands or Other Waters Filled. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 23. Is Any Portion of the Work Already Complete? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identity the authorization, if possible.

Block 24. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

Information regarding adjacent landowners is usually available through the office of the tax assessor in the county or counties where the project is to be developed.

Block 25. Information about Approvals or Denials by Other Agencies. You may need the approval of other federal, state, or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 26. Signature of Applicant or Agent. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8½ x11 inch plain white paper (tracing paper or film may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). **While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.**

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 Expires December 31, 2004

The public reporting burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE *(an agent is not required)*
6. APPLICANT'S ADDRESS	9. AGENT'S ADDRESS
7. APPLICANT'S PHONE NUMBERS WITH AREA CODE a. Residence b. Business	10. AGENT'S PHONE NUMBERS WITH AREA CODE a. Residence b. Business

11. **STATEMENT OF AUTHORIZATION**

I hereby authorize _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE DATE

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE *(see instructions)*

13. NAME OF WATERBODY, IF KNOWN *(if applicable)*	14. PROJECT STREET ADDRESS *(if applicable)*
15. LOCATION OF PROJECT COUNTY _____ STATE _____	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

17. DIRECTIONS TO THE SITE

18. Nature of Activity *(Description of project, include all features)*

19. Project Purpose *(Describe the reason or purpose of the project, see instructions)*

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled *(see instructions)*

23. Is Any Portion of the Work Already Complete? Yes _____ No _____ IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

*Would include but is not restricted to zoning, building and flood plain permits

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States, knowingly and willfully falsifies, conceals, or covers up any trick scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

APPENDIX C.2

Vegetation Evaluation

HDR | ONE COMPANY *Many Solutions*℠

Memo

To: Tim Seck – PPM Energy

From: Bruce Moreira, Sarah Emery, Joyce Pickle- HDR

Project: Rugby Wind Farm Tranmission Line

CC:

Date: 6/15/05

Job No: 9624-164

RE: Vegetation Characteristics for 230 kV Transmission Route, Rugby Wind Farm, Pierce County, ND

HDR staff conducted a wetland delineation and route review of the 9.5 mile proposed route for a 230 kV transmission line for the Rugby Wind Farm on June 7 and 8, 2005. The route from the proposed Rugby Wind Farm Project Substation in Section 28, T158N, R72W to the existing Rugby Substation in Section 7, T156N, R72W parallels an existing 230 kV transmission line. The route is mostly agricultural land in cultivation, but also crosses some isolated areas of fallow fields (probable CRP) and grasslands used for pasture. Two areas of probable native grassland were identified along the route. Both areas are currently used as pasture and not in US Fish and Wildlife Service (USFWS) Grassland Easement property. The route crosses multiple wetlands, but they are small enough to be easily spanned between structures. Only one wetland is over 1,000 feet in length and will require a transmission structure be placed within the wetland. This wetland area is located in the south-half of Section 33, T157N, R72W. The wetland and adjacent upland are used as pasture, but the majority of the wetland is in good condition. This wetland is not a USFWS Wetland Easement property but it is adjacent to a US Army Corps of Engineers (USACE) jurisdictional waters.

Table 1. Section level description of vegetation characteristics along the transmission line.

Section	Twn/Rng	Vegetation Characteristics
28	158N/72W	Cultivated agricultural land for majority of section along route. CRP grassland present in central portion of W1/2 of section.
33	158N/72W	Mixture of agricultural land, CRP, and pasture. N ½ of NW ¼ is grassland that is pasture and may contain native prairie remnants. The N ½ of SE1/4 is CRP grassland.
4	157N/72W	Agricultural land in cultivation.
3	157N/72W	Agricultural land in cultivation. South edge of section contains small wooded area adjacent to abandoned farm building. West edge of section, along roadway, contains small area of woodland/windrow adjacent to existing farm buildings.
10	157N/72W	Agricultural land in cultivation. North end of section contains area of hay/alfalfa. Transmission route passes through three windrows adjacent to pre-existing gaps for the existing transmission line.
15	157N/72W	Agricultural land in cultivation. N1/4 of NW1/4 contains area of wetland and hay/alfalfa.
22	157N/72W	Probable native grassland that is used as pasture.
21	157N/72W	Agricultural land in cultivation.
28	157N/72W	Agricultural land in cultivation. South end of SE1/4 contains area of hay/alfalfa.
33	157N/72W	North ½ contains agricultural area. South ½ contains large wetland complex along creek that is used as pasture. Majority of wetland is in good condition.
6	156N/72W	Agricultural land in cultivation. In middle of section, transmission route passes through one windrow adjacent to the existing transmission line.
7	156N/72W	South of Highway 2 is a wetland complex, pasture and planted grassland.

HDR Engineering, Inc.

6190 Golden Hills Drive
Minneapolis, MN 55416

Phone (763) 591-5400
Fax (763) 591-5413
www.hdrinc.com

APPENDIX C.3

Microwave Interference Study

HDR | ONE COMPANY *Many Solutions*℠

Memo

To:	Tim Seck, PPM		
From:	Scott Reed – HDR	Project:	Rugby Wind Project
CC:	Michelle Bissonnette		
Date:	3/14/05	Job No:	9624

RE: Microwave Interference Study for the Rugby Wind Project

HDR Engineering, Inc. (HDR) received authorization from PPM Energy (PPM) to conduct a microwave interference study of the Rugby Wind Project. HDR requested that Comsearch conduct a microwave interference study and calculate the worse case Fresnel Zone on each of the beam paths. HDR had Comsearch calculate the Fresnel Zone based on a proposed 80 m turbine height and maximum 82 m rotor diameter. The site location for the study was identified as:

Township Name	Township	Range	Sections
Meyer	156N	72W	3-10
Tofte	157N	71W	5-8
Torgerson	157N	72W	1-17, 20-29, 32-36
Walsh	157N	73W	1, 12
Juniata	158N	71W	5-8, 17-20, 29-32
Spring Lake	158N	72W	1-36
East Barton	158N	73W	1, 12, 13, 24, 25, 36

Comsearch identified four microwave paths that intersect the project area of interest (Table 1). The Worst Case Fresnel Zone (WCFZ) is approximately 20 meters (approximately 66 feet) wide on either side of the Otter Tail Power Company beam path (WQAB983 to WGX902). Based on the information provided by Comsearch, WQAB983 is located at or immediately adjacent to the Rugby Substation. It is anticipated that a transmission line connection from the proposed Rugby Wind Project would not impact this beam path. The microwave beam paths for Midcontinent Communications and WWC Holding Company cross the southern end of the transmission corridor for the Rugby Wind Project; the WCFZ radius for the WWC beam path is just over 19 meters (approximately 62 feet) and the WCFZ radius for the Midcontinent beam path is just over 15 meters (approximately 49 feet). The microwave beam paths are present in the following sections within the project area:

Township Name	Township	Range	Sections
Meyer	156N	72W	3-8

Comsearch identified 68 land mobile sites that fall within the Rugby Wind Project boundary (Table 2). It is not anticipated that the land mobile sites will be affected by turbine placement. However, it may be prudent to avoid the areas within several hundred feet of the land mobile sites. The land mobile sites are present in the following sections within the project area:

Township Name	Township	Range	Sections
Meyer	156N	72W	3
Torgerson	157N	72W	6, 7, 22, 28, 32, 36
Spring Lake	158N	72W	18, 33
East Barton	158N	73W	24

The attached Comsearch report presents their evaluation of the Rugby Wind Project area of interest which shows potential interference to existing microwave and the location of known registered land mobile telecom systems.

Please let us know if you have any additional questions on this study.

Executive Summary – Wind Power GeoPlanner™

Licensed Microwave and Land Mobile Fixed Base Station Search

Comsearch performed an analysis to evaluate the potential effects of the planned Rugby Wind Park, North Dakota project area to existing microwave telecom systems and land mobile telecom systems.

Comsearch's Wind Power GeoPlanner™ provides a graphical representation of the microwave paths and fixed land mobile sites, and provides supporting technical parameters. The microwave path and land mobile data is overlaid on USGS topographic basemaps.

Microwave Search Results. Comsearch identified four (4) microwave paths that intersect the project area or area of interest (AOI) (see Figure 1 and Table 1 below).

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

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

In general, the WCFZ is the XY area or swath where the planned wind turbines should be avoided, if possible. The WCFZ radius in meters is included in Table 1. Figure 2 shows the Worst Case Fresnel Zones for each microwave path.

For this project, latitude and longitude values for turbine locations and the turbine blade radius were not given. If the latitude and longitude values for turbine locations are provided, Comsearch can identify specific microwave telecom paths and turbines where a potential XY conflict exists. Additionally, when wind turbines need to be located inside a WCFZ, Comsearch can provide a detailed interference study, which considers the vertical Z-height clearance objectives.

Land Mobile Search Results. Comsearch identified 68 land mobile sites that fall within the Rigby project boundary (see Figure 3 and Table 2 for a partial listing, and the excel file on the CDROM for a full listing).

Comsearch Contact:
Denise Finney, Account Manager
Phone: (703) 726-5650 Fax: (703) 726-5599
Email: dfinney@comsearch.com

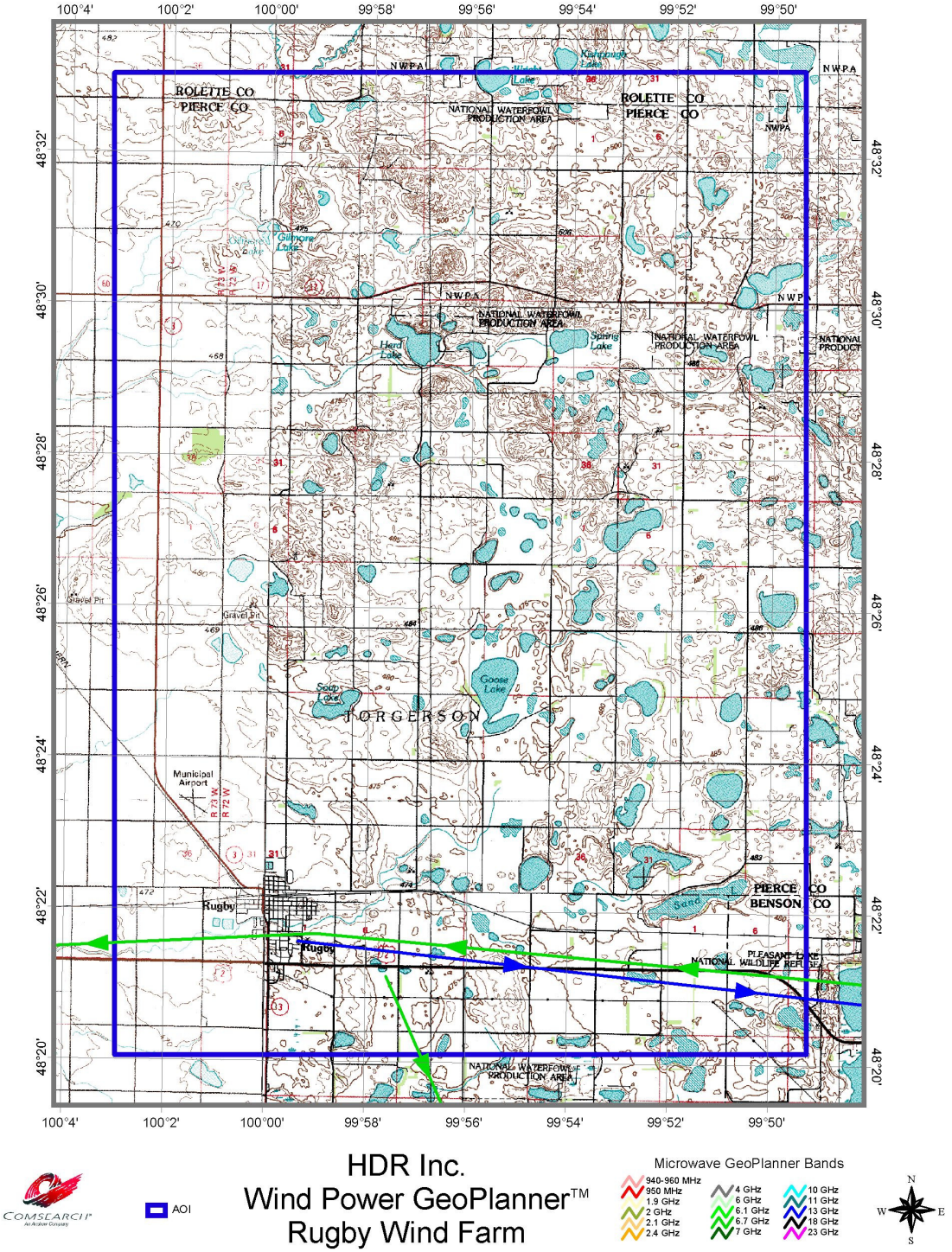
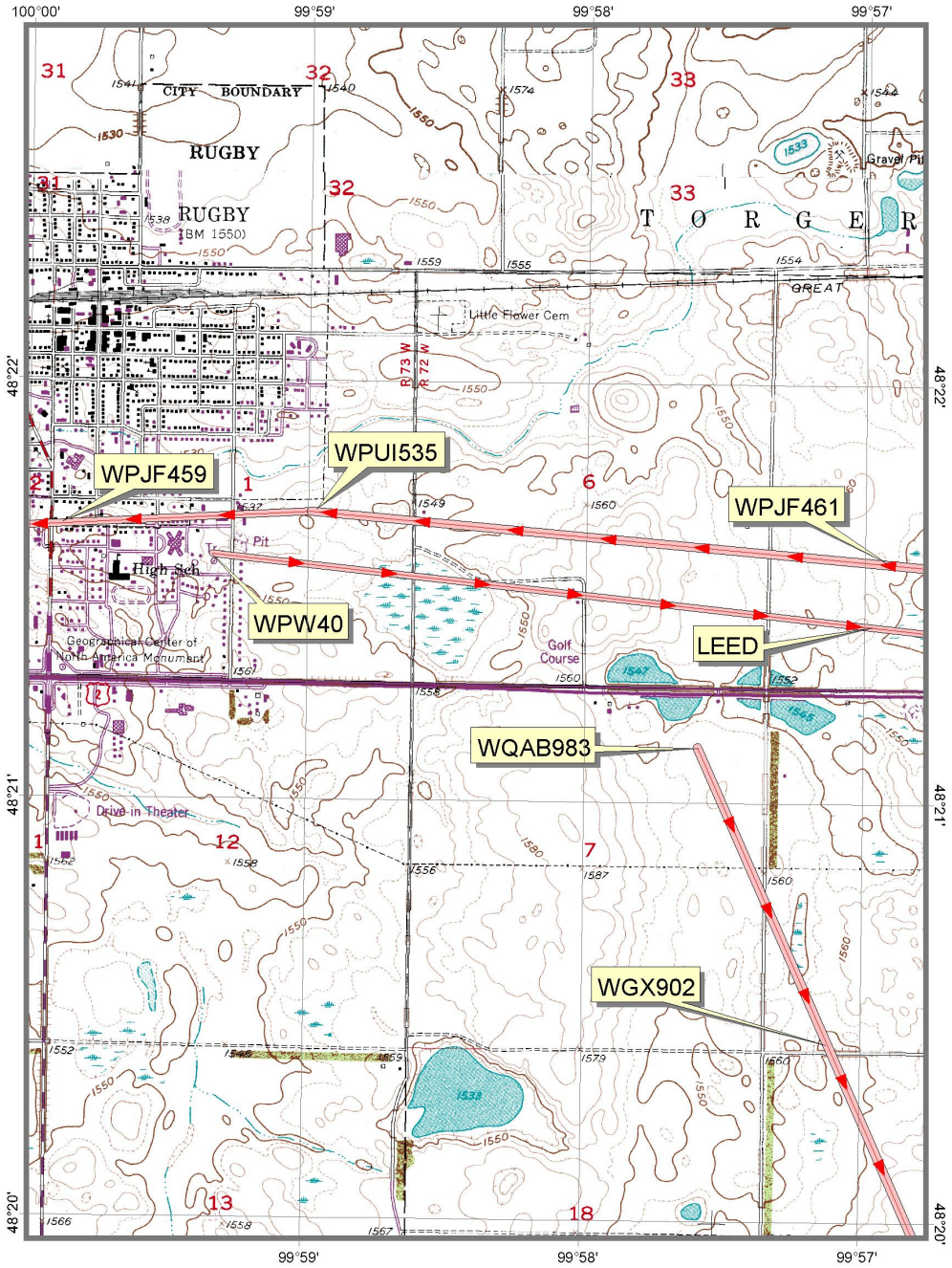


Figure 1: GeoPlanner™ Project Overview



HDR Inc.
Wind Power GeoPlanner™
Rugby Wind Farm

Figure 2: GeoPlanner™ WCFZ

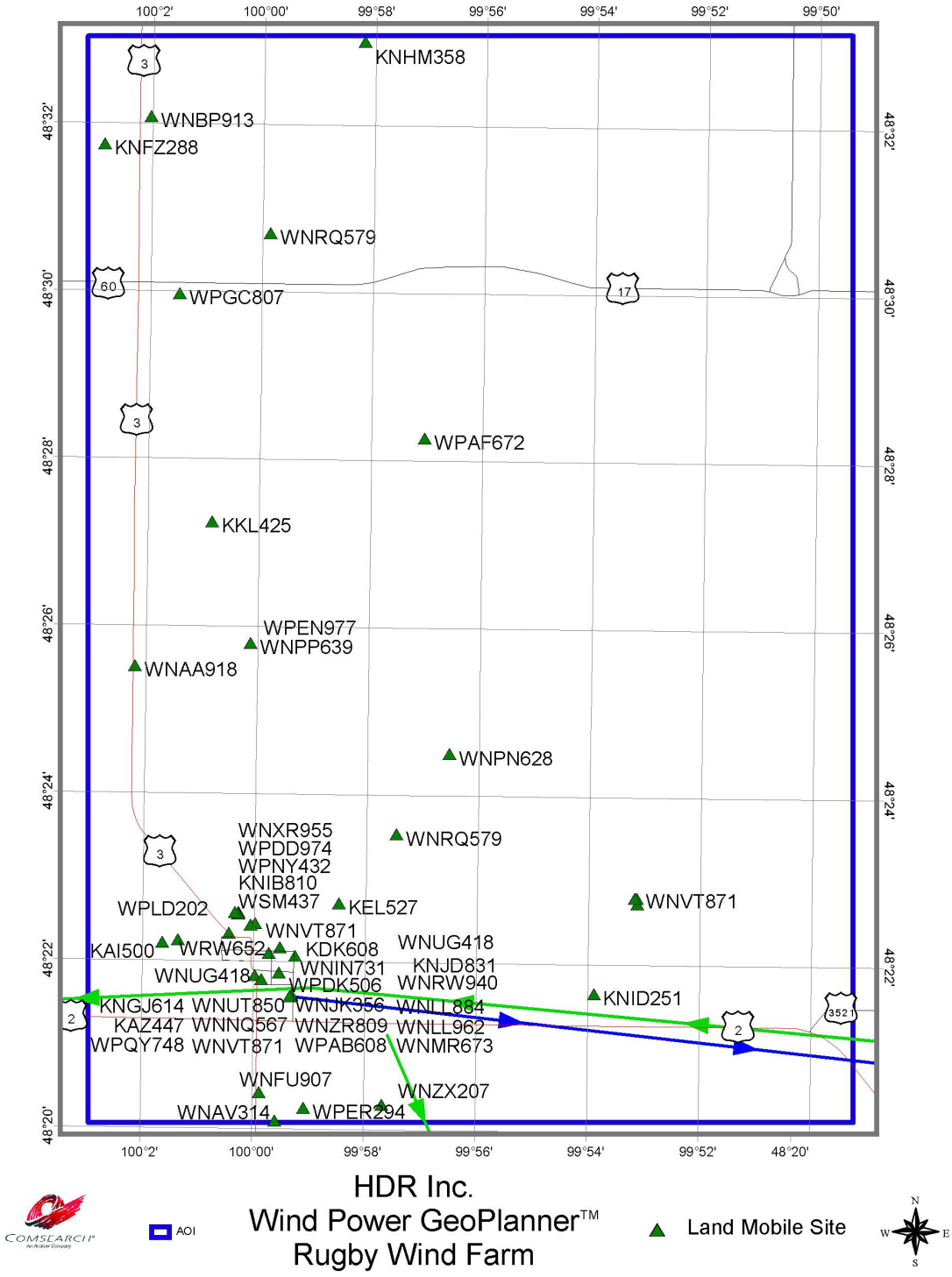


Figure 3: Land Mobile Sites

Name Site 1	Name Site 2	Call Sign Site 1	Call Sign Site 2	Band Name	Company Site 1	Company Site 2	WCFZ (m)
KNOX	RUGBY DT	WPJF461	WPUI535	Upper 6 GHz	WWC Holding Co., Inc	WWC Holding Co., Inc	19.02
RUGBY	ESMOND	WQAB983	WGX902	Upper 6 GHz	OTTER TAIL POWER COMPANY	OTTER TAIL POWER COMPANY	20.09
RUGBY	LEEDS	WPW40	LEED	13 GHz	Midcontinent Communications	Midcontinent Communications	15.23
RUGBY DT	BERWICK	WPUI535	WPJF459	Upper 6 GHz	WWC Holding Co., Inc	WWC Holding Co., Inc	15.59

Table 1: Microwave GeoPlanner™ Links within Project Area

Call Sign	Latitude	Longitude	Location	City, State	Licensee
WPQY748	48.3631	-99.9976	800 MAIN AVE S	RUGBY, ND	GOOD SAMARITAN HOSPITAL ASSOCIATION
WRW652	48.3722	-100.0074	1/8 MI N ON HWY 3	RUGBY, ND	DEPLAZES, ANTHONY
WSM437	48.3764	-100.0046	.4 KM W OF JCT HWY 2 & 3	RUGBY, ND	FERRELLGAS LP
KAI500	48.3703	-100.0274	TELEGRAPH OFF 2ND AVE N & 2ND ST W	RUGBY, ND	BNSF Railway Company
KAZ447	48.3644	-99.9924	RUGBY HIGH SCHOOL MAIN AVE & 12TH ST	RUGBY, ND	RUGBY PUBLIC SCHOOL DIST 5
KDK608	48.3694	-99.9921	1/2 MI W HWY 3 HWY 2	RUGBY, ND	RON FOSSUM DIST INC
KEL527	48.3783	-99.9746	2 MI E & 2 MI N OF	RUGBY, ND	PIERCE COUNTY
KKL425	48.4542	-100.0140	RT 2 BOX 53 4 MI N	RUGBY, ND	BROSSART, VALENTINE F
KNGJ614	48.3639	-99.9996	COUNTY COURT HOUSE 311 3RD ST SE	RUGBY, ND	PIERCE, COUNTY OF
KNHM358	48.5500	-99.9699	6 MI W 8 1/2 MI S	ROLETTE, ND	HAMAN, CLEMENCE
KNIB810	48.3764	-100.0046	105 4TH AVE SW	RUGBY, ND	FARMERS UNION OIL COMPANY
KNID251	48.3608	-99.8982	5 MI E .5 MI N .25 MI W	RUGBY, ND	JOHNSON, SCOTT L
KNJD831	48.3631	-99.9976	800 MAIN AVE S	RUGBY, ND	GOOD SAMARITAN HOSPITAL ASSOCIATION DBA HEART OF AMERICA MEDICAL CENTER
…	…				

Table 2: Land Mobile Sites (Partial listing, see CDROM for complete list)

APPENDIX C.4

Class I Cultural Resources Inventory

HDR | ONE COMPANY *Many Solutions*℠

Memo

To: Tim Seck (PPM Energy)	
From: Michael Madson	Project: PPM Rugby Wind Farm
CC: Angela Piner and Sarah Emery (HDR)	
Date: June 15, 2005	Job No: 9624

RE: Rugby Wind Farm Cultural Resources Literature Review

This memorandum documents the cultural resources data collection (Class I Inventory) for the proposed Rugby Wind Farm project. HDR Engineering, Inc. (HDR) initiated this data collection in 2004 to assist PPM Energy, Inc. (PPM) in project planning. The known cultural resources information, derived from previous professional cultural resources surveys and reported site leads, was on file at the State Historic Preservation Office (SHPO) in Bismarck, North Dakota. In February 2005, HDR reviewed the information on file at the SHPO again to ensure that data relevant to the Rugby Wind Farm project and associated transmission line was current. Collected data includes archaeological site files and previous cultural resources studies and reports. In addition, HDR reviewed 19th-century Public Land Survey (PLS) maps to identify potential historic-period cultural features that may yet exist in the project area.

Cultural Resources Reports and Sites

HDR reviewed existing cultural resources documentation for the following townships, all of which are in Pierce County, North Dakota, and comprise the Rugby Wind Farm project area (Table 1). The project area is in turn comprised of three distinct elements: the Rugby Wind Farm Site, the Transmission Corridor, and the Transmission Route.

Table 1. Project Area (Rugby Wind Farm Site, Transmission Corridor, and Transmission Route).

Township Name	Township	Range	Section
Meyer	156N	72W	3-10
Tofte	157N	71W	5-8
Torgerson	157N	72W	1-17, 20-29, 32-36
Walsh	157N	73W	1, 12
Juniata	158N	71W	5-8, 17-20, 29-32
Spring Lake	158N	72W	1-36
East Barton	158N	73W	1, 12, 13, 24, 25, 36

The Class I inventory documented 14 previous cultural resources investigations in the project area and vicinity. These reports illustrate the wide variety of investigations in the area, including those conducted in support of transmission line construction, borrow sources for road construction, roadway upgrades, and water routing and treatment facilities. In summary, these studies include: one previous investigation of portions of the Rugby Wind Farm Site; four of portions of or within one mile of the Transmission Corridor and the Transmission Route; five of the combined Rugby Wind Farm Site, Transmission Corridor, and Transmission Route; and four investigations in the immediate vicinity but outside of these areas (Table 2).

HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416-1518
Phone: (763) 591-5400
Fax: (763) 591-5413
www.hdrinc.com

Table 2. Previous Cultural Resources Investigations in the Project Area and Vicinity.

Survey Report Date	Report Title	Author(s)/Association	Comment	Project Component
1975	*Report of the Archaeological and Historic Site Reconnaissance Survey of Project No. F-3-002-211, Rugby to Leeds, Pierce and Benson Counties*	Nick G. Franke/State Historical Society of North Dakota	Southern terminus of Transmission Corridor and Transmission Route project areas	Transmission Corridor/Transmission Route
1988	*The Rugby Historic Sites Inventory Project, North Dakota Cultural Resources Survey 1987-1988*	Susan Granger and Scott Kelly/Gemini Research	West of project area	Within one mile of the Transmission Corridor/Transmission Route
1990	*Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review, Part 1: Prehistoric Cultural Resources Overview*	Michael L. Gregg and Paul R. Picha/University of North Dakota	Regional overview	Wind Farm Project Site/Transmission Corridor/Transmission Route
1995	*NH-3-002(040)212 Cultural Resource Field Review*	Robert C. Christensen/ North Dakota Department of Transportation	South and east of project area	N/A
1996	*Cultural Resource Inventory Report for the Rugby Water Supply and Treatment Plant Improvement, Phase II, Souris River Study Unit*	Sarah J. Rothwell/LTA	East of project area	N/A
1999	*Otter Tail Company's 230kV Harvey/Rolla Transmission Line: A Class III Cultural Resources Inventory of Selected Segments in Wells, Pierce, and Rolette Counties, North Dakota*	Byron L. Olson/Powers Elevation Co. Inc.	South and north of project area	N/A
2000	*Addendum to: Otter Tail Company's 230kV Harvey/Rolla Transmission Line: A Class III Cultural Resources Inventory of Selected Segments in Wells, Pierce, and Rolette Counties, North Dakota*	Byron L. Olson/Bilcatt Archaeology, Inc.	Pedestrian survey in: Sections 23 and 26 (Spring Lake)	Wind Farm Project Site
2000	*Wrought Iron Cross Cemeteries in North Dakota-Continuing Survey, 1998-99*	Thomas D. Isern and Kevin Nesemeier/North Dakota State University Institute for Regional Studies	Little Flower Cemetery (32PI33) in Section 6 (Meyer) west of project area	Within one mile of the Transmission Corridor/Transmission Route
2001	*Otter Tail Company's 230kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce County, ND*	Byron L. Olson/Bilcatt Archaeology, Inc.	Section 4 (Torgerson); 1, 13-16, 21, 28, and 33 (Spring Lake); one possible prehistoric cairn (32PIX78) in Section 13 (Spring Lake)	Site 32PIX78 (only Wind Farm Project Site); Wind Farm Project Site /Transmission Corridor/Transmission Route
2001	*Highway 2 Rugby to Knox: A Class III Cultural Resources Inventory in Pierce and Benson Counties, North Dakota*	Ed Stine/Hemisphere Field Services	Southern terminus of project area	Transmission Corridor/Transmission Route
2002	*NDSHPO Ref #00-0044, Kraft Stone Circle Site*	John G. Morrison/Metcalf Archaeological Consultants, Inc.	Stone circles (32PI53) in Section 15 (Spring Lake)	Wind Farm Project Site; within one mile of the Transmission Corridor/Transmission Route
2002	*Brossart Gravel Pit: A Cultural Resource Inventory in Pierce County, North Dakota*	Ed Stine/ Metcalf Archaeological Consultants, Inc.	Reported stone circle (32PIX32) in Section 31 (Spring Lake);	Wind Farm Project Site; within one mile of the Transmission

Table 2. Previous Cultural Resources Investigations in the Project Area and Vicinity.

Survey Report Date	Report Title	Author(s)/Association	Comment	Project Component
			Section 36 (Walsh)	Corridor/Transmission Route
2004	*A Cultural Resource Inventory of Structure Replacement, Rugby-Devil's Lake 115 kV Transmission Line, Benson, Ramsey, and Pierce Counties, North Dakota*	Joseph Giliberti/Western Area Power Administration	South and east of the project area	N/A
2004	*ROW-046/073, Class III Inventory Report*	Bob Christensen/North Dakota Department of Transportation	East of project area	N/A

Previous investigations in the project area documented three prehistoric archaeological resources, namely two site leads and one archaeological site (Table 3). The three resources are within the Rugby Wind Farm Site. There are no archaeological resources within the Transmission Corridor and no archaeological resources along the Transmission Route; however, two resources are within one mile of the Transmission Corridor and no resources are within one mile of the Transmission Route.

Table 3. Previously Identified Archaeological Resources in the Wind Farm Project Area.

Site Number	Site Type	Comment
32PIX32	Reported stone circle	Exact location unknown (reported site); not identified by Stine (2002)
32PIX78	Possible cairn	Identified by Olson (2001)
32PI53	Stone circles	Identified by Morrison (2002)

The following paragraphs, organized by project component(s), describe the nature of these investigations and identified resources.

Rugby Wind Farm Site (1 report)

Olson (2000) documented a Class III survey for the proposed 230 kV Ottertail transmission line project. The 2000 survey included portions of the Rugby Wind Farm Site, namely in Sections 23 and 26 of Spring Lake Township, as well as multiple individual linear segments or segment groups in neighboring townships. No archaeological resources were identified during survey within the Rugby Wind Farm Site (Olson 2000).

Transmission Corridor and Transmission Route (4 reports)

Franke (1975) completed a survey of a portion of U.S. Highway 2 that included the southern terminus of the Transmission Corridor and Transmission Route. The survey was conducted from approximately one mile east of the junction of Highway 2 and 3 at Rugby, North Dakota and east to the west edge of Leeds, North Dakota. During the survey, one historic-period artifact scatter was noted southeast of the Transmission Corridor and Transmission Route.

Granger and Kelly (1988) performed a historic standing structure inventory of Rugby, North Dakota. These structures are west of the proposed Transmission Corridor and Transmission Route. Granger and Kelly (1988) documented and evaluated 274 structures within the report; 106 structures and two possible historic districts were identified as requiring further investigation.

Isern and Nesemeier (2000) inventoried 72 wrought iron cross cemeteries in 24 counties in North Dakota. The crosses represent folk art and the material culture of the North American Plains. One cemetery, the

Little Flower Cemetery (32PI133) is in Section 6 of Meyer Township, immediately west of the Transmission Corridor and 0.75 mile west of the Transmission Route.

Stine (2001) documented a Class III survey of proposed road improvements on U.S. Highway 2, between Rugby and Knox, North Dakota. A portion of the surveyed area included the southern terminus of the Transmission Corridor and Transmission Route in Meyer Township. No cultural resources were identified.

Rugby Wind Farm Project Site, Transmission Corridor, Transmission Route (5 reports)

Gregg and Picha (1990) completed an overview for the Des Lacs-Souris Drainage Basin Erosion Control project for the McKenzie Water District of the Custer National Forest. The review area included broad areas of north-central and northwestern North Dakota, including the entire Rugby Wind Farm Site, Transmission Corridor, and Transmission Route. No fieldwork was conducted for the report; however, it contains an extensive prehistoric context for the region.

Olson (1999, 2001) documented Class III surveys for the proposed 230 kV Ottertail transmission line project. The 2001 survey (as well as the 2000 survey, also by Olson, mentioned above) included portions of the project area, as well as multiple individual linear segments or segment groups in neighboring townships. Two prehistoric archaeological sites were identified during the 1999 survey, although these sites are not within the project area. During the 2001 survey, Olson identified one archaeological site lead, a possible cairn 32PIX78, that is in Section 13 of Spring Lake Township, within the Rugby Wind Farm Site. The possible cairn is a cluster of seven glacial cobbles near the top of a rise overlooking a kettle pond. Olson (2001) reported that there were scattered surface erratics at the time of the survey in the vicinity, although they were not clustered; Olson (2001) noted the uncertainty regarding whether the possible cairn was indeed a cultural resource. No additional investigation at the site lead location was completed.

At the request of a land owner and Otter Tail Power Company, Morrison (2002) recorded 32PI53, two stone circles in Section 15 of Spring Lake Township. The stone circles are on separate ridges overlooking lakes, marshlands and drainages. One stone circle is comprised of 10 to 15 stones and measures approximately 2.5 meters in diameter. A second circle is directly east of the first and is within a saddle between two rises. This circle contains 15-20 stones and measures 3.5 meters in diameter. The site was avoided during construction of the Otter Tail Power Company transmission line; no additional investigation of the site occurred. The eligibility of 32PI53 for listing on the National Register of Historic Places has not been determined. The archaeological site is within the Rugby Wind Farm Site and within one mile of the Transmission Corridor.

Stine (2002) also completed a Class III cultural resource inventory for proposed expansion of a borrow area for the North Dakota Department of Transportation. The survey was completed prior to the expansion of an existing gravel pit in Section 31 of Spring Lake Township and Section 36 of Walsh Township. A site lead, 32PIX32, was previously noted in Section 31, however, the site, a stone circle, was not identified by Stine (2002) during the survey. The site lead is within the Wind Farm Project Site, and within one mile of the Transmission Corridor.

Immediate Vicinity (4 Reports)

Christensen (1995) reported on the North Dakota Department of Transportation's pedestrian survey of selected areas along Highway 2. All surveyed areas were south and southeast of the Rugby Wind Farm project areas. One archaeological site was identified during the survey approximately nine miles southeast of the project areas.

Rothwell (1996) completed an archaeological resource survey for proposed additions to the City of Rugby water system east of the project area. No cultural resources were identified.

Christensen (2004) reported on a Class III inventory for probable development of a parcel north of Highway 2 and east of the project area. No cultural resources were identified during the survey.

Finally, Giliberti (2004) of the Western Area Power Administration completed a cultural resource inventory of the Rugby to Devil's Lake 115kV transmission line. The project involved the replacement of H-frame transmission line structures along an alignment south of the project area. No cultural resources were noted during the survey.

Public Land Survey Map Review

HDR reviewed PLS maps for the project areas (Table 4). The maps illustrate environmental conditions, including elevation variations across the landscape and watercourses, during the early 1880s. The maps indicate intensive historic-period land use south, east, and west of the project area, including active farmsteads, cultivated acreage, wagon roads, and a railroad alignment. In addition, the Mouse River Wagon Road is shown through the transmission line project area.

Table 4. Public Land Survey Map Data.

Township Name	Township	Range	Public Land Survey Dates	Cultural Features/Location
Meyer	156N	72W	1883-1887	St. Paul, Minneapolis, and Manitoba Railroad alignment; road/trail alignment; farmsteads and cultivated acreage (In sections 1-5)
Tofte	157N	71W	1883-1884	Road/trail alignment (probable Mouse River Wagon Road in sections 31-33)
Torgerson	157N	72W	1883-1884	Mouse River Wagon Road in sections 19-21, 25-28
Walsh	157N	73W	1883-1884	Mouse River (Wagon) Road in sections 24-28, 31-33
Juanita	158N	71W	1883-1884	None
Spring Lake	158N	72W	1883-1884	None
East Barton	158N	73W	1883-1884	None

SHPO Correspondence (see attached)

HDR wrote Mr. Paul Picha at the SHPO in December 2004 to request a review of potential project-related impacts on known or suspected cultural resources. The SHPO responded with a request for additional information in order to determine the Area of Potential Effects (APE) and any project impacts in the APE. The SHPO recommended that PPM sponsor a Class I cultural resources inventory for the site to determine the nature of previous cultural resources investigations and the location of known archaeological sites in the project site. The SHPO response letter stated that there is "potential for unrecorded properties in a variety of physiographic settings in the…project area". Therefore, the SHPO suggested that a Class III cultural resources inventory, primarily pedestrian survey, might be appropriate. During a meeting with Mr. Picha on May 5, 2005, HDR Archaeologist Michael Madson reviewed the project information at that time. Mr. Madson reported to Mr. Picha that PPM was planning to conduct a field inventory (Class III) of the impact areas once the project footprint was better defined and seasonal land use cycles allowed for cleared agricultural fields. Mr. Picha shared additional background materials with Mr. Madson that would assist during site identification during the field inventory and recommended communication with Mr. William Ambrose Littleghost of the Spirit Lake Nation (see below).

Tribal Correspondence

HDR contacted cultural resources representatives at the Turtle Mountain Band of Chippewa (Mr. Brady Grant) and the Spirit Lake Nation (Mr. Williams Ambrose Littleghost) for their input. Letters were sent to these representatives in February and June, 2005 respectively. We have not received a response as of the date of this memorandum.

Implications for Archaeological Resources

After review of the recorded archaeological site information, the information in previous survey reports, and communication with Mr. Picha of the SHPO, HDR believes that the project area has a relatively high potential for prehistoric archaeological resources, particularly on elevated landforms that have escaped cultivation, such as the area around the prehistoric stone circles at 32PI53. A potential for significant historic-period archaeological resources appears to be small, although the intersection of the transmission line project area and former alignment of the Mouse River Wagon Road may have archaeological materials related to use of the alignment.

Conclusions

HDR recommends a Class III archaeological resources survey for areas proposed for construction of the transmission line, wind turbines, and associated access roads and other elements. These investigations must be conducted by a professional archeologist permitted by the State of North Dakota per NDCC 55-03-01. The nature of the archaeological resources survey would depend on surface exposure and the characteristics of the landform proposed for development. The proposed Transmission Route will be surveyed for archaeological resources. In addition, HDR recommends that, once the Rugby Wind Farm Site construction plan reaches a more definite stages of development, the plan will be communicated to Mr. Picha (SHPO), Mr. Grant (Turtle Mountain Band of Chippewa), and Mr. Littleghost (Spirit Lake Nation). For both surveys, HDR archaeologists will design a survey methodology to document the areas proposed for ground disturbance, identify existing archaeological resources within those areas, provide recommendations for National Register eligibility, and offer recommendations for archaeological site avoidance, impact minimization, or mitigation if necessary.

HDR Engineering, Inc.

6190 Golden Hills Drive
Minneapolis, MN 55416-1518

Phone: (763) 591-5400
Fax: (763) 591-5413
www.hdrinc.com

December 6, 2004

Mr. Paul Picha
North Dakota State Historic Preservation Office
612 East Boulevard Avenue
Bismarck, ND 58505-0830

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Picha:

HDR Engineering, Inc. (HDR) requests your office review of the Rugby Wind Farm for possible effects to known or potential sites of archaeological or historic significance. The proposed project is a 100 to 150 MW wind farm in Pierce County, located north of the city of Rugby, North Dakota. Currently the project plans to use approximately 67 to 100 1.5-MW turbines, although that may change as turbine technology advances. The exact turbine locations have not been determined. It is unknown whether any federal permits will be required for this project. If it appears that the project will require federal involvement, then our office will notify you.

The proposed project is located in the following Township, Ranges, and Sections in Pierce County, North Dakota:

Township	Range	Sections
157 N	71 W	5-8
157 N	72 W	1-12
158 N	71 W	7-8, 17-20, 29-32
158 N	72 W	7-36

Enclosed is map detailing the proposed location of the Rugby Wind Farm site location to facilitate your review. If you require further information or have questions regarding this matter, please call me at (763) 278-5910, or Mike Madson at (763) 278-5921. Thank you for your assistance.

Sincerely,

Michelle Bissonnette
Project Manager

Michael Madson
Senior Archaeologist

Enclosure: Project Location Map

cc: Mr. Tim Seck, PPM Energy, Inc.

HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416
Phone: (763) 591-5400
Fax: (763) 591-5413
www.hdrinc.com

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

December 9, 2004

Michelle Bissonnette
Project Manager
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

NDSHPO Ref.: 05-0240 HDR/PPM Energy, Inc. 150 MW Rugby Wind Farm, Pierce County, North Dakota

Dear Michelle:

We have reviewed the information on the proposed 150 MW Rugby Wind Farm, Pierce County, North Dakota, in your letter of December 6. Given the size of the project area, additional information will be needed before the Area of Potential Effect (APE) can be determined. We recommend that a Class I CRI (file search) be completed for areas that may be impacted by the project. There also is potential for unrecorded properties in a variety of physiographic settings in the Pierce County project area (see enclosure). A Class III CRI (pedestrian survey) may be warranted once more detailed information on project particulars (scale and scope of structures, utility corridors, access roads, etc.) becomes known.

Also, if the project crosses lands administered by a federal agency, then the agency must be consulted regarding their recommendations on the project.

We look forward to working with you as this project develops. If you have questions please contact either Duane Klinner at (701) 328-3576 or Paul Picha at (701) 328-3574.

Sincerely,

for

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

enc.: File list for T157-158N, R71-72W, Pierce County, North Dakota

A & H P MANUSCRIPT REPORT

TOWNSHIP: 157 RANGE: 072 SECTION: 09
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 157 RANGE: 072 SECTION: 04
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

A & H P MANUSCRIPT REPORT

TOWNSHIP: 158 RANGE: 071 SECTION: 08
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 158 RANGE: 072 SECTION: 09
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 158 RANGE: 072 SECTION: 10
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 158 RANGE: 072 SECTION: 18
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 158 RANGE: 072 SECTION: 26
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 158 RANGE: 071 SECTION: 13
MANUSCRIPT_NO:006090 YEAR: 1993
TITLE: Cultural Resources Survey Report Class III Cultural Resource Inventory Item No. 1, Ten Microwave Repeater Sites, ND
AUTHOR(s): Martorano, M. T. Anderson

TOWNSHIP: 158 RANGE: 072 SECTION: 13
MANUSCRIPT_NO:007660 YEAR: 2000
TITLE: Addendum To: Ottertail Company's 230 kV Harvey/Rolla Transmission Line Cultural Resources Inventory, Wells, Pierce, and Rolette Counties, ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 14
MANUSCRIPT_NO:007660 YEAR: 2000
TITLE: Addendum To: Ottertail Company's 230 kV Harvey/Rolla Transmission Line Cultural Resources Inventory, Wells, Pierce, and Rolette Counties, ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 23
MANUSCRIPT_NO:007660 YEAR: 2000
TITLE: Addendum To: Ottertail Company's 230 kV Harvey/Rolla Transmission Line Cultural Resources Inventory, Wells, Pierce, and Rolette Counties, ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 26
MANUSCRIPT_NO:007660 YEAR: 2000
TITLE: Addendum To: Ottertail Company's 230 kV Harvey/Rolla Transmission Line Cultural Resources Inventory, Wells, Pierce, and Rolette Counties, ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 13
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 14
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 15
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 16
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 21
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 33
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 15
MANUSCRIPT_NO:008285 YEAR: 2002
TITLE: Kraft Stone Circle Site, Pierce Co., ND

AUTHOR(s): Morrison, J.

TOWNSHIP: 158 RANGE: 072 SECTION: 31
MANUSCRIPT_NO:008412 YEAR: 2002
TITLE: Brossart Gravel Pit: A Class III Cultural Resource Inventory in Pierce Co., ND

AUTHOR(s): Stine, E.

Legals Search

County	*Site*	*Township*	*Range*	*Section*	*AreaSig1*	*StateRegistry*	*NationalRegistry*
PI	X0083	157	071	23	Archeological		
PI	00047	157	072	31	Architectural		
PI	00503	157	072	31	Architectural		
PI	00504	157	072	31	Architectural		
PI	00505	157	072	31	Architectural		
PI	00506	157	072	31	Architectural		
PI	00507	157	072	31	Architectural		
PI	00508	157	072	31	Architectural		
PI	00509	157	072	31	Architectural		
PI	00510	157	072	31	Architectural		
PI	00532	157	072	31	Architectural		
PI	00533	157	072	31	Architectural		
PI	00542	157	072	31	Architectural		
PI	00551	157	072	31	Architectural		
PI	00552	157	072	31	Architectural		
PI	00557	157	072	31	Architectural		
PI	00559	157	072	31	Architectural		
PI	00561	157	072	31	Architectural		
PI	00562	157	072	31	Architectural		

County	*Site*	*Township*	*Range*	*Section*	*AreaSig1*	*StateRegistry*	*NationalRegistry*
PI	00564	157	072	31	Architectural		
PI	00565	157	072	31	Architectural		
PI	00641	157	072	31	Architectural		
PI	00699	157	072	31	Architectural		
PI	00700	157	072	31	Architectural		
PI	00553	157	072	32	Architectural		
PI	00563	157	072	32	Architectural		
PI	X0030	158	071	03	Historical		
PI	00018	158	071	13	Archeological		
PI	X0031	158	071	23	Historical		
PI	X0078	158	072	13	Archeological		
PI	00053	158	072	15	Archeological		
PI	X0032	158	072	31	Archeological		

APPENDIX C.5

WEST Phase I Biological Survey of Rugby Wind Farm (Submitted to the USFWS)

Phase One Screening Report and USFWS PII Score

PPM Energy Site

Rugby, North Dakota

April 1, 2005

Prepared for:

HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416-1518

and

PPM Energy, Inc.
1125 NW Couch, Suite 700
Portland, OR 97209

Prepared by:

Clayton Derby
Western EcoSystems Technology, Inc.
2003 Central Avenue
Cheyenne, Wyoming 82001

Table of Contents

List of Tables and Figures

List of Appendices

I. INTRODUCTION

I.A. Purpose

When exploring prospective wind farm sites, knowledge of wildlife and other biological resource issues helps the wind industry and agencies identify and avoid potential ecological problems early in the development process. Additionally, this information is useful in addressing natural resource concerns raised by state and federal natural resource agencies as well as other project stakeholders (e.g., local residents, private organizations). Western EcoSystems Technology, Inc. (WEST) was contracted to conduct biological investigations of the Rugby Wind Farm proposed for construction by PPM Energy, Inc. (PPM) in Pierce County, North Dakota (Figure 1). The purpose of this report is to investigate general biological issues associated with wind farm development at the proposed site so that major issues can be identified. This investigation generally follows the site evaluation process described in the document "Studying wind energy/bird interactions: a guidance document" (Anderson et al. 1999) and the U.S. Fish and Wildlife Service's "Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines" (USFWS 2003). To evaluate the site at this level, the investigation relies heavily on existing local, regional, and national research efforts, input from agencies, and other literature, and does not include a large pre-construction baseline study effort. A reconnaissance-level site visit was conducted to evaluate major land features (e.g., topography, ridge aspect, water bodies, etc.) and habitats in the project areas. This report presents the observations made during the site visit, describes agency consultations, discusses the results of a literature review in order to assess the potential impacts of the proposed wind farms on state and/or federally protected or sensitive species of concern, and presents the Potential Impact Index (PII) score associated with the USFWS Interim Guidelines.

This report focuses on the proposed wind farm site and the following potential areas of concern:

- Raptors
- Federal Species of Concern
- State Wildlife Issues
- Unique Habitats
- Wetlands
- Bats
- Avian Migratory Pathways

I.B. Project Description

The proposed Rugby Wind Farm project area is located between 4-11 miles north of Rugby, North Dakota (Figure 1). The elevation of the project area ranges from approximately 1,500-1,700 feet (ft). Mixed-grass prairie with livestock grazing and cultivated agriculture are the dominant vegetation types and land uses in the wind farm area. There are scattered patches of deciduous trees and shrubs around some of the lakes and ravines and planted tree rows and shelter belts in cultivated fields and near residences. Numerous waterbodies and wetlands of varying size are located throughout the project area. There is not a consistent ridgeline or other similar feature through the project area, rather the area is composed of numerous small hills and low areas (Figure 2).

Most lands in the project area are privately owned. Portions of these private lands have easements held by the USFWS. There are five Waterfowl Production Areas (WPA) owned by the USFWS within, partially within, the overall boundary of the project area: Torgerson Marsh in the SW ¼ of SE ¼ of Sec. 7 T157N R72W, Herd Lake in the N ½ of NE ¼ of Sec. 21 and majority of Sec. 22 T158N R72W, Juanita in the SW ¼ of Sec. 19 T158N R71W, Kittilson in parts of Sec. 5 T157N R72W and Sec. 30 and 31 T158N R72W, and Ghost Valley in Sec. 1 T158N R72W (Figure 2). After completion of the site visit on November 22, 2004 the project area was extended three miles further north (*i.e.*, from the north boundary being Highway 17 to the north boundary being three miles north of Highway 17) and one mile west (*i.e.*, new boundary is Highway 3). This area was not physically surveyed, however based on a review of topographic maps and aerial photos it appears to contain the same general features as the original project boundary, with the exception of fewer wetlands and larger waterbodies, and less overall topographic relief.

The Rugby Wind Farm is proposed to consist of up to 100 wind turbines with a capacity of approximately 150 MW. The most likely turbine size is 1.5 MW with a rotor diameter of 82 meters (269 ft). The wind turbines will be situated on 80-meter-tall (262 ft) steel, tubular towers secured to a concrete foundation. Details on turbine layout have not been developed at this time.

II. METHODS

II.A. Agency Consultations

Letters requesting information and comments relating to biological issues (including occurrence of federally listed and candidate species, state listed species, and state rare species in the vicinity of the proposed wind farm development site) were sent to the U.S. Fish and Wildlife Service (USFWS), the North Dakota Game and Fish Department (NDGFD), and the North Dakota Parks and Recreation Department (NDPRD) (for Natural Heritage Inventory review) by HDR Engineering, Inc (see Appendix A). The NDPRD replied on December 14, 2004, the NDGFD replied on January 14, and the USFWS replied on January 10, 2005 (Appendix B). In addition to these correspondences, representatives from WEST, and/or HDR have had several phone conversations, in-person discussions, and site visits/meetings with personnel from both agencies.

II.A. Phase I Screening and USFWS PII

Biological resources in the vicinity of the proposed wind farm area were evaluated by reviewing existing data and visiting the site area. A site visit was conducted on November 17, 2004 and included environmental staff from HDR and the Wetland District Manager from J. Clark Salyer NWR Complex. A second site visit occurred on November 22, 2004 and included a biologist from the NDGFD and a biologist from WEST. During the first site visit the group discussed the project relative to FWS easements and fee title interests. During the second visit, biological features and potential wildlife habitat, including plant communities, topographic features, and potential raptor nest structures, were identified. A list of wildlife species observed during the site visit was recorded (Table 1).

Table 1. A list of species observed during the November 22, 2004 site visit within the project area.

COMMON NAME	SCIENTIFIC NAME
Various and numerous waterfowl species	
Black-billed magpie	*Pica pica*
Blue jay	*Cyanocitta cristata*
Ring-necked pheasant	*Phasianus colchicus*
Sharp-tailed grouse	*Tympanuchus phasianellus*
Hairy Woodpecker	*Dendrocopos villosus*
Bald Eagle	*Haliaeetus leucocephalus*
Common Raven	*Corvus corax*
Unidentified/mixed sparrow flocks	
Fox squirrel	*Sciurus niger*
White-tailed deer	*Odocoileus virginianus*
Longtail weasel	*Mustela frenata*

Several data sources were used to identify biological resources within the project area, including data requested from the North Dakota Natural Heritage Inventory, review of websites, discussions with USFWS and NDGFD personnel, and published literature, field guides, etc. After biological resources in the project area were identified, potential for conflicts with the proposed Rugby Wind Farm area were analyzed based, in part, upon studies conducted at other wind plants throughout the U.S. The Potential Impact Index (PII) score based on the Interim USFWS Guidelines (USFWS 2003) was also developed for the proposed wind farm area.

III. RESULTS

III.A. Phase I Screening

III.A.1 Raptors

Nesting density and species breeding**.** Potential nesting habitats in the project area for above-ground nesting raptor species are present in the form of scattered trees, tree rows, and shelter belts. No cliffs or rock outcrops were identified during the site visit. Based on the reconnaissance-level site visit, it did not appear that the proposed project area supports high densities of above-ground nesting raptors, but extensive searches were not completed. One large raptor stick nest was located in a large cottonwood tree in T157N R72W Sec. 1. One bald eagle was observed perched in the same tree and another sitting on the nest at the time of the site visit. It is possible that this is an active bald eagle nest but because of the site visit date, nest occupancy and/or species use could not be confirmed.

Above-ground nesting species most likely to nest within and surrounding the project area include, Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), and red-tailed hawk (*Buteo jamaicensis*). It is also possible that ferruginous hawk (*Buteo regalis*), Cooper's hawk (*Accipiter cooperi*), sharp-shinned hawk (*Accipiter striatus*), bald eagle (*Haliaeetus leucocephalus*), screech owl (*Otus asio*), and great-horned owl (*Bubo virginianus*) could nest in the project area (Stewart 1975). Ground- or belowground-nesting raptors most

likely nesting in the project area includes northern harrier (*Circus cyaneus*). Other potential ground- or belowground-nesting raptors that could be in the project area include burrowing owl (*Athene cunicularia*), short-eared owl (*Asio flammeus*), and long-eared owl (*Asio otus*), (Stewart 1975). Turkey vulture (*Cathartes aura*) may occur in the project area during the breeding season but are unlikely to nest within the project area due to lack of habitat.

Raptors that may also occur in the project area during the non-breeding season include those listed above, plus rough-legged hawk (*Buteo lagopus*), goshawk *(Accipiter gentiles),* and snowy owl (*Nyctea scandiaca*) (Stewart 1975).

Potential for prey densities**.** No signs of colonial rodents (*e.g*. prairie dogs) were observed during the site visit and none are known to be in the project area. Potential raptor prey sources include isolated ground squirrels and other rodents, rabbits, and waterfowl. Waterfowl are known to concentrate in the area during certain times of the year. Overall, it is very difficult to assess potential prey densities during a single site visit and prey densities can fluctuate rapidly based on habitat and climatic factors. However, overall prey densities are not expected to be significantly different than areas outside of the proposed project area.

Does the topography of the site increase the potential for raptor use? The proposed project is located in an area dominated by rolling hills separated by drainages and waterbodies. The area west of the project area is significantly flatter and somewhat lower in elevation. There are no consistent, prominent ridges running through the project area. At some wind farm sites located on prominent ridges with defined edges (e.g., rims of canyons, steep slopes), raptors are often observed flying along the rim edges, using updrafts to maintain altitude while hunting, migrating, or soaring. For example, at a wind farm site in Wyoming, raptors most often used areas within 50 m of the rim edge (Johnson et al. 2000a). Overall, raptor use is not expected to be heavily influenced by the topography in the project area because of the general lack of defined ridges and rim edges. Raptor use may be related to certain waterbodies if they consistently stage more waterfowl and/or have fish populations that could serve as prey.

Many developed wind farms have documented some level of raptor fatalities. Erickson et al. (2001) reported that raptor fatalities averaged 0.033 raptors/turbine/year for nine project areas reviewed. This estimate is reduced to 0.006 raptors/turbine/year if projects in California are removed. A study conducted at the Buffalo Ridge wind farm in southwestern Minnesota (primarily agricultural lands with grasslands/CRP and wetlands) documented one raptor fatality, a red-tailed hawk, during four years of searching 354 turbines (Johnson et al. 2002). Based on the general lack of potential above-ground nesting areas, relatively low potential for concentrated prey items during most periods of the year, and the lack of a defined ridge or other topographic feature in the project area, overall direct impacts to raptors are likely to be similar to the range of 0.006 to 0.033 raptors/turbine/year reported by Erickson et al. (2001).

III.A.2. Federal Species of Concern

In their January 10, 2005 letter the USFWS identified three threatened or endangered species as potentially occur in the project area: whooping crane (*Grus americana*), bald eagle, and piping plover (*Charadrius melodus)* (USFWS letter, Appendix B). The USFWS also identified that piping plover critical habitat has been designated near the project area. In addition to these

threatened and endangered species and critical habitat, the USFWS expressed concern regarding migratory birds, USFWS property interests in the project area, and wetland, grassland, and woodland resources (USFWS letter, Appendix B).

Whooping Crane (Endangered). The whooping crane is an endangered bird with a total population of over 200 birds as of August 2004 (Wally Jobman, USFWS, pers. comm.). Whooping cranes typically migrate from their breeding grounds in Wood Buffalo National Park, Canada to their wintering areas in Aransas National Wildlife Refuge, Texas, although one young adult summered in North Dakota in 1989, 1990, 1993. During the migration, most birds pass through central and western North Dakota, demonstrating a possible correlation between whooping crane stopover sites in North Dakota and the path of the Missouri River (Austin and Richert 2001). There were 289 confirmed observations of whooping cranes in North Dakota between 1943 and 1999, with most occurring along the Missouri River valley. However, there have been confirmed observations of whooping cranes through numerous other counties of North Dakota, including Pierce County (Austin and Richert 2001). The North Dakota Natural Heritage Inventory review (NDPRD letter, Appendix B) did not contain any records of whooping crane occurring within the project area.

Outside of Nebraska, more than 75% of recorded roost observations of whooping cranes from 1943-1999 have been in palustrine wetlands (Austin and Richert 2001). Typically, whooping cranes roost or loaf in shallow water vegetated wetlands and forage in subirrigated wet meadows and/or cultivated agricultural lands. Only four of 644 roost observations used by Austin and Richert (2001) were of whooping cranes that roosted in flooded cropland, while most observations of roosting whooping cranes outside of Nebraska occurred in vegetated wetlands. Of these observations, only 12% occurred in lacustrine or lakeside wetlands. The proposed project area contains numerous waterbodies. Many of the waterbodies in the project area could currently be considered lakes with lacustrine wetlands (approximately 1527 ac based on National Wetland Inventory maps); however, there are palustrine wetlands in the area (approximately 2896 acres based on Wetland Inventory maps). The project area also contains some cultivated fields that may provide potential foraging habitat. Overall the project area contains some potential habitat for migrating whooping cranes, but most historic whooping crane use has occurred west of the project area.

The potential exists, although remote given their very low numbers and that the main flyway is west of the project, for whooping cranes to fly through the area during migration. Whooping cranes generally migrate at 1,000-5,000 ft, altitudes well above turbine height (Tom Stehn, USFWS, http://www.learner.org/jnorth/spring1998/jnexpert/_CraneAnswer.html), and thus for the most part are unlikely to collide with turbines. However, as whooping cranes ascend and descend during takeoff and landing, or migrate during inclement weather, they may fly at lower altitudes and may fly within rotor-swept areas.

Piping Plover (Threatened). According to the USFWS, more piping plovers nest in North Dakota than in any other state. The species nests along midstream sandbars of the Missouri and Yellowstone Rivers and along shorelines of alkaline wetlands. The shores of Lake Sakakawea and areas dominated by alkaline wetlands have been ruled as critical habitat for the piping plover

(USFWS 2001). The closes designated critical habitat for piping plovers is approximately 5-7 miles southeast of the proposed wind farm area

The North Dakota Natural Heritage Inventory does not have any records for piping plovers within the proposed project area (NDPRD letter, Appendix B). The wetlands and waterbodies within the project area (viewed during the November 22, 2004 site visit) did not exhibit the saline wetland characteristics used by piping plovers in non-riverine areas of North Dakota (USFWS 2001). Most or all wetlands had vegetation extending to the waterline.

While no potential nesting habitat for the piping plovers was observed within the project area, the potential exists for the species to fly through the project area during migration. Little is known concerning the migration habits of the piping plover, and it is not known if the species migrates along major river systems or flies in direct north-south pattern.

Bald Eagle (Threatened). In previous discussions and correspondence with the USFWS, the USFWS described the bald eagle as migrating primarily along major rivers through North Dakota**.** Wintering bald eagles are often associated with lakes, rivers, and reservoirs where they feed primarily on fish (Johnsgard 1990). In North Dakota, eagles have been known to concentrate during the winter along the Missouri River. Bald eagles may also be found during migration and winter periods in areas away from major rivers if sufficient forage (e.g., carrion) is available. Like most raptors, bald eagles are potentially found in the project area during migration. Two bald eagles were documented in the project area during the November 22, 2004 site visit.

Bald eagles nest in areas with mature forest, typically along major water ways, lakes, and reservoirs. However, with increasing bald eagle populations, nesting eagles are also being found in areas away from "major" waterbodies. Limited nesting habitat is present within the project area in the form of mature cottonwood trees. One potential eagle nest was located in the project area during the November 22, 2004 site visit. Because of the time of year, actual species use (*e.g.*, eagle or large red-tailed hawk nest) or occupancy (*i.e.*, active vs. inactive) could not be determined for the single nest located. The USFWS recommended a spring survey to determine species use and occupancy of the nest (USFWS letter, Appendix B). If it is determined that the nest is an active bald eagle nest, PPM proposed a one-mile buffer around the nest. The USFWS agreed that a one-mile buffer with no disturbance should be sufficient to minimize impacts.

WEST is unaware of any documented bald eagle fatalities at wind power facilities (Erickson et al. 2001, Erickson pers. comm.), even when bald eagles are known to nest within relative close proximity of wind farms (e.g., nest within 5-miles of the Foote Creek Rim wind farm site both before and after turbine construction).

Migratory Birds. Most species of migratory birds are protected by the Migratory Bird Treaty Act (MBTA). The USFWS lists 29 birds as species of concern within the Prairie Pothole Region (USFWS 2002). Most of these species do not receive special protection beyond the MBTA, but they have been identified as vulnerable to population decline in the area by the USFWS. The Interim USFWS Guidelines use migratory birds and potential impacts to them as one factor in the PII score. See Section III.B. for a discussion of the PII score.

Of the nine project areas and associated studies reviewed by Erickson et al. (2001), all had documented bird mortalities. Data from these studies indicated that there was an average of 2.19 fatalities/turbine/year for all birds (0.033 are raptors). If projects in California are removed, the result is 1.83 fatalities/turbine/year for all birds (0.006 are raptors). Studies from 1996-1999 at the Buffalo Ridge wind farm, Minnesota, estimated 0.98 fatalities/turbine/year (Johnson et al. 2002). More recent studies conducted in the eastern U.S. (Erickson et al. 2001 contained the eastern studies done at the point in time) indicate a similar to slightly higher level of avian mortality, as was summarized by Erickson et al. For example, a wind farm located at Mountaineer, WV, had a bird mortality rate of between 2-3 birds/turbine/year and Buffalo Mountain, TN had a bird mortality rate of 10-12 birds/turbine/year (Erickson et al. 2004). Total annual impacts from all wind farms, calculated in 2001, were 10,000-40,000 birds. This compares to avian mortality estimates of 60-80 million/year from vehicles, 98-980 million/year for buildings and windows, tens of thousands to 174 million/year for power lines, and 4-50 million/year for communication towers (Erickson et al. 2001). Based on general habitat characteristics and species composition compared to other wind farms, it is reasonable to assume that bird fatalities associated with a wind farm developed at the proposed Rugby Wind Farm would be similar to those fatality rates documented in other locations. To reduce potential impacts to migratory birds, in particular raptors, the USFWS recommended that overhead power lines, if needed, be constructed in accordance with the current guidelines for preventing raptor electrocutions.

Besides the direct impact of wind turbines on migratory birds (*i.e.*, fatality), concerns have also been raised regarding indirect impacts to breeding birds, however there is uncertainty regarding this degree of indirect impacts. In Minnesota, researchers have found that breeding songbird density on CRP grasslands was reduced in the immediate vicinity of turbines (Leddy et al. 1999), but changes in density at broader scales was not detectable (Johnson et al. 2000b). It is difficult to estimate the indirect impacts of the proposed wind farm.

Prairie Grouse.
While the USFWS did not identify sharp-tailed grouse as an issue in correspondence to date, the USFWS has identified prairie grouse as a concern on the national level (Manville 2004). Sharp-tailed grouse were observed in the project area during the November 22, 2004 site visit. It is likely that leks are located in the project area, but no known lek surveys to document the locations have been identified. Turbines should not be placed on known lek locations.

Grassland, Wetland, and Woodland Resources
The proposed project area contains a minimal amount of woodland areas. Most treed areas are in the form of farmsteads and tree rows, but there are areas of native woodlands around the wetlands and lakes. Current plans do not include the placement of turbines in these woodland areas, minimizing potential impacts to the woodland resource. If trees and shrubs are impacted by the project, the USFWS recommended a 2:1 restoration effort. Grassland resources are discussed in section III.A.3 and wetland resources are discussed in section III.A.5.

III.A.3. State Wildlife Issues and Native Grasslands

The NDGFD identified disturbance to native prairie as their primary concern (NDGFD letter, Appendix B). The USFWS also expressed concerns regarding impacts to native grasslands. While exact turbine locations have not been identified at this time, the overall project area contains areas of native grasslands and it is likely that plans will include placement of turbines in these areas. The grasslands are currently utilized for livestock grazing, with some areas receiving significant grazing pressure. The NDGFD and USFWS generally recommend minimizing the number of turbines, roads, and other facilities in native grassland areas. The USFWS notes that where construction in native areas in unavoidable, impacts should be minimized by using larger turbines, limiting new road construction, and timing construction for late summer (after July 15). The USFWS also recommends reseeding disturbed areas with native seed stocks from nurseries located within a 250-mile radius of the project area.

III.A.4. Unique Habitat

The proposed wind farm project area is located in the prairie pothole region, and as such contains a number of wetlands and lakes along with areas of native grasslands. While this habitat type is not "unique" to the Rugby area (e.g., the prairie pothole region extends over portions of South Dakota, Minnesota, North Dakota, and Canada), concerns have been raised by various parties regarding its general loss.

III.A.5. Wetlands and USFWS Wetland Easements

Information concerning wetlands is based on general field observations and NWI maps and not on formal delineations. Numerous wetlands and waterbodies are located in the project area. Many of the wetlands are under USFWS easements. Currently, preliminary plans are to avoid placing any turbines, roads, or other features in jurisdictional wetlands or wetlands with USFWS conservation easements.

Maps of wetlands, USFWS wetland easement areas, and Wildlife Production Areas were provided by the USFWS to HDR Engineering for project planning purposes. If needed, formal wetland delineations and permitting will be completed before construction.

III.A.6. Bats

There are several species of bats found in North Dakota, including the big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), long-legged bat (*Myotis volans*), eastern red bat (*Lasiurus borealis*), little brown bat (*Myotis lucifugus*), long-eared bat (*Myotis evotis*), western small footed myotis (*Myotis ciliolabrum*), northern myotis (*Myotis septentrionalis*), Townsend's big-eared bat (*Corynorhinus townsendii*), silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), and red bat (*Lasiurus borealis*) (http://www.batcon.org/discover/species/nd.html, Grondahl no date). The USFWS formerly had listed the long-eared bat, big-eared bat, long-legged bat, and small-footed myotis as candidate species. Based on information from two web sites (http://nationalatlas.gov/natlas/natlasstart.asp, http://www.batcon.org/) none of the former candidate species have been found in the project area.

Potential roosting habitat within the wind farm project areas is found in the form of trees and a few old buildings. No caves were observed during the site visit or reported by agency personnel. Bats may forage over the entire project area, although the extent of use is not known.

Bat casualties have been reported from most wind farms where post-construction fatality data are publicly available. Reported estimates of bat mortality at wind farms through 2001 ranged from 0.07 – 10.0 per turbine per year in the U.S. (Table 2). Most of the bat casualties at wind farms have been migratory species that conduct long migrations between summer roosts and winter hibernacula, but mortalities of numerous species have been found. Examples of species commonly found as fatalities at windpower facilities include hoary bats, silver-haired bats and eastern red bats. A recent report of bat fatalities at a wind farm in West Virginia included relatively high numbers of red bats, hoary bats, eastern pipistrelle (*Pipistrellus subflavus*) and little brown bats over the course of one year, up to 47.53 bats/turbine/year (Kerns and Kerlinger 2004). The West Virginia site is located on a prominent, relatively narrow ridge in the Appalachian Mountains and may be located within a bat migration corridor. The causes of the relatively high number of migratory bat deaths at some windpower facilities are not well understood. Some researchers have suggested it may be related to the lack or reduction of echolocation during migration (Johnson 2003). Furthermore, field methods to provide strong quantitative predictions of migratory bat use are lacking.

Table 2. Reported bat fatality estimates for windpower facilities in the U.S from Johnson (2003).

Location	Year	Mean annual mortality	Bat mortalities per turbine	Notes
Buffalo Ridge, MN P1	1999	5	0.07	Adjusted for search biases
Buffalo Ridge, MN P2	1998-2001	289	2.02	Adjusted for search biases
Buffalo Ridge, MN P3	1999-2001	319	2.32	Adjusted for search biases
Wisconsin	1999	34	1.10	Not adjusted for search biases
Foote Creek Rim, WY	1998-2001	138	1.04	Adjusted for search biases
Buffalo Mtn., TN	2001	30	10.0	Not adjusted for search biases
Vansycle, OR	1999	28	0.40	Adjusted for search biases

Due to a lack of information concerning bat migration habits, it is difficult to predict if the proposed project area is located within a bat migration corridor. However, unlike the West Virginia site, the proposed project area does not appear to contain topographic features that may funnel migrating bats (Figure 2). The proposed wind project will likely result in some bat mortality, but the magnitude of these fatalities is difficult to determine. The Buffalo Ridge, Minnesota project area contained features similar to the Rugby Wind Farm in that there were numerous wetlands, croplands, woodlots, etc. Even in these habitats (e.g., potential foraging areas around wetlands and woodlots) significant bat mortalities were not documented.

III.A.7. Avian Migratory Pathways

Many species of songbirds and waterfowl migrate at night and thus may collide with tall, man-made structures. Although most birds migrate at altitudes greater than those associated with most wind turbines and towers, large numbers of songbirds have been documented colliding with lighted communication towers and buildings when foggy conditions and spring or fall migration coincide. To date, no large mortality events on the same scale as those seen at communication towers have been documented at windpower facilities in North America (Erickson et al. 2001). However, turbines used by many wind developers are getting taller and require lighting by the

Federal Aviation Administration; this may increase the risk of collision by nocturnal migrants with wind turbines.

Little is known for certain regarding what landscape cues migratory birds use during migration. For this project, migratory pathways are considered on a continental, regional, and local scale. On a continental scale, the proposed project area is not located near an ocean coast or immediately near a large mountain range (e.g., Rocky Mountains); features that could impact migration on a continental scale. Likewise on a regional scale, the proposed project is located in an area of open, rolling hills. There are not any obvious "funnels" (e.g., gaps in mountains, Missouri River) or other migratory paths (e.g., long ridge lines) leading into or out of the wind farm area that could potentially serve as a migratory path on a regional scale. On a local scale, the wetlands and waterbodies may serve as a local attractant for migrating song birds to stop over while moving as part of a large "broad front" migration once they are in the project area. These broad front migration events can be episodic (Evans 1998), making them difficult to predict.

The area does contain significant migratory stopover for waterfowl in the spring and fall. This is not necessarily unique to the project area as it is seen throughout the larger prairie pothole region.

III.B. USFWS Guidelines and PII Score

The USFWS issued "Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines" in 2003. Application of the guidelines is voluntary. The voluntary guidelines are meant to assist the USFWS and the wind energy industry to locate projects to minimize or avoid wildlife impacts by providing a standardized approach to evaluate proposed project areas against other reference areas.

WEST personnel visited the proposed wind farm project area with NDGFD personnel on November 22, 2004 and completed the field portion of the interim guidelines (*i.e.*, physical attribute checklist, ecological attractiveness checklist). Once in the office, WEST completed the remaining worksheets (*i.e.*, species occurrence and status checklist) for determining the Potential Impact Index (PII) scores (Appendix C). The PII developed for this project uses the Audubon National Wildlife Refuge near Lake Sakakawea as a reference site. Potential species occurrence was based on the bird distribution maps found in range guides (Stewart 1975), and the site visit. Potential bat occurrence is based on range maps located on a government web site (http://nationalatlas. gov/natlas/natlasstart.asp) and a web site maintained by Bat Conservation International (http://www.batcon.org/).

The PII for the proposed wind farm project area was 177. The PII score for the Audubon NWR reference site was 216. The Interim Guidelines state that a reference site should be selected such that it has more ecological concerns and a higher score. The Audubon NWR was selected for the reference site because it would likely have a higher PII score than the project site. The reference site is publicly available land located near the project area but with more species, "better" habitat characteristics for several threatened and/or endangered species (*e.g.*, piping plover), more threatened and endangered species, and a special designation. In addition, the USFWS did not have any existing data on other PII scores within the state for comparison.

IV. SUMMARY

The purpose of this report is to identify potential conflicts that a wind farm developed in the proposed area could have on wildlife and wildlife habitat. Discussions with state and federal agency personnel, a reconnaissance-level site visit, and review of published and unpublished literature were all used to identify these potential conflicts. The proposed wind farm area is located in an area with wetlands and waterbodies, areas of cultivated agriculture, and areas of native mixed-grass prairie. This area provides habitat for numerous species, some of which are identified as species of concern. These species include grassland nesting birds, raptors, and prairie grouse. A potential bald eagle nest was located near the southern edge of the project area. The area is also an important migratory area for waterfowl as part of the prairie pothole region. Many of the same landscape features found in the proposed Rugby Wind Farm area are found in other wind farm projects (e.g., Buffalo Ridge has wetlands and waterbodies, CRP, cropland, etc.). The USFWS recommended that post-construction mortality studies be conducted to determine the effect of the wind farm on avian species. These studies would help confirm the presumption that direct mortality from this wind farm are likely to be similar as other wind farms in the Midwest and West.

The Interim USFWS Guidelines PII score is used as one tool to combine species use, landscape features, and ecological features into one measurement. The PII score for the proposed Rugby Wind Farm was 177. The score for a reference area located at the Audubon NWR was 216. The Rugby Wind Farm PII score is lower than the Audubon NWR reference area because of many of the items identified in Section III.B. Specifically, the Audubon NWR has potential habitat for more species of concern, is a potential migratory funnel, and has special designation. The score of 177 for the Rugby site can be generally attributed to the presence of native grassland and wetlands as part of the larger prairie pothole region. These landscape features make it “possible” for native species of concern, identified in the PII scoring process, to occur in the project area. It is likely that other wind projects of this scope proposed for development in the prairie pothole region would have PII scores of similar magnitude if they encompass areas of native grasslands and wetlands.

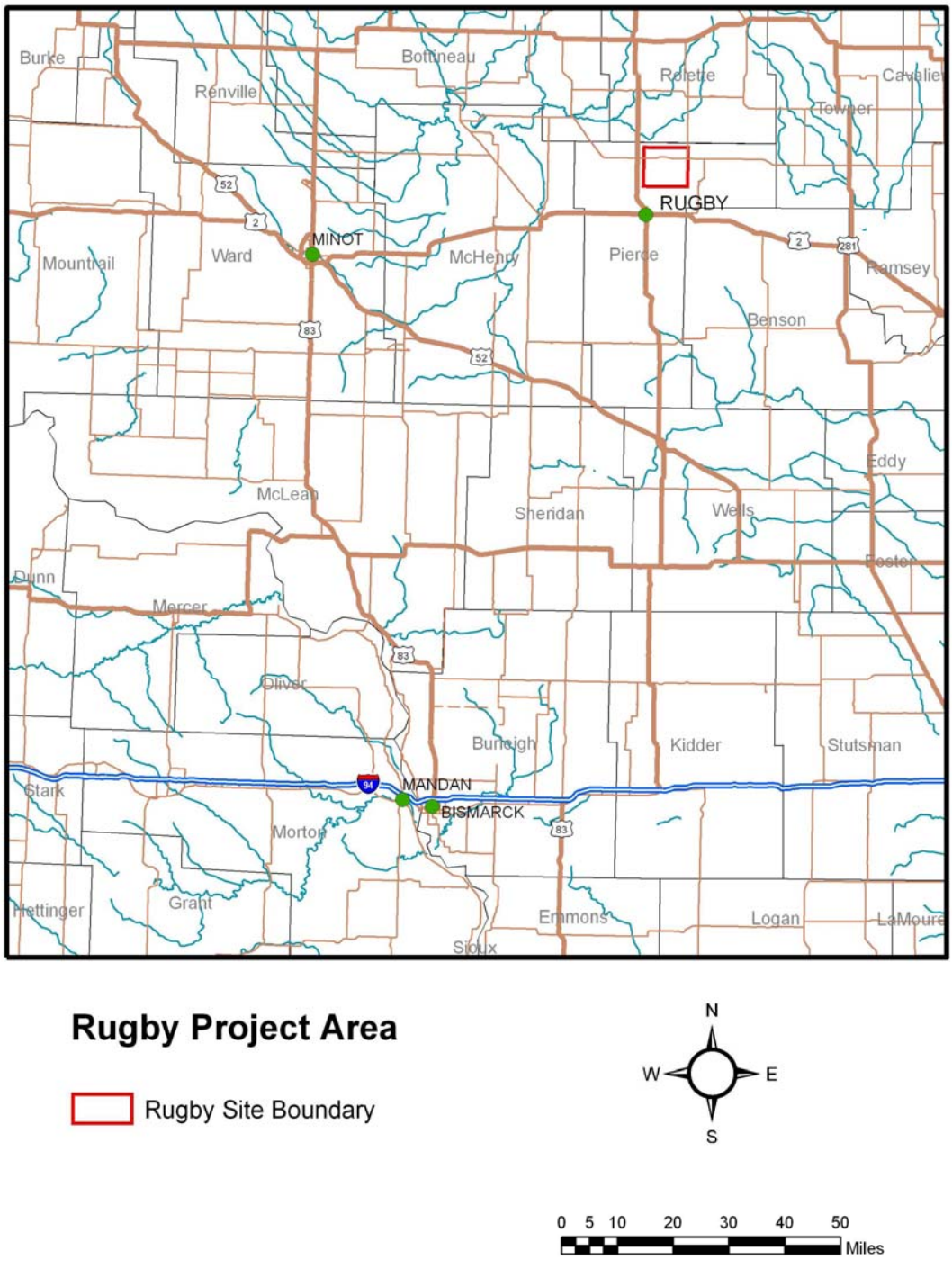


Figure 1. Rugby Wind Farm proposed project area.

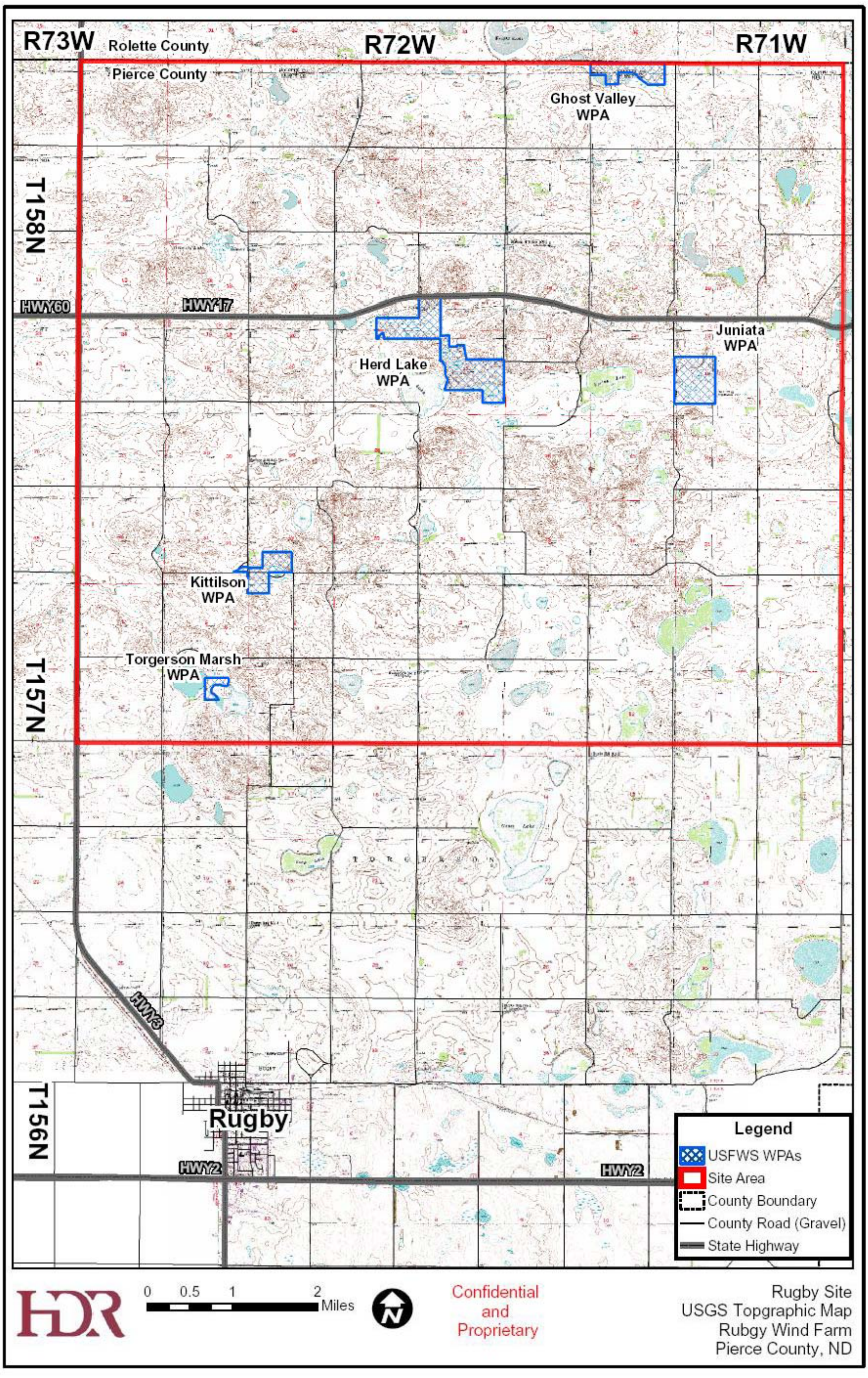


Figure 2. Rugby Wind Farm proposed project area detailed map.

V. LITERATURE CITED

Anderson, R., M. Morrison, K. Sinclair, D. Strickland. 1999. Studying wind energy/bird interaction: a guidance document. Prepared for the Avian Subcommittee and National Wind Coordinating Committee. 87 pp.

Austin, J.E. and A.L. Richert. 2001. A comprehensive review of observational and site evaluation data of migrant whooping cranes in the United States, 1943-1999. Unpublished report prepared for the U.S. Fish and Wildlife Service.

Erickson, W.P., G.D. Johnson, M.D. Strickland, K.J. Sernka, and R.E. Good. 2001. Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collision Mortality in the United States. Prepared for the National Wind Coordinating Committee. Available at http://www.west-inc.com

Erickson, W., M.D. Strickland, G. Johnson, D. Young. 2004. Update on bird and bat impacts at wind energy project. Presentation at the 2004 TWS International Conference.

Evans, W.R. 1998. Acoustic detection of nocturnal bird migration at a proposed wind turbine site in north-central Nebraska. Unpublished report to the Nebraska Public Power District.

Grondahl, C. No Date. Small Mammals of North Dakota. North Dakota Game and Fish Department, Bismarck, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. http://www.npwrc.usgs.gov/resource/distr/mammals/mammals/mammals.htm (Version 15AUG97).

Johnsgard, P.A. 1990. Hawks, eagles, and falcons of North America: Biology and natural history. Smithsonian Institution Press, Washington D.C.

Johnson, G.D. 2003. What is known and not known about bat collision mortality at windplants? In R.L. Carlton, editor. Avian interactions with wind power structures. Proceedings of a workshop in Jackson Hole, Wyoming, USA, October 16-17, 2002. Electric Power Research Institute, Palo Alto, California. In Press.

Johnson, G.D., D.P. Young, Jr., W.P Erickson, C.E. Derby, M.D. Strickland and R.E. Good. 2000a. Wildlife Monitoring Studies, SeaWest Windpower Project, Carbon County, Wyoming, 1995-1999. Prepared for SeaWest Energy Corporation, San Diego, CA, and Bureau of Land Management, Rawlins.

Johnson, G.D., W.P. Erickson, M.D. Strickland, M.F. Shepherd and D.A. Shepherd. 2000b. Avian Monitoring Studies at the Buffalo Ridge, Minnesota Wind Resource Area: Results of a 4-year study. Tech. Rept. Prepared for Northern States Power Co., Minneapolis, MN. 262pp.

Johnson, G.D., W.P. Erickson, M.D. Strickland, M.F. Shepherd, D.A. Shepherd, and S.A. Sarappo. 2002. Collision mortality of local and migrant birds at a large-scale wind-power development on Buffalo Ridge, Minnesota. Wildlife Society Bulletin 30(3):879-887.

Kerns, J. and P. Kerlinger. 2004. A study of bird and bat collision fatalities at the Mountaineer Wind Energy Center, Tucker County, West Virginia: annual report for 2003. Technical Report prepared for FPL Energy and Mountaineer Wind Energy Center Technical Review Committee.

Leddy, K.L., K.F. Higgins and K.F. Naugle. 1999. Effects of wind turbines on upland nesting birds in Conservation Reserve Program grasslands. Wilson Bulletin 111: 100-104.

Manville, A.M., II. 2004. Prairie grouse leks and wind turbines: U.S. Fish and Wildlife Service justification for a 5-mile buffer from leks; additional grassland songbird recommendations. Division of Migratory Bird Management, USFWS, Arlington, VA, peer-reviewed briefing paper. 17 pp.

Stewart, R.E. 1975. Breeding Birds of North Dakota. Tri-College Center for Environmental Studies, Fargo, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. http://www.npwrc.usgs.gov/resource/distr/birds/bb_of_nd/bb_of_nd.htm (Version 06JUL2000).

USFWS (U.S. Fish and Wildlife Service). 2001. Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for the Northern Great Plains Breeding Population of the Piping Plover; Proposed Rule. 50 CFR Part 17.

USFWS (U.S. Fish and Wildlife Service). 2002. Birds of conservation concern 2002. Division of Migratory Bird Management, Arlington, Virginia. 99 pp. [Online version available at <http://migratorybirds.fws.gov/reports/bcc2002.pdf>]

USFWS (U.S. Fish and Wildlife Service). 2003. Service interim guidance on avoiding and minimizing wildlife impacts from wind turbines. Technical memorandum to Regional Directors, Regions 1-7.

APPENDIX A
Letters Sent to the USFWS, NDGFD, and NDPRD by HDR Engineering

December 3, 2004

Mr. Terry Ellsworth
U.S. Fish and Wildlife Service
3425 Miriam Avenue
Bismarck, ND 58501-7926

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Ellsworth:

HDR Engineering, Inc. appreciates your and Mr. Albright's input on siting this proposed wind project. Please review the Rugby Wind Farm project for potential effects to known federally-listed threatened or endangered species and rare natural features. This request is made pursuant to Section 7 of the Endangered Species Act of 1973, as amended. In addition, please review this project in relation to the USFWS refuge system, including Waterfowl Protection Areas and easements.

The proposed project is a 100 to 150 MW wind farm in Pierce County, located north of the city of Rugby, North Dakota. Currently the project plans to use approximately 67 to 100 1.5-MW turbines, although that may change as turbine technology advances. The exact turbine locations have not been determined.

The proposed project is located in the following Township, Ranges, and Sections in Pierce County, North Dakota:

Township	Range	Sections
157 N	71 W	5-8
157 N	72 W	1-12
158 N	71 W	7-8, 17-20, 29-32
158 N	72 W	7-36

Enclosed is map detailing the location of the Rugby Wind Farm site location to facilitate your review. If you require further information or have questions regarding this matter, please call Michelle Bissonnette at (763) 278-5910. Thank you for your assistance.

Sincerely,

Michelle Bissonnette
Project Manager

Enclosure: Project Location Map

cc: Mr. Lee Albright, US Fish and Wildlife Service
Mr. Tim Seck, PPM Energy

December 3, 2004

Mr. Dean Hildebrand
North Dakota Game and Fish Department
100 North Bismarck Expressway
Bismarck, ND 58501-5095

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Hildebrand:

HDR Engineering, Inc. requests your review of the above-mentioned project for potential effects to known federally-listed threatened or endangered species and rare natural features.

The proposed project is a 100 to 150 MW wind farm in Pierce County, located north of the city of Rugby, North Dakota. Currently the project plans to use approximately 67 to 100 1.5-MW turbines, although that may change as turbine technology advances. The exact turbine locations have not been determined.

The proposed project is located in the following Township, Ranges, and Sections in Pierce County, North Dakota:

Township	Range	Sections
157 N	71 W	5-8
157 N	72 W	1-12
158 N	71 W	7-8, 17-20, 29-32
158 N	72 W	7-36

Enclosed is map detailing the location of the Rugby Wind Farm site location to facilitate your review. If you require further information or have questions regarding this matter, please call Michelle Bissonnette at (763) 278-5910. Thank you for your assistance.

Sincerely,

Michelle Bissonnette
Project Manager

Enclosure: Project Location Map

cc: Mr. Steve Dyke, North Dakota Game and Fish Department
Mr. Tim Seck, PPM Energy, Inc.

December 3, 2004

Ms. Kathy Duttenhefner
ND Natural Heritage Inventory
North Dakota Parks & Recreation Department
1600 East Century Avenue
Bismarck, ND 58503-0649

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Ms. Duttenhefner:

HDR Engineering, Inc. requests a database review for the above-mentioned project. The proposed project is a 100 to 150 MW wind farm in Pierce County, located north of the city of Rugby, North Dakota. Currently the project plans to use approximately 67 to 100 1.5-MW turbines, although that may change as turbine technology advances. The exact turbine locations have not been determined.

The proposed project is located in the following Township, Ranges, and Sections in Pierce County, North Dakota:

Township	Range	Sections
157 N	71 W	5-8
157 N	72 W	1-12
158 N	71 W	7-8, 17-20, 29-32
158 N	72 W	7-36

Enclosed is map detailing the proposed location of the Rugby Wind Farm site location to facilitate your review. If you require further information or have questions regarding this matter, please call Michelle Bissonnette at (763) 278-5910. Thank you for your assistance.

Sincerely,

Michelle Bissonnette
Project Manager

Enclosure: Project Location Map

cc: Mr. Tim Seck, PPM Energy, Inc.

APPENDIX B
Letters Received from the USFWS, NDGFD, and NDPRD

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

RECEIVED
JAN 12 2005
HDR Engineering, Inc.

JAN 10 2005

Ms. Michelle Bissonnette, Project Manager
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, Minnesota 55416

Dear Ms. Bissonnette:

I am writing in response to your December 3, 2004, request for information on threatened and endangered species in relation to a proposed wind power project near Rugby, North Dakota. The proposed project includes construction of 67 to 100 1.5-MW wind turbines, access roads, and ancillary facilities. The proposed location for the wind power project is in Pierce County:

T. 157 N., R. 71 W., Sections 5-8
T. 157 N., R. 72 W., Sections 1-12
T. 158 N., R. 71 W., Sections 7, 8, 17-20, 29-32
T. 158 N., R. 72 W., Sections 7-36

In general, wildlife resources and issues that warrant consideration during project planning include: migratory birds (e.g., collisions and electrocutions); tribal, state or Federal land interests; wetlands, prairie, and woodland habitats; Clean Water Act - Section 404 activities; threatened and endangered species; ancillary facility development (e.g., roads, substations, underground cables, or overhead transmission lines); and monitoring, research, and assessment. Natural resources and issues that may be applicable to your project are further addressed below.

Migratory Birds

Adequate consideration to bird resources early in the site evaluation process can minimize impacts and facilitate project construction. Although current wind turbine technology minimizes the incidence of avian death due to blade and tower strikes, direct mortality of some migratory birds will continue to occur. The Fish and Wildlife Service (Service), under the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Act, the Endangered Species Act, and Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds," is directed to protect migratory birds. The provisions of these Acts generally make it unlawful to take migratory birds. However, being responsive to Congressional and Presidential mandates, treaties, and legislation, wind power developers, in concert with the Service, can cooperatively ensure projects proceed in a positive manner. Together, we have a responsibility to scientifically

determine the factors in siting and operation of wind power plants that contribute to avian fatalities and to implement measures to minimize impacts to migratory birds.

To minimize the electrocution hazard to birds, the Service, with support from the Rural Utilities Service, recommends that new or updated overhead power lines be constructed in accordance with the current guidelines for preventing raptor electrocutions. The recommended guidelines can be found in "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996". To increase power line visibility and reduce bird fatalities resulting from collisions with power lines, the Service recommends power lines that cross or run adjacent to rivers or large wetlands be modified according to "Mitigating Bird Collisions with Power Lines: The State of the Art in 1994". Both publications can be obtained by writing or calling the Edison Electric Institute, P.O. Box 266, Waldorf, Maryland, 20604-0266, (1-800-334-5453) or visiting their website at www.eei.org.

Research, Monitoring and Assessment

We encourage project proponents to conduct collision monitoring studies designed to determine the effect of several factors, such as site selection, turbine designs, the layout of wind plants, wind plant operations, habitat alteration, and changes in available perching and nesting sites on bird deaths. The Avian Subcommittee of the National Wind Coordinating Committee (NWCC) has developed a guidance document to assist wind energy developers in designing studies that will produce credible and comparable results of avian interaction with wind power plants. The NWCC document, "Studying Wind Energy/Bird Interactions: A Guidance Document. Metrics and methods for determining or monitoring potential impacts on birds at existing and proposed wind energy sites," can be obtained by contacting the National Wind Coordination Committee, c/o RESOLVE, 1255 23rd Street, Suite 275, Washington, D.C. 20037, or by visiting their website at www.nationalwind.org). The Service currently is compiling a list of research and monitoring issues related to wind power development in the Dakotas. We look forward to sharing these ideas with you and other industry representatives, and cooperatively developing a reasonable approach to acquisition of information that may help identify additional measures to minimize impacts to wildlife resources.

Fish and Wildlife Service Property Interests

As part of the National Wildlife Refuge System, the Service administers fee title Refuge and Waterfowl Production Areas, as well as wetland and grassland easements throughout North Dakota. Lee Albright, Wetland Manager, J. Clark Salyer National Wildlife Refuge, has provided HDR Engineering (HDR) with current Service property information for the proposed project area.

Wetland, Grassland, and Woodland Resources

The proposed project area is located in the Drift Prairie region of North Dakota and includes areas of native mixed-grass prairie. Since the 1800s, North Dakota has lost approximately 75-90 percent of its native grasslands primarily due to crop production.

Native prairie has significant natural resource values including:

- Provides habitat for a number of migratory grassland birds whose populations are declining.
- Provides nesting habitat for millions of waterfowl.
- Contains 200-300 plant species, which provide genetic diversity important to agriculture and medicine.
- Provides habitat for thousands of insects including the Dakota skipper, a candidate species, and other butterflies (Ex: Regal fritillary, Tawny crescent).
- Crucial for soil and water conservation.
- Provides recreational opportunities (hunting, bird watching/wildlife observation, hiking).
- Living laboratories for scientific research.

Our review of National Wetlands Inventory (NWI) maps indicates that wetland areas are located within the project area. NWI data can be accessed directly by visiting their website at www.wetlands.fws.gov. We recommend you avoid construction of wind towers and ancillary facilities in or adjacent to wetlands when possible.

Construction activities should be conducted in a manner that will minimize impacts to the existing habitat in the project area. Where impacts are unavoidable, we recommend that you:

- Time construction for late summer (after July 15) or fall so as not to disrupt waterfowl or other wildlife during the nesting season.
- Avoid construction in native prairie if possible and reseed disturbed native prairie with a comparable native grass/forb seed mixture. Obtain seed stock from nurseries within 250 miles of the project area to insure the particular cultivars are well adapted to the local climate.
- Minimize grassland disturbance by using fewer, larger turbines and limiting new road construction.

- Use underground transmission lines between turbines, as well as to the primary substation.

- Locate ancillary facilities to avoid placement of fill in wetlands along the route.

- Install and maintain appropriate erosion control measures to reduce sedimentation and water quality degradation of wetlands and streams near the project area.

- Replace unavoidable wetland losses with functionally equivalent wetlands and replace trees or shrubs destroyed during construction on a 2:1 basis.

Section 404 program

Section 404 of the Clean Water Act regulates placement of fill materials in wetlands. A Corps of Engineers' 404 permit may be required if fill material will be placed in aquatic sites including wetlands. Contact Mr. Dan Cimarosti, Regulatory Office, Corps of Engineers, 1513 South 12th Street, Bismarck, North Dakota 58504 (701-255-0015), to determine their permit requirements. If a 404 permit is required, the Service will provide recommendations on this project to the Corps.

Threatened and Endangered Species

A list of federally threatened and endangered species that may occur within the proposed project's area of influence is enclosed. This list fulfills requirements of the Fish and Wildlife Service under Section 7 of the Endangered Species Act.

If a Federal agency authorizes, funds, or carries out a proposed action, the responsible Federal agency, or its delegated agent, is required to evaluate whether the action "may affect" listed species or critical habitat. If the Federal agency or its designated agent determines the action "is likely to adversely affect" listed species or modify critical habitat, the responsible Federal agency shall request formal section 7 consultation with this office. If the evaluation shows a "no effect" determination on listed species or critical habitat, further consultation is not necessary. If a private entity receives Federal funding for a construction project, or if any Federal permit is required, the Federal agency may designate the fund recipient or permittee as its agent for purposes of informal section 7 consultation.

Section 10(a)(1)(B) of the Endangered Species Act allows non-Federal parties planning activities that have no Federal nexus, but which could result in the incidental taking of listed animals, to apply for an incidental take permit. The application must include a habitat conservation plan (HCP) laying out the proposed actions, determining the effects of those actions on affected fish and wildlife species and their habitats (often including proposed or candidate species), and defining measures to minimize and mitigate adverse effects.

During a site visit November 22, 2004, North Dakota Game and Fish Department (Department) staff observed a large nest structure in T. 157 N., R. 72 W., Section 1, SW¼. At the time of the field review, it could not be determined if the structure was a bald eagle nest or if is was built by some other raptor species. Bald eagles prefer forested habitats near bodies of water and most nest sites are located within one half mile of water. Adult bald eagles mate for life and tend to use the same nest year after year. Bald eagle nesting activity begins in mid-February and the young are usually fledged by mid-July. Although individual bald eagle pairs can show considerable tolerance to human activity, every effort must be made to minimize disturbance of nesting pairs. The Service recommends conducting a spring survey of the nest structure prior to project construction to determine the status of the potential bald eagle nest. Please forward the results of the survey to this office for our records.

On December 29, 2004, the Service met with the Department, HDR, and PPM Energy to discuss potential project issues. At that meeting, HDR Engineering presented a proposal to create a one mile buffer area around the potential bald eagle nest. If a survey indicates that the nest structure is being used by nesting bald eagles, a one mile buffer area with no disturbance should be sufficient to minimize impacts to nesting birds.

Thank you for the opportunity to comment on this project. If you require further information or the project plans change, please contact Terry Ellsworth of my staff at 701-250-4481, or at the letterhead address above.

Sincerely,

Jeffrey K. Towner

Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

Enclosure

cc: ARD, ES, Denver (MAIL STOP 60120)
(Attn: R. Dach)
J. Clark Salyer WMD
(Attn: L. Albright)
Regulatory Office, Army Corps of Engineers, Bismarck
(Attn: D. Cimarosti)
Director, ND Game & Fish Department, Bismarck
(Attn: M. McKenna)

FEDERAL THREATENED AND ENDANGERED SPECIES
AND DESIGNATED CRITICAL HABITAT FOUND IN
PIERCE COUNTY, NORTH DAKOTA
January 2005

ENDANGERED SPECIES

Birds

Whooping crane (Grus Americana): Migrates through west and central counties during spring and fall. Prefers to roost on wetlands and stockdams with good visibility. Young adult summered in North Dakota in 1989, 1990, and 1993. Total population 140-150 birds.

THREATENED SPECIES

Birds

Bald eagle (Haliaeetus leucocephalus): Migrates spring and fall statewide but primarily along the major river courses. It concentrates along the Missouri River during winter and is known to nest in the floodplain forest.

Piping plover (Charadrius melodus): Nests on midstream sandbars of the Missouri and Yellowstone Rivers and along shorelines of saline wetlands. More nest in North Dakota than any other state.

DESIGNATED CRITICAL HABITAT

Birds

Piping Plover - Alkali Lakes and Wetlands - Critical habitat includes: (1) shallow, seasonally to permanently flooded, mixosaline to hypersaline wetlands with sandy to gravelly, sparsely vegetated beaches, salt-encrusted mud flats, and/or gravelly salt flats; (2) springs and fens along edges of alkali lakes and wetlands; and (3) adjacent uplands 200 feet (61 meters) above the high water mark of the alkali lake or wetland.

"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

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

January 14, 2005

Michelle Bissonnette
Project Manager
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Dear Ms. Bissonnette:

RE: Rugby Wind Farm, Pierce County, North Dakota

The North Dakota Game and Fish Department has reviewed the proposed project area for wildlife concerns. Currently, this project proposes to place approximately 67 to 100 1.5 MW turbines north of the city of Rugby. Our primary concern is the disturbance of native prairie associated with construction of turbines, access roads, transmission lines, etc. We recommend the US Fish and Wildlife Service wind turbine siting guidelines be implemented as appropriate. We would appreciate being kept informed as this project progresses, and as other wind power projects are developed.

Sincerely,

Michael G. McKenna
Chief
Conservation & Communication Division

js

John Hoeven, Governor
Douglass A. Prchal, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@state.nd.us
www.NDparks.com

December 14, 2004

Michelle Bissonnette
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Re: Rugby Wind Farm Project
Pierce County, North Dakota

Dear Ms. Bissonnette:

The North Dakota Parks and Recreation Department (NDPRD) has reviewed the above referenced wind farm project located in Sections 5-8, T157N, R71W; Sections 1-12, T157N, R72W; Sections 7-8, 17-20, and 29-32; T158N, R71W; and Sections 7-36, T158N, R72W, Pierce County.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare species and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.

The North Dakota Natural Heritage Inventory has limited rare species information from the project area. Due to the lack of available survey data we cannot give an accurate assessment as to potential impacts to rare species and associated habitats.

The NDPRD recommends that any impacted areas be revegetated with species native to the project area.

Thank you for the opportunity to comment on this project. Please contact Kathy Duttenhefner (701-328-5370 or kgduttenhefner@state.nd.us) of our staff if additional information is needed.

Sincerely,

Jesse Hanson

Jesse Hanson, Coordinator
Planning and Natural Resources Division

R.USNDNHI*1425

Play in our backyard!

APPENDIX C
USFWS Interim Guidelines PII Scoring Sheets

PHYSICAL ATTRIBUTE CHECKLIST

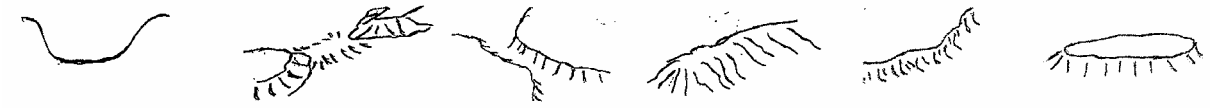
Physical Attribute				Site: Rugby	Site: Audubon NWR	Site:	Site:
Topography	Mountain Aspect*	Side	W				
			E				
			N				
			S				
		Top					
		Foothill	W				
			E				
			N				
			S				
	Valley*						
	Pass*						
	Gap*						
	Ridge*						
	Bluff*						
	Topographic Diversity			X			
Wind* Direction	S						
	N						
	E						
	W			X	X		
	Updrafts*						
Migratory* Corridor Potential	Latitudinal (N ↔ S)			X	X		
	Longitudinal (E ↔ W)						
	Wide Approaches (>30 km)*				X		
	Funnel Effect*	Horizontal			X		
		Vertical					
Site Size (acres) & Configuration*	<640			X	X		
	>640 <1000			X	X		
	>1000 <1500			X	X		
	Turbine Rows not Parallel to Migration			X	X		
Infrastructure To Build	Transmission			X	X		
	Roads			X	X		
	Buildings*	Storage		X	X		
		Maintenance		X	X		
		Daily Activity		X	X		
	Substation			X	X		
Increased Activity*				X	X		
			Totals	14	15		

PHYSICAL ATTRIBUTE CRITERIA - 36 categories, max $\sum = 36$.

Topography - Terrain characteristic within the ecological influence of the proposed wind farm, generally, but not restricted to ± 8 km.

Mountain Aspect - Aspect of topography for site of proposed development. Multiple categories may be checked.

Valley Pass Gap Ridge Bluff Butte



Wind Direction - Compass direction *from* which prevailing winds approach. Multiple categories may be checked.

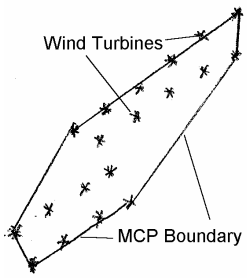
Updrafts - Do updrafts/upslope winds prevail?

Migratory Corridor Potential - Subjective estimate of area to be a potential avian/bat migratory corridor based strictly on topographical characteristics. Multiple categories may be checked.

Wide (>30 km) - Terrain characteristics of approaches to site from each migratory direction, i.e., a large plain, river corridor, long valley. The larger the area that migrant birds/bats are drawn from, the more may be at risk

Funnel Effect - Is the site in or near an area where migrant birds/bats may be funneled (concentrated) into a smaller area, either altitudinally, laterally, or both?

Site Size & Configuration – Size is estimated as if a minimum convex polygon (MCP) were drawn around peripheral turbines.



Successive boxes are checked to convey relationship of larger size = increased impact to birds/bats, *e.g.*, a 700 acre site will have 2 categories checked while a 1200 acre site will have all 3 categories checked.

Configuration of turbine rows is usually perpendicular to prevailing wind direction. Rows aligned perpendicular or oblique to route of migration intuitively presents more risk to birds than rows aligned parallel to movement.

Buildings – Building are categorized by relative size and visitation frequency, *i.e.,* structures that are visited daily are usually larger and present more impact than those that are not. If a "Daily Activity" building is required, all Building categories are checked. If a maintenance structure is required, Storage is also checked.

Increased Activity - Will any type of human activity increase? Sites in urban-suburban or otherwise developed areas (oil, gas, mines) will have less impact on vertebrate wildlife than those in remote or undeveloped areas.

Avian Species of Special Concern Checklist
(Complete prior to SPECIES OCCURRENCE & STATUS CHECKLIST)

Birds (*n* = 29)	**Site**											
	Rugby			Audubon NWR								
Occurrence[1]	**B**	**M/W**	**∑**	**B**	**M/W**	**∑**	**B**	**M/W**	**∑**	**B**	**M/W**	**∑**
American Bittern	X	X	2	X	X	2						
Northern Harrier	X	X	2	X	X	2						
Swainson's Hawk	X	X	2	X	X	2						
Ferruginous Hawk		X	1	X	X	2						
Peregrine Falcon					X	1						
Yellow Rail												
Solitary Sandpiper												
Willet	X	X	2	X	X	2						
Upland Sandpiper	X	X	2	X	X	2						
Long-billed Curlew												
Hudsonian Godwit												
Marbled Godwit	X	X	2	X	X	2						
Sanderling												
White-rumped Sandpiper												
Buff-breasted Sandpiper												
Wilson's Phalarope	X	X	2	X	X	2						
Black-billed Cuckoo	X	X	2	X	X	2						
Burrowing Owl	X	X	2	X	X	2						
Short-eared Owl	X	X	2	X	X	2						
Red-headed Woodpecker	X	X	2	X	X	2						
Loggerhead Shrike	X	X	2	X	X	2						
Sprague's Pipit	X	X	2	X	X	2						
Grasshopper Sparrow	X	X	2	X	X	2						
Baird's Sparrow	X	X	2	X	X	2						
Henslow's Sparrow												
Le Conte's Sparrow	X	X	2	X	X	2						
Nelson's Sharp-tailed Sparrow	X	X	2	X	X	2						
McCown's Longspur												
Chestnut-collared Longspur	X	X	2	X	X	2						
Subtotals	18	19	37	19	20	39						
Total			37			39						

Avian Species of Special Concern Checklist (29 species, max $\sum$ = 58)

Column totals of this list are added to appropriate cells in the SPECIES OCCURRENCE & STATUS CHECKLIST. Appropriate avian field guides and species accounts should be consulted for confirmation of species distribution and habitat associations.

In addition to species lists (rows), season of occurrence is also indicated (columns). "B" indicates breeding or summer occurrence and "M/W" indicates presence during migration or as wintering species. The USFWS guidelines for windpower development suggests that if occurrence within or in the vicinity ($\leq$ 7 km) of a proposed site is confirmed or suspected, an "X" is entered. However, due to sharp differences in habitat and topography within 7 km of the proposed project, and X was only entered if it was likely the species would occur or fly through the project area based on topography and habitat features.

NOTE: These species were selected because they are listed as Birds of Conservation concern by the USFWS (2002) within BCR 11 (Prairie Potholes–U.S. portion only). Determinations of occurrence were based on the geographical location of the project area, habitat, Stewart (1975), and identification guides.

Bat Species Of Special Concern Checklist
(Complete prior to SPECIES OCCURRENCE & STATUS CHECKLIST)

	Site											
Bats (*n* = 4)	Rugby			Audubon NWR								
Occurrence	**B**	**M/W**	**∑**	**B**	**M/W**	**∑**	**B**	**M/W**	**∑**	**B**	**M/W**	**∑**
Long-eared Myotis												
Big-eared Bat												
Long-legged Myotis												
Small-footed Myotis												
Subtotals	0	0	0	0	0	0						
Total			0			0						

Bat Species Of Special Concern Checklist (4 species, max ∑ = 8).

Column totals of this list are added to appropriate cells in the SPECIES OCCURRENCE & STATUS CHECKLIST. Appropriate bat field guides and references should be consulted for confirmation of species distribution and habitat associations.

In addition to species lists (rows), season of occurrence is also indicated (columns). "B" indicates breeding or summer occurrence and "M/W" indicates presence during migration or as wintering species. If occurrence within or in the vicinity (≤ 7 km) of a proposed site is confirmed or suspected, an "X" is entered.

NOTE: The Four bat species on this list were included because they are were formerly candidates for listing under the Federal Endangered Species Act in North Dakota (USFWS 1995). Species occurrence was based on the web site http://nationalatlas. gov/natlas/natlasstart.asp and species occurrence information from Bat Conservation International web site http://www.batcon.org/ .

SPECIES OCCURRENCE & STATUS CHECKLIST

Species		Site: Rugby			Audubon NWR								
	Occurrence	**B**	**M/W**	**∑**	**B**	**M/W**	**∑**	**B**	**M/W**	**∑**	**B**	**M/W**	**∑**
Threatened & Endangered	Interior Least Tern				X	X	2						
	Whooping Crane		X	1		X	1						
	Pallid Sturgeon					X	1						
	Bald Eagle	X	X	2	X	X	2						
	Piping Plover				X	X	2						
Candidate*	Dakota Skipper	X	X	2	X	X	2						
Special Concern*	Birds (max ∑=58)	18	19	37	19	20	39						
	Bats (max ∑=8)	0	0	0	0	0	0						
Bats*			X	1		X	1						
	Subtotals	20	23	43	23	27	50						
	Total			43			50						

SPECIES OCCURRENCE & STATUS CHECKLIST (39 categories, max ∑ = 78)

Checklist totals for each column in "Avian Species of Special Concern List" and "Bat Species of Special Concern List are inserted in this checklist.

Threatened & Endangered Species - Species include in the Federal List of Endangered and Threatened Species (see attached letter).

Candidate Species - Species being investigated for inclusion in the Federal List of Endangered and Threatened Species. None were described by the USFWS.

Species of Special Concern – Birds of Conservation Concern (USFWS 2002) within BCR 11 were used to generate this list.

Bats (other than bat Species of Special Concern) are included due to generally unknown impacts of wind farms on individual and populations.

ECOLOGICAL ATTRACTIVENESS CHECKLIST

			Site			
Ecological Attractor			Rugby	Audubon NWR		
Migration Route*		Local				
	Continental*	N	x	x		
		S	x	x		
		E				
		W				
Ecological Magnets*		Lotic System				
		Lentic System	x	x		
		Wetlands	x	x		
		Native Grassland	x	x		
		Forest				
		Food Concentrated	x	x		
		Energetic Foraging				
	Vegetation/ Habitat	Unique		x		
		Diverse	x	x		
Significant Ecological Event*						
Site of Special Conservation Status*				2		
Total			7	10		

ECOLOGICAL ATTRACTIVENESS CRITERIA - 16 categories, max$\sum$ = 17.

Migration Route - Indicates predominate direction of movement of seasonal migrations. Multiple categories may be checked.

Local - Some avian populations move only altitudinally & direction may be East-West (sage grouse, owls, bald eagles).

Continental - Some migratory corridors experience mass movements in only one season/direction annually (*e.g.*, Bridger Mountains autumn eagle migration).

Ecological Magnets - Special, unique, unusual, or super ordinary habitats or conditions within the vicinity of the site that may attract vertebrate wildlife. Lotic systems include small perennial or seasonal creeks to major rivers. Lentic systems include stock ponds to lakes. Multiple categories may be checked.

Vegetation/Habitat - Unique or exceptionally diverse vegetation or habitat in the vicinity may indicate exceptional diversity and abundance of avian species or bats.

Significant Ecological Event - Special, unique, unusual, or super ordinary events that occur or are suspected to occur in the vicinity of the site, *e.g.*, up to one third of the Continental population of Trumpeter Swans visit Ennis Lake, < 4 km from a proposed Wind Resource Area; the Continental migration of shorebirds passes over (many stop) @ Benton Lake National Wildlife Refuge) and up to 2000 golden eagles pass over the Bridger Mountains in autumn. If unknown but suspected a "?" is entered. Specifics regarding the cell are then addressed in the appropriate box of the SITE SPECIFIC COMMENTS sheet to focus follow-up investigation and assist in definition of study objectives.

Site of Special Conservation Status - Any existing or proposed covenants, conservation easements, or other land development limitations intended to conserve, protect, or enhance wildlife or habitat. This criterion is weighted (2 entered if true) because of previous financial or other investment in ecological values. Specifics regarding the easement are then addressed in the appropriate box of the SITE SPECIFIC COMMENTS sheet to focus follow-up attention.

POTENTIAL IMPACT INDEX

	Site							
	Rugby		Audubon NWR					
Checklist (*p*)[1]	∑	∑/*p*	∑	∑/*p*	∑	∑/*p*	∑	∑/*p*
Physical (36 boxes = 36/131 = 0.28)	14	50	15	54				
Species Occurrence & Status (78 boxes = 78 / 131 = 0.59)	43	73	50	85				
Ecological (17 boxes = 17 / 131 = 0.13)	7	54	10	77				
Totals		177		216				

[1]Proportion of total (131) checklist scores.

SITE SPECIFIC COMMENTS

Checklist	Site: Rugby	Site: Audubon NWR
Physical	Rolling hills with numerous wetlands and waterbodies	Some rolling hills around NWR, wetlands, bay of Lake Sac.
	Although migration occurs through project area, not likely to be funneled due to continuation of general habitat over larger area	Location adjacent to Missouri River. Likely funnels migrants
	No definite "mountain aspect" for area so new category of "topographic diversity" added to account for the many hills and wetlands in the area.	
Species Occurrence	Native habitats and wetlands result in the possibility of numerous species.	Several federally protected species present or possible.
Ecological	Native habitats and wetlands	Missouri River is a migration route for many species
		The presence of the Missouri River and Lake Sakakawea provides an ecological magnet

WEST, Inc.
Western EcoSystems Technology, Inc. 2003 Central Ave., Cheyenne, WY 82001
Phone: 307.634.1756 Fax: 307.637.6981 Web site: www.west-inc.com

June 3, 2005

Sarah Emery
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416-1518

Ms. Emery,

During a site visit to the proposed PPM Rugby Wind Farm on November 22, 2004, a potential bald eagle nest was located in T157N, R72W, Sec. 1. Because of the time of year (late fall), species occupancy could not be determined. We were asked to revisit the site during the spring 2005 to confirm species occupancy and activity. WEST biologists visited the potential bald eagle nest several times this spring during sharp-tailed grouse lek surveys and avian point counts. The nest contained a Canada goose this year, and not a bald eagle or other raptor.

If you would like further details please do not hesitate to contact me.

Sincerely,

Clayton Derby
Project Manager

APPENDIX D

Agency Letters

December 3, 2004

Mr. Dean Hildebrand
North Dakota Game and Fish Department
100 North Bismarck Expressway
Bismarck, ND 58501-5095

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Hildebrand:

HDR Engineering, Inc. requests your review of the above-mentioned project for potential effects to known federally-listed threatened or endangered species and rare natural features.

The proposed project is a 100 to 150 MW wind farm in Pierce County, located north of the city of Rugby, North Dakota. Currently the project plans to use approximately 67 to 100 1.5-MW turbines, although that may change as turbine technology advances. The exact turbine locations have not been determined.

The proposed project is located in the following Township, Ranges, and Sections in Pierce County, North Dakota:

Township	Range	Sections
157 N	71 W	5-8
157 N	72 W	1-12
158 N	71 W	7-8, 17-20, 29-32
158 N	72 W	7-36

Enclosed is map detailing the location of the Rugby Wind Farm site location to facilitate your review. If you require further information or have questions regarding this matter, please call Michelle Bissonnette at (763) 278-5910. Thank you for your assistance.

Sincerely,

Michelle Bissonnette

Michelle Bissonnette
Project Manager

Enclosure: Project Location Map

cc: Mr. Steve Dyke, North Dakota Game and Fish Department
Mr. Tim Seck, PPM Energy, Inc.

HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416
Phone: (763) 591-5400
Fax: (763) 591-5413
www.hdrinc.com

December 3, 2004

Ms. Kathy Duttenhefner
ND Natural Heritage Inventory
North Dakota Parks & Recreation Department
1600 East Century Avenue
Bismarck, ND 58503-0649

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Ms. Duttenhefner:

HDR Engineering, Inc. requests a database review for the above-mentioned project. The proposed project is a 100 to 150 MW wind farm in Pierce County, located north of the city of Rugby, North Dakota. Currently the project plans to use approximately 67 to 100 1.5-MW turbines, although that may change as turbine technology advances. The exact turbine locations have not been determined.

The proposed project is located in the following Township, Ranges, and Sections in Pierce County, North Dakota:

Township	Range	Sections
157 N	71 W	5-8
157 N	72 W	1-12
158 N	71 W	7-8, 17-20, 29-32
158 N	72 W	7-36

Enclosed is map detailing the proposed location of the Rugby Wind Farm site location to facilitate your review. If you require further information or have questions regarding this matter, please call Michelle Bissonnette at (763) 278-5910. Thank you for your assistance.

Sincerely,

Michelle Bissonnette

Michelle Bissonnette
Project Manager

Enclosure: Project Location Map

cc: Mr. Tim Seck, PPM Energy, Inc.

HDR Engineering, Inc.

6190 Golden Hills Drive
Minneapolis, MN 55416

Phone: (763) 591-5400
Fax: (763) 591-5413
www.hdrinc.com

December 3, 2004

Mr. Terry Ellsworth
U.S. Fish and Wildlife Service
3425 Miriam Avenue
Bismarck, ND 58501-7926

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Ellsworth:

HDR Engineering, Inc. appreciates your and Mr. Albright's input on siting this proposed wind project. Please review the Rugby Wind Farm project for potential effects to known federally-listed threatened or endangered species and rare natural features. This request is made pursuant to Section 7 of the Endangered Species Act of 1973, as amended. In addition, please review this project in relation to the USFWS refuge system, including Waterfowl Protection Areas and easements.

The proposed project is a 100 to 150 MW wind farm in Pierce County, located north of the city of Rugby, North Dakota. Currently the project plans to use approximately 67 to 100 1.5-MW turbines, although that may change as turbine technology advances. The exact turbine locations have not been determined.

The proposed project is located in the following Township, Ranges, and Sections in Pierce County, North Dakota:

Township	Range	Sections
157 N	71 W	5-8
157 N	72 W	1-12
158 N	71 W	7-8, 17-20, 29-32
158 N	72 W	7-36

Enclosed is map detailing the location of the Rugby Wind Farm site location to facilitate your review. If you require further information or have questions regarding this matter, please call Michelle Bissonnette at (763) 278-5910. Thank you for your assistance.

Sincerely,
Michelle Bissonnette

Michelle Bissonnette
Project Manager

Enclosure: Project Location Map

cc: Mr. Lee Albright, US Fish and Wildlife Service
Mr. Tim Seck, PPM Energy

HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416
Phone: (763) 591-5400
Fax: (763) 591-5413
www.hdrinc.com

December 6, 2004

Mr. Paul Picha
North Dakota State Historic Preservation Office
612 East Boulevard Avenue
Bismarck, ND 58505-0830

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Picha:

HDR Engineering, Inc. (HDR) requests your office review of the Rugby Wind Farm for possible effects to known or potential sites of archaeological or historic significance. The proposed project is a 100 to 150 MW wind farm in Pierce County, located north of the city of Rugby, North Dakota. Currently the project plans to use approximately 67 to 100 1.5-MW turbines, although that may change as turbine technology advances. The exact turbine locations have not been determined. It is unknown whether any federal permits will be required for this project. If it appears that the project will require federal involvement, then our office will notify you.

The proposed project is located in the following Township, Ranges, and Sections in Pierce County, North Dakota:

Township	Range	Sections
157 N	71 W	5-8
157 N	72 W	1-12
158 N	71 W	7-8, 17-20, 29-32
158 N	72 W	7-36

Enclosed is map detailing the proposed location of the Rugby Wind Farm site location to facilitate your review. If you require further information or have questions regarding this matter, please call me at (763) 278-5910, or Mike Madson at (763) 278-5921. Thank you for your assistance.

Sincerely,

Michelle Bissonnette
Project Manager

Michael Madson
Senior Archaeologist

Enclosure: Project Location Map

cc: Mr. Tim Seck, PPM Energy, Inc.

HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416
Phone: (763) 591-5400
Fax: (763) 591-5413
www.hdrinc.com

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

December 9, 2004

Michelle Bissonnette
Project Manager
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

NDSHPO Ref.: 05-0240 HDR/PPM Energy, Inc. 150 MW Rugby Wind Farm, Pierce County, North Dakota

Dear Michelle:

We have reviewed the information on the proposed 150 MW Rugby Wind Farm, Pierce County, North Dakota, in your letter of December 6. Given the size of the project area, additional information will be needed before the Area of Potential Effect (APE) can be determined. We recommend that a Class I CRI (file search) be completed for areas that may be impacted by the project. There also is potential for unrecorded properties in a variety of physiographic settings in the Pierce County project area (see enclosure). A Class III CRI (pedestrian survey) may be warranted once more detailed information on project particulars (scale and scope of structures, utility corridors, access roads, etc.) becomes known.

Also, if the project crosses lands administered by a federal agency, then the agency must be consulted regarding their recommendations on the project.

We look forward to working with you as this project develops. If you have questions please contact either Duane Klinner at (701) 328-3576 or Paul Picha at (701) 328-3574.

Sincerely,

for

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

enc.: File list for T157-158N, R71-72W, Pierce County, North Dakota

A & H P MANUSCRIPT REPORT

TOWNSHIP: 157 RANGE: 072 SECTION: 09
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 157 RANGE: 072 SECTION: 04
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

A & H P MANUSCRIPT REPORT

TOWNSHIP: 158 RANGE: 071 SECTION: 08
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 158 RANGE: 072 SECTION: 09
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 158 RANGE: 072 SECTION: 10
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 158 RANGE: 072 SECTION: 18
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 158 RANGE: 072 SECTION: 26
MANUSCRIPT_NO:005036 YEAR: 1990
TITLE: Des Lacs-Souris Drainage Basin Erosion Control Study Area Cultural Resources Review Part 1: Prehistoric Cultural Resources Overview & Part 2: Prehistoric and Historic Archeological Sites on Primary Sample Units and Potential Impacts
AUTHOR(s): Gregg, M. P. Picha

TOWNSHIP: 158 RANGE: 071 SECTION: 13
MANUSCRIPT_NO:006090 YEAR: 1993
TITLE: Cultural Resources Survey Report Class III Cultural Resource Inventory Item No. 1, Ten Microwave Repeater Sites, ND
AUTHOR(s): Martorano, M. T. Anderson

TOWNSHIP: 158 RANGE: 072 SECTION: 13
MANUSCRIPT_NO:007660 YEAR: 2000
TITLE: Addendum To: Ottertail Company's 230 kV Harvey/Rolla Transmission Line Cultural Resources Inventory, Wells, Pierce, and Rolette Counties, ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 14
MANUSCRIPT_NO:007660 YEAR: 2000
TITLE: Addendum To: Ottertail Company's 230 kV Harvey/Rolla Transmission Line Cultural Resources Inventory, Wells, Pierce, and Rolette Counties, ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 23
MANUSCRIPT_NO:007660 YEAR: 2000
TITLE: Addendum To: Ottertail Company's 230 kV Harvey/Rolla Transmission Line Cultural Resources Inventory, Wells, Pierce, and Rolette Counties, ND
AUTHOR(s): Olson, B.

A & H P MANUSCRIPT REPORT

TOWNSHIP: 158 RANGE: 072 SECTION: 26
MANUSCRIPT_NO:007660 YEAR: 2000
TITLE: Addendum To: Ottertail Company's 230 kV Harvey/Rolla Transmission Line Cultural Resources Inventory, Wells, Pierce, and Rolette Counties, ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 13
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 14
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 15
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 16
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 21
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 33
MANUSCRIPT_NO:007891 YEAR: 2001
TITLE: Otter Tail Company's 230 kV Harvey/Rolla Transmission Line: Class III Cultural Resource Inventory of Selected Segments of Reroute Alternate #5, Pierce Co., ND
AUTHOR(s): Olson, B.

TOWNSHIP: 158 RANGE: 072 SECTION: 15
MANUSCRIPT_NO:008285 YEAR: 2002
TITLE: Kraft Stone Circle Site, Pierce Co., ND

AUTHOR(s): Morrison, J.

TOWNSHIP: 158 RANGE: 072 SECTION: 31
MANUSCRIPT_NO:008412 YEAR: 2002
TITLE: Brossart Gravel Pit: A Class III Cultural Resource Inventory in Pierce Co., ND

AUTHOR(s): Stine, E.

Legals Search

County	*Site*	*Township*	*Range*	*Section*	*AreaSig1*	*StateRegistry*	*NationalRegistry*
PI	X0083	157	071	23	Archeological		
PI	00047	157	072	31	Architectural		
PI	00503	157	072	31	Architectural		
PI	00504	157	072	31	Architectural		
PI	00505	157	072	31	Architectural		
PI	00506	157	072	31	Architectural		
PI	00507	157	072	31	Architectural		
PI	00508	157	072	31	Architectural		
PI	00509	157	072	31	Architectural		
PI	00510	157	072	31	Architectural		
PI	00532	157	072	31	Architectural		
PI	00533	157	072	31	Architectural		
PI	00542	157	072	31	Architectural		
PI	00551	157	072	31	Architectural		
PI	00552	157	072	31	Architectural		
PI	00557	157	072	31	Architectural		
PI	00559	157	072	31	Architectural		
PI	00561	157	072	31	Architectural		
PI	00562	157	072	31	Architectural		

County	*Site*	*Township*	*Range*	*Section*	*AreaSig1*	*StateRegistry*	*NationalRegistry*
PI	00564	157	072	31	Architectural		
PI	00565	157	072	31	Architectural		
PI	00641	157	072	31	Architectural		
PI	00699	157	072	31	Architectural		
PI	00700	157	072	31	Architectural		
PI	00553	157	072	32	Architectural		
PI	00563	157	072	32	Architectural		
PI	X0030	158	071	03	Historical		
PI	00018	158	071	13	Archeological		
PI	X0031	158	071	23	Historical		
PI	X0078	158	072	13	Archeological		
PI	00053	158	072	15	Archeological		
PI	X0032	158	072	31	Archeological		

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

RECEIVED
JAN 12 2005
HDR Engineering, Inc.

JAN 10 2005

Ms. Michelle Bissonnette, Project Manager
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, Minnesota 55416

Dear Ms. Bissonnette:

I am writing in response to your December 3, 2004, request for information on threatened and endangered species in relation to a proposed wind power project near Rugby, North Dakota. The proposed project includes construction of 67 to 100 1.5-MW wind turbines, access roads, and ancillary facilities. The proposed location for the wind power project is in Pierce County:

T. 157 N., R. 71 W., Sections 5-8
T. 157 N., R. 72 W., Sections 1-12
T. 158 N., R. 71 W., Sections 7, 8, 17-20, 29-32
T. 158 N., R. 72 W., Sections 7-36

In general, wildlife resources and issues that warrant consideration during project planning include: migratory birds (e.g., collisions and electrocutions); tribal, state or Federal land interests; wetlands, prairie, and woodland habitats; Clean Water Act - Section 404 activities; threatened and endangered species; ancillary facility development (e.g., roads, substations, underground cables, or overhead transmission lines); and monitoring, research, and assessment. Natural resources and issues that may be applicable to your project are further addressed below.

Migratory Birds

Adequate consideration to bird resources early in the site evaluation process can minimize impacts and facilitate project construction. Although current wind turbine technology minimizes the incidence of avian death due to blade and tower strikes, direct mortality of some migratory birds will continue to occur. The Fish and Wildlife Service (Service), under the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Act, the Endangered Species Act, and Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds," is directed to protect migratory birds. The provisions of these Acts generally make it unlawful to take migratory birds. However, being responsive to Congressional and Presidential mandates, treaties, and legislation, wind power developers, in concert with the Service, can cooperatively ensure projects proceed in a positive manner. Together, we have a responsibility to scientifically

determine the factors in siting and operation of wind power plants that contribute to avian fatalities and to implement measures to minimize impacts to migratory birds.

To minimize the electrocution hazard to birds, the Service, with support from the Rural Utilities Service, recommends that new or updated overhead power lines be constructed in accordance with the current guidelines for preventing raptor electrocutions. The recommended guidelines can be found in "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996". To increase power line visibility and reduce bird fatalities resulting from collisions with power lines, the Service recommends power lines that cross or run adjacent to rivers or large wetlands be modified according to "Mitigating Bird Collisions with Power Lines: The State of the Art in 1994". Both publications can be obtained by writing or calling the Edison Electric Institute, P.O. Box 266, Waldorf, Maryland, 20604-0266, (1-800-334-5453) or visiting their website at www.eei.org.

Research, Monitoring and Assessment

We encourage project proponents to conduct collision monitoring studies designed to determine the effect of several factors, such as site selection, turbine designs, the layout of wind plants, wind plant operations, habitat alteration, and changes in available perching and nesting sites on bird deaths. The Avian Subcommittee of the National Wind Coordinating Committee (NWCC) has developed a guidance document to assist wind energy developers in designing studies that will produce credible and comparable results of avian interaction with wind power plants. The NWCC document, "Studying Wind Energy/Bird Interactions: A Guidance Document. Metrics and methods for determining or monitoring potential impacts on birds at existing and proposed wind energy sites," can be obtained by contacting the National Wind Coordination Committee, c/o RESOLVE, 1255 23rd Street, Suite 275, Washington, D.C. 20037, or by visiting their website at www.nationalwind.org). The Service currently is compiling a list of research and monitoring issues related to wind power development in the Dakotas. We look forward to sharing these ideas with you and other industry representatives, and cooperatively developing a reasonable approach to acquisition of information that may help identify additional measures to minimize impacts to wildlife resources.

Fish and Wildlife Service Property Interests

As part of the National Wildlife Refuge System, the Service administers fee title Refuge and Waterfowl Production Areas, as well as wetland and grassland easements throughout North Dakota. Lee Albright, Wetland Manager, J. Clark Salyer National Wildlife Refuge, has provided HDR Engineering (HDR) with current Service property information for the proposed project area.

Wetland, Grassland, and Woodland Resources

The proposed project area is located in the Drift Prairie region of North Dakota and includes areas of native mixed-grass prairie. Since the 1800s, North Dakota has lost approximately 75-90 percent of its native grasslands primarily due to crop production.

Native prairie has significant natural resource values including:

- Provides habitat for a number of migratory grassland birds whose populations are declining.
- Provides nesting habitat for millions of waterfowl.
- Contains 200-300 plant species, which provide genetic diversity important to agriculture and medicine.
- Provides habitat for thousands of insects including the Dakota skipper, a candidate species, and other butterflies (Ex: Regal fritillary, Tawny crescent).
- Crucial for soil and water conservation.
- Provides recreational opportunities (hunting, bird watching/wildlife observation, hiking).
- Living laboratories for scientific research.

Our review of National Wetlands Inventory (NWI) maps indicates that wetland areas are located within the project area. NWI data can be accessed directly by visiting their website at www.wetlands.fws.gov. We recommend you avoid construction of wind towers and ancillary facilities in or adjacent to wetlands when possible.

Construction activities should be conducted in a manner that will minimize impacts to the existing habitat in the project area. Where impacts are unavoidable, we recommend that you:

- Time construction for late summer (after July 15) or fall so as not to disrupt waterfowl or other wildlife during the nesting season.
- Avoid construction in native prairie if possible and reseed disturbed native prairie with a comparable native grass/forb seed mixture. Obtain seed stock from nurseries within 250 miles of the project area to insure the particular cultivars are well adapted to the local climate.
- Minimize grassland disturbance by using fewer, larger turbines and limiting new road construction.

- Use underground transmission lines between turbines, as well as to the primary substation.

- Locate ancillary facilities to avoid placement of fill in wetlands along the route.

- Install and maintain appropriate erosion control measures to reduce sedimentation and water quality degradation of wetlands and streams near the project area.

- Replace unavoidable wetland losses with functionally equivalent wetlands and replace trees or shrubs destroyed during construction on a 2:1 basis.

Section 404 program

Section 404 of the Clean Water Act regulates placement of fill materials in wetlands. A Corps of Engineers' 404 permit may be required if fill material will be placed in aquatic sites including wetlands. Contact Mr. Dan Cimarosti, Regulatory Office, Corps of Engineers, 1513 South 12th Street, Bismarck, North Dakota 58504 (701-255-0015), to determine their permit requirements. If a 404 permit is required, the Service will provide recommendations on this project to the Corps.

Threatened and Endangered Species

A list of federally threatened and endangered species that may occur within the proposed project's area of influence is enclosed. This list fulfills requirements of the Fish and Wildlife Service under Section 7 of the Endangered Species Act.

If a Federal agency authorizes, funds, or carries out a proposed action, the responsible Federal agency, or its delegated agent, is required to evaluate whether the action "may affect" listed species or critical habitat. If the Federal agency or its designated agent determines the action "is likely to adversely affect" listed species or modify critical habitat, the responsible Federal agency shall request formal section 7 consultation with this office. If the evaluation shows a "no effect" determination on listed species or critical habitat, further consultation is not necessary. If a private entity receives Federal funding for a construction project, or if any Federal permit is required, the Federal agency may designate the fund recipient or permittee as its agent for purposes of informal section 7 consultation.

Section 10(a)(1)(B) of the Endangered Species Act allows non-Federal parties planning activities that have no Federal nexus, but which could result in the incidental taking of listed animals, to apply for an incidental take permit. The application must include a habitat conservation plan (HCP) laying out the proposed actions, determining the effects of those actions on affected fish and wildlife species and their habitats (often including proposed or candidate species), and defining measures to minimize and mitigate adverse effects.

During a site visit November 22, 2004, North Dakota Game and Fish Department (Department) staff observed a large nest structure in T. 157 N., R. 72 W., Section 1, SW¼. At the time of the field review, it could not be determined if the structure was a bald eagle nest or if is was built by some other raptor species. Bald eagles prefer forested habitats near bodies of water and most nest sites are located within one half mile of water. Adult bald eagles mate for life and tend to use the same nest year after year. Bald eagle nesting activity begins in mid-February and the young are usually fledged by mid-July. Although individual bald eagle pairs can show considerable tolerance to human activity, every effort must be made to minimize disturbance of nesting pairs. The Service recommends conducting a spring survey of the nest structure prior to project construction to determine the status of the potential bald eagle nest. Please forward the results of the survey to this office for our records.

On December 29, 2004, the Service met with the Department, HDR, and PPM Energy to discuss potential project issues. At that meeting, HDR Engineering presented a proposal to create a one mile buffer area around the potential bald eagle nest. If a survey indicates that the nest structure is being used by nesting bald eagles, a one mile buffer area with no disturbance should be sufficient to minimize impacts to nesting birds.

Thank you for the opportunity to comment on this project. If you require further information or the project plans change, please contact Terry Ellsworth of my staff at 701-250-4481, or at the letterhead address above.

Sincerely,

Jeffrey K. Towner

Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

Enclosure

cc: ARD, ES, Denver (MAIL STOP 60120)
(Attn: R. Dach)
J. Clark Salyer WMD
(Attn: L. Albright)
Regulatory Office, Army Corps of Engineers, Bismarck
(Attn: D. Cimarosti)
Director, ND Game & Fish Department, Bismarck
(Attn: M. McKenna)

FEDERAL THREATENED AND ENDANGERED SPECIES
AND DESIGNATED CRITICAL HABITAT FOUND IN
PIERCE COUNTY, NORTH DAKOTA
January 2005

ENDANGERED SPECIES

Birds

Whooping crane (Grus Americana): Migrates through west and central counties during spring and fall. Prefers to roost on wetlands and stockdams with good visibility. Young adult summered in North Dakota in 1989, 1990, and 1993. Total population 140-150 birds.

THREATENED SPECIES

Birds

Bald eagle (Haliaeetus leucocephalus): Migrates spring and fall statewide but primarily along the major river courses. It concentrates along the Missouri River during winter and is known to nest in the floodplain forest.

Piping plover (Charadrius melodus): Nests on midstream sandbars of the Missouri and Yellowstone Rivers and along shorelines of saline wetlands. More nest in North Dakota than any other state.

DESIGNATED CRITICAL HABITAT

Birds

Piping Plover - Alkali Lakes and Wetlands - Critical habitat includes: (1) shallow, seasonally to permanently flooded, mixosaline to hypersaline wetlands with sandy to gravelly, sparsely vegetated beaches, salt-encrusted mud flats, and/or gravelly salt flats; (2) springs and fens along edges of alkali lakes and wetlands; and (3) adjacent uplands 200 feet (61 meters) above the high water mark of the alkali lake or wetland.

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
J. CLARK SALYER NATIONAL WILDLIFE REFUGE
681 SALYER ROAD
UPHAM, ND 58789-9307
PHONE (701) 768-2548
FAX (701) 768-2834

January 13, 2005

Mr. Bruce Moreira
Environmental Scientist
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Dear Mr. Moreira:

Included as another attachment with this e-mail is the most accurate digital information we have for identifying (Native Grassland) or native prairie within the proposed project area. It's not perfect, but this should be good enough for the purpose of this exercise.

Please note the U.S. Fish and Wildlife Service has purchased a grass easement within fractional portions of Section 8, 9, and 10, T.158N., R.72W. The Service has established guidelines for considering wind turbine siting on these easement lands. Requests to site wind turbines on these lands are subject to a compatibility review and a right-of-way permit is required prior to constructing turbines, access roads, or performing other associated construction activities necessary to make the turbines operational. This process may take approximately one year to complete from the time a request for a right-of-way permit is received. Please contact me immediately should plans arise to place turbines within these areas. I appreciate your cooperation. If you need any additional information please let me know.

Sincerely,

Lee Albright

"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

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

January 14, 2005

Michelle Bissonnette
Project Manager
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Dear Ms. Bissonnette:

RE: Rugby Wind Farm, Pierce County, North Dakota

The North Dakota Game and Fish Department has reviewed the proposed project area for wildlife concerns. Currently, this project proposes to place approximately 67 to 100 1.5 MW turbines north of the city of Rugby. Our primary concern is the disturbance of native prairie associated with construction of turbines, access roads, transmission lines, etc. We recommend the US Fish and Wildlife Service wind turbine siting guidelines be implemented as appropriate. We would appreciate being kept informed as this project progresses, and as other wind power projects are developed.

Sincerely,

Michael G. McKenna
Chief
Conservation & Communication Division

js

John Hoeven, Governor
Douglass A. Prchal, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@state.nd.us
www.NDparks.com

December 14, 2004

Michelle Bissonnette
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Re: Rugby Wind Farm Project
Pierce County, North Dakota

Dear Ms. Bissonnette:

The North Dakota Parks and Recreation Department (NDPRD) has reviewed the above referenced wind farm project located in Sections 5-8, T157N, R71W; Sections 1-12, T157N, R72W; Sections 7-8, 17-20, and 29-32; T158N, R71W; and Sections 7-36, T158N, R72W, Pierce County.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare species and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.

The North Dakota Natural Heritage Inventory has limited rare species information from the project area. Due to the lack of available survey data we cannot give an accurate assessment as to potential impacts to rare species and associated habitats.

The NDPRD recommends that any impacted areas be revegetated with species native to the project area.

Thank you for the opportunity to comment on this project. Please contact Kathy Duttenhefner (701-328-5370 or kgduttenhefner@state.nd.us) of our staff if additional information is needed.

Sincerely,

Jesse Hanson

Jesse Hanson, Coordinator
Planning and Natural Resources Division

R.USNDNHI*1425

Play in our backyard!

January 25, 2005

Mr. Gary R. Ness, Director
Aeronautics Commission
P.O. Box 5020
Bismarck, ND 58502-5020

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Ness:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

The Rugby Wind Farm is proposed to consist of up to 100 wind turbines with a capacity of up to 150 MW. The most likely turbine size is 1.5 MW wind turbine with a rotor diameter of up to 70-82 meters (231 to 269 feet). The wind turbines will be situated on 80 meter (262 feet) tall steel tubular towers secured to a concrete foundation. The exact turbine locations have not been determined to date. An approximately eight mile 115 kV or 230 kV transmission line will be needed to connect the wind project substation to the interconnection substation near Rugby, ND.

The proposed wind farm will be located in the following Township, Ranges, and Sections in Pierce County, North Dakota:

Township Name	Township	Range	Sections
Tofte	157N	71W	5-8
Torgerson	157N	72W	1-12
Walsh	157N	73W	1, 12
Juniata	158N	71W	5-8, 17-20, 29-32
Spring Lake	158N	72W	1-36
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Fax: (763) 591-5413
www.hdrinc.com

PPM Energy is also studying the following corridor for locating the proposed transmission line:

Township Name	Township	Range	Sections
Meyer	156N	72W	3-10
Torgerson	157N	72W	3-5, 8-17, 20-29, 32-36
Spring Lake	158N	72W	16, 17, 20-22, 27-29, 32-34

Enclosed is a map detailing the location of the Rugby Wind Farm site location to facilitate your review. Comments received by February 14th, 2005 will be included in the Certificate of Site Compatibility Application to the PSC. If you require further information or have questions regarding this matter, please call me at (763) 278-5910. Thank you for your assistance.

Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

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

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Attorney General Stenehjem:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

The Rugby Wind Farm is proposed to consist of up to 100 wind turbines with a capacity of up to 150 MW. The most likely turbine size is 1.5 MW wind turbine with a rotor diameter of up to 70-82 meters (231 to 269 feet). The wind turbines will be situated on 80 meter (262 feet) tall steel tubular towers secured to a concrete foundation. The exact turbine locations have not been determined to date. An approximately eight mile 115 kV or 230 kV transmission line will be needed to connect the wind project substation to the interconnection substation near Rugby, ND.

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Sincerely,

Angela Rivera for

Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

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

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Johnson:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

The Rugby Wind Farm is proposed to consist of up to 100 wind turbines with a capacity of up to 150 MW. The most likely turbine size is 1.5 MW wind turbine with a rotor diameter of up to 70-82 meters (231 to 269 feet). The wind turbines will be situated on 80 meter (262 feet) tall steel tubular towers secured to a concrete foundation. The exact turbine locations have not been determined to date. An approximately eight mile 115 kV or 230 kV transmission line will be needed to connect the wind project substation to the interconnection substation near Rugby, ND.

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Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

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

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Dr. Dwelle:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

Angela Rinke

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

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

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Ms. Olson:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

for Angela Rinke

Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Ms. Leann K. Bertsch, Commissioner of Labor
North Dakota Department of Labor
600 East Boulevard Avenue, Department 406
Bismarck, ND 58505-0340

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Ms. Bertsch:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

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

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Kutzer:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Mr. Martin White, Chairman
North Dakota Department of Commerce
1600 East Century Avenue, Suite 2
P.O. Box 2057
Bismarck, ND 58502-2057

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. White:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

Angela Rueen

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Ms. Kim Christianson
Program Manager Energy Conservation and Renewable Energy
Division of Community Services
1600 East Century Avenue, Suite 2
P.O. Box 2057
Bismarck, ND 58502-2057

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Ms. Christianson:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Mr. Dean Hildebrand
North Dakota Game and Fish Department
100 North Bismarck Expressway
Bismarck, ND 58501-5095

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Hildebrand:

As you know, HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC) for the Rugby Wind Farm. On December 3, 2004, our office sent you a letter requesting your review of the project. Since that time, we have gained additional information about the project.

As we stated previously, the project is proposed to consist of up to 100 wind turbines with a capacity of up to 150 MW. The most likely turbine size is 1.5 MW wind turbine with a rotor diameter of up to 70-82 meters (231 to 269 feet). The wind turbines will be situated on 80 meter (262 feet) tall steel tubular towers secured to a concrete foundation. The exact turbine locations have not been determined to date. The project site area has been expanded since we last contacted you. The revised wind farm boundary includes the following Township, Ranges, and Sections in Pierce County, North Dakota:

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In addition to the wind turbines, an approximately eight mile 115 kV or 230 kV transmission line will be needed to connect the wind project substation to the interconnection substation near Rugby, ND. This area is indicated on the attached map. As a result, we are also studying the following corridor for locating the proposed transmission line:

Township Name	Township	Range	Sections
Meyer	156N	72W	3-10
Torgerson	157N	72W	3-5, 8-17, 20-29, 32-36
Spring Lake	158N	72W	16, 17, 20-22, 27-29, 32-34

Enclosed is a map detailing the location of the revised Rugby Wind Farm site location to facilitate your review. Additional comments received by February 14th, 2005 will be included in the Certificate of Site Compatibility Application to the PSC. If you require further information or have questions regarding this matter, please call me at (763) 278-5910. Thank you for your assistance.

Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

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

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Murphy:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

The Rugby Wind Farm is proposed to consist of up to 100 wind turbines with a capacity of up to 150 MW. The most likely turbine size is 1.5 MW wind turbine with a rotor diameter of up to 70-82 meters (231 to 269 feet). The wind turbines will be situated on 80 meter (262 feet) tall steel tubular towers secured to a concrete foundation. The exact turbine locations have not been determined to date. An approximately eight mile 115 kV or 230 kV transmission line will be needed to connect the wind project substation to the interconnection substation near Rugby, ND.

The proposed wind farm will be located in the following Township, Ranges, and Sections in Pierce County, North Dakota:

Township Name	Township	Range	Sections
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Sincerely,

for Angela Rivera

Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Governor John Hoeven
600 East Boulevard Avenue, Department 101
Bismarck, ND 58505-0001

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Governor Hoeven:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

Angela Rine

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Mr. Brad Darr, District Engineer
North Dakota Highway Department
District 3
316 Sixth Street South East
Devils Lake, ND 58301-0817

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Darr:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Ms. Cheryl Kulas, Executive Director
North Dakota Indian Affairs Commission
600 East Boulevard Avenue
1st Floor – Judicial Wing
Bismarck, ND 58505-0300

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Ms. Kulas:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

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

RE: Rugby Wind Farm, Pierce County, North Dakota

To Whom It May Concern:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

Angela Diver

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Mr. Rick Larson, Director of Minerals Management
North Dakota State Land Department
Energy Development Impact Office
P.O. Box 5523
Bismarck, ND 58506-5523

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Larson:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

for Angela Pierce

Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Ms. Kathy Duttenhefner
North Dakota Parks and Recreation Department
Natural Resource Program
1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Ms. Duttenhefner:

As you know, HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC) for the Rugby Wind Farm. On December 3, 2004, our office sent you a letter requesting your review of the project. Since that time, we have gained additional information about the project.

As we stated previously, the project is proposed to consist of up to 100 wind turbines with a capacity of up to 150 MW. The most likely turbine size is 1.5 MW wind turbine with a rotor diameter of up to 70-82 meters (231 to 269 feet). The wind turbines will be situated on 80 meter (262 feet) tall steel tubular towers secured to a concrete foundation. The exact turbine locations have not been determined to date. The project site area has been expanded since we last contacted you. The revised wind farm boundary includes the following Township, Ranges, and Sections in Pierce County, North Dakota:

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In addition to the wind turbines, an approximately eight mile 115 kV or 230 kV transmission line will be needed to connect the wind project substation to the interconnection substation near Rugby, ND. This area is indicated on the attached map. As a result, we are also studying the following corridor for locating the proposed transmission line:

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Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

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

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Ms. Sharp:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Mr. Kieth Bartholomay, Chairman
North Dakota State Soil Conservation Committee
2718 Gateway Avenue, Unit #104
Bismarck, ND 58503

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Bartholomay:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

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

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Frink:

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Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Mr. Terry Ellsworth
U.S. Fish and Wildlife Service
3425 Miriam Avenue
Bismarck, ND 58501-7926

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Ellsworth:

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Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Ms. Trisha J. Feiring, District Conservationist
Pierce County Soil Conservation District
Rugby Field Office
126 2nd Avenue SW, Suite 104
Rugby, ND 58368-1724

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Ms. Feiring:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

The Rugby Wind Farm is proposed to consist of up to 100 wind turbines with a capacity of up to 150 MW. The most likely turbine size is 1.5 MW wind turbine with a rotor diameter of up to 70-82 meters (231 to 269 feet). The wind turbines will be situated on 80 meter (262 feet) tall steel tubular towers secured to a concrete foundation. The exact turbine locations have not been determined to date. An approximately eight mile 115 kV or 230 kV transmission line will be needed to connect the wind project substation to the interconnection substation near Rugby, ND.

The proposed wind farm will be located in the following Township, Ranges, and Sections in Pierce County, North Dakota:

Township Name	Township	Range	Sections
Tofte	157N	71W	5-8
Torgerson	157N	72W	1-12
Walsh	157N	73W	1, 12
Juniata	158N	71W	5-8, 17-20, 29-32
Spring Lake	158N	72W	1-36
East Barton	158N	73W	1, 12, 13, 24, 25, 36

HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416
Phone: (763) 591-5400
Fax: (763) 591-5413
www.hdrinc.com

PPM Energy is also studying the following corridor for locating the proposed transmission line:

Township Name	Township	Range	Sections
Meyer	156N	72W	3-10
Torgerson	157N	72W	3-5, 8-17, 20-29, 32-36
Spring Lake	158N	72W	16, 17, 20-22, 27-29, 32-34

Enclosed is a map detailing the location of the Rugby Wind Farm site location to facilitate your review. Comments received by February 14th, 2005 will be included in the Certificate of Site Compatibility Application to the PSC. If you require further information or have questions regarding this matter, please call me at (763) 278-5910. Thank you for your assistance.

Sincerely,

for Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

January 25, 2005

Mr. Dan Cimarosti
U.S. Army Corps of Engineers, Regulatory Office
1513 South 12th Street
Bismarck, ND 58504

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Mr. Cimarosti:

On behalf of PPM Energy, HDR Engineering, Inc. (HDR) is notifying you of the above-mentioned project in accordance with NDCC 69-06-01-05. HDR is in the process of preparing an application for a Certificate of Site Compatibility to the North Dakota Public Services Commission (PSC). We request that you review the proposed project and provide comments and information about applicable permits that may be required from your office. You will also be receiving notice once the application is filed.

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Sincerely,

Michelle Bissonnette
Project Manager

Enclosures: Project Location Map

Cc: Mr. Tim Seck, PPM Energy, Inc.

STATE OF NORTH DAKOTA
OFFICE OF ATTORNEY GENERAL
STATE CAPITOL
600 E BOULEVARD AVE DEPT 125
BISMARCK, ND 58505-0040
(701) 328-2210 FAX (701) 328-2226
www.ag.state.nd.us

Wayne Stenehjem
ATTORNEY GENERAL

January 31, 2005

Michelle Bissonnette
Project Manager
HDR
6190 Golden Hills Drive
Minneapolis MN 55416

Dear Ms. Bissonnette:

I am responding on behalf of the Attorney General to your recent letter asking this office to review your proposal and provide comments and information about applicable permits.

The Attorney General and members of his staff are prohibited by statute from giving legal advice, opinions, or assistance to private businesses or members of the public. We may only serve as legal advisors to state officials, state's attorneys, and certain city officials.

For legal advice and information, and to ensure compliance with all state laws and local ordinances, you may wish to consult an attorney in private practice licensed in North Dakota. He or she can review your information and advise you of your options. If you need assistance finding an attorney, you can contact the State Bar Association at (701) 255-1404.

Accordingly, we cannot take any further action in response to your letter.

Sincerely,

Liz Brocker

Liz Brocker
Executive Assistant

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
1200 Missouri Avenue, Bismarck, ND 58504-5264
P.O. Box 5520, Bismarck, ND 58506-5520
701.328.5200 (fax)
www.ndhealth.gov

February 2, 2005

Ms. Michelle Bissonnette
Project Manager
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55418

Re: Rugby Wind Farm, Pierce County, North Dakota

Dear Ms. Bissonnette:

This department has reviewed the information concerning the above-referenced project submitted to Dr. Terry Dwelle, under date of January 25, 2005, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner.

2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.

3. Projects disturbing one or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablisment of vegetation or other permanent cover. Further information on the storm water permit may be obtained from the Department's website or by calling the Division of Water Quality (701-328-5210). Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

4. Noise from construction activities may have adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Noise effects can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
1200 Missouri Avenue, Bismarck, ND 58504-5264
P.O. Box 5520, Bismarck, ND 58506-5520
701.328.5200 (fax)
www.ndhealth.gov

Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

North Dakota
Department of Commerce

Community Services

Economic
Development & Finance

Tourism

Workforce Development

Century Center

1600 E. Century Ave

Suite 2

PO Box 2057

Bismarck, ND 58502-2057

Phone 701-328-5300

Fax 701-328-5320

www.ndcommerce.com

February 2, 2005

Michelle Bissonnette
HDR Engineering, Inc.
6190 Golden Hills Dr.
Minneapolis, MN 55416

"Letter of Clearance" In Conformance with the North Dakota Federal Program Review System - State Application Identifier No.: ND050202-0039

Dear Ms. Bissonnette:

SUBJECT: PPM Energy - Rugby Wind Farm, Pierce County, North Dakota

The above referenced notice has been reviewed through the North Dakota Federal Program Review Process. As a result of the review, clearance is given to the project only with respect to this consultation process.

If the proposed project changes in duration, scope, description, budget, location or area of impact, from the project description submitted for review, then it is necessary to submit a copy of the completed application to this office for further review.

We also request the opportunity for complete review of applications for renewal or continuation grants within one year after the date of this letter.

Please use the above SAI number for reference to the above project with this office. Your continued cooperation in the review process is much appreciated.

Sincerely,

James R. Boyd
Manager of Governmental Services

sf

cc: Tim Sect @ Midwest Renewables, PPM Energy

North Dakota Department of Transportation

David A. Sprynczynatyk, P.E.
Director

John Hoeven
Governor

February 7, 2005

Michelle Bissonnette
HDR Engineering
6190 Golden Hills Drive
Minneapolis, MN 55416

RE: Rugby Wind Farm, Pierce County, North Dakota

Dear Ms. Bissonnette:

This letter is in response to your letter dated January 25, 2005, regarding your request to review the Rugby Wind Farm project.

I see that there will be a transmission line running across US Highway 2, from the substation, north. Please obtain all appropriate permits and risk management documents from the Devils Lake District office that may relate to this project.

If you have any questions, please call me at 701-665-5100.

Sincerely,

Brad Darr, P.E.
District Engineer

jp

John Hoeven, Governor
Douglass A. Prchal, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@state.nd.us
www.NDparks.com

February 8, 2005

Michelle Bissonnette
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Re: Rugby Wind Farm
Pierce County, North Dakota

Dear Ms. Bissonnette:

The North Dakota Parks and Recreation Department (NDPRD) has reviewed the above referenced project proposal to place wind turbines and transmission line in Sections 5-8, T157N, R71W; Sections 1-17, 20-29, and 32-36, T157N, R72W; Sections 1 and 12, T157N, 73W; Sections 5-8, 17-20, and 29-32, T158N, R71W; Sections 1-36, T158N, R72W; and Sections 1, 12, 13, 24, 25, and 36, T158N, R73W, Pierce County.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare species and ecological communities). The project as defined does not affect state park lands that we manage or Land and Water Conservation Fund recreation projects that we coordinate.

The North Dakota Natural Heritage Inventory has limited rare species information from the project area. Due to the lack of available survey data we cannot give an accurate assessment as to potential impacts to rare species and associated habitats.

The NDPRD recommends that any impacted areas be revegetated with species native to the project area.

Thank you for the opportunity to comment on this project. Please contact Kathy Duttenhefner (701-328-5370 or kgduttenhefner@state.nd.us) of our staff if additional information is needed.

Sincerely,

Jesse Hanson

Jesse Hanson, Coordinator
Planning and Natural Resources Division

R.USNDNHI*1448

Play in our backyard!

1707 North 9th Street
PO Box 5523
Bismarck, ND 58506-5523
Phone: (701)-328-2800
Fax: (701) 328-3650

www.land.state.nd.us
www.discovernd.com

ND STATE LAND DEPARTMENT
Helping to Fund Education

Gary D. Preszler, Commissioner

February 11, 2005

HDR ENGINEERING INC
6190 GOLDEN HILLS DR
MINNEAPOLIS MN 55416

RE: Rugby Wind Farm, Pierce County, North Dakota

The Board of University and School Lands (Land Board) owns the following property within the proposed wind farm area and transmission corridor.

Township Name	Township	Range	Sections
Tofte	157	71	No school trust land
Torgerson	157	72	SW4 Sec. 2
Torgerson	157	72	NW4 Sec. 14
Torgerson	157	72	NW Sec. 22
Walsh	157	73	No school trust land
Juniata	158	71	No school trust land
Spring Lake	158	72	E2 & SW4 Sec. 16
Spring Lake	158	72	SE4 Sec. 36
East Barton	158	73	E2-36

We are supportive of the expansion of wind generation in North Dakota. School trust lands are managed in trust under the constitution and the congressional grant at statehood solely for the support of schools and various public institutions in North Dakota. For this purpose, the Land Board considers applications for activities on school trust lands that will generate income for the trusts. Wind generation can certainly generate income for the schools and we are ready to discuss easement terms with you.

Please be aware that any proposed use of school trust lands requires an easement or permit from the Land Board. Approval of locations or routes by the North Dakota Public Service Commission does not mean that it will be approved by the Land Board. If you are proposing to locate any facilities on the school trust lands identified above, you should contact us for preliminary discussions of routing before you complete your application with the Public Service Commission. It is easier to agree on possible routes and locations in advance. In that way, you will not need to amend your application to the Public Service Commission in the event that the Land Board does not agree with your proposal as it affects school trust lands.

Please contact Rick Larson, Mike Brand, or myself at 701-328-2800 if you need additional information about school trust lands which may be affected by your proposed project.

Sincerely,

Gary D. Preszler, Commissioner
State Land Department

GDP/mg
g:\support\gdpletters\gdpltrs mg.doc

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
502 Hwy 2 W, Suite 1
Devils Lake, ND 58301

To: Michelle Bissonnette, Project Manager
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Subject: Rugby Wind Farm Date: Feb. 11, 2005

I recently received a copy of your letter to our Agency requesting comments on the Rugby Wind Farm Project. I also received a phone call from your office requesting information on prime farmlands, farmlands of statewide importance and farmlands of local importance which may occur in the project area. This information was provided over the phone.

The primary purpose of the FPPA (Farmland Protection Policy Act) is to reduce the conversion of prime farmland to non-agricultural uses. Presently, it only applies to projects which involve any federal funds. Your letter did not mention whether federal agencies are providing any funds for this project. If such is the case, then Form 1006 must be completed in order to properly evaluate any proposed sites for compliance with FPPA. Send me the form with parts I and III completed and I will complete parts II and IV and return to you with guidelines for assigning site assessment points. We do require a copy of the completed form (with points assigned for any alternate sites) to be returned to our office in a timely manner for our review. Please keep in mind when assigning points that is rare that any site assessment would score less than 60 points, which means that most sites on prime farmland will exceed 160 points.

If federal funds are not involved, Form 1006 is not required, but we would encourage you to consider the purpose of FPPA in your site selection.

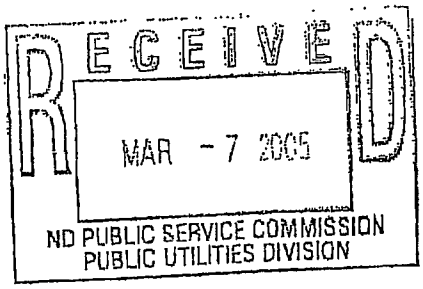
In either case, it is necessary that the project conform with all federal regulations and guidelines pertaining to wetland protection. In addition, care should be taken during the construction of the proposed project to minimize soil blowing and water erosion as these may cause negative impacts to adjacent farmlands.

Please contact me if any further information or assistance is needed.

Sincerely,

Alan R. Gulsvig
Area Resource Soil Scientist
Ph. (701) 662-7967 ext. 128

PPM Energy
A ScottishPower Company



March 4, 2005

Ms. Illona A. Jeffcoat-Sacco
Executive Secretary
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480

Re: **Wind Project Siting Process- Rugby Wind Farm**

Dear Ms. Jeffcoat-Sacco:

Per North Dakota Public Service Commission ("Commission") staff request, PPM Energy, Inc. (PPM) is writing to you to propose a process for finalizing the placement of wind turbines that is compatible with North Dakota power plant siting rules and consistent with circumstances unique to permitting and siting wind projects.

Wind facility siting is a process through which input is considered from several different entities. When considering where to locate the wind farm in North Dakota, PPM originally identified four sites. These sites were identified based on expected wind resource and transmission availability. Next PPM conducted a "fatal flaw" analysis for the top two sites. The fatal flaw analyses looked at environmental conditions at each site and also further assessed wind resource and transmission. The Rugby site was identified as an optimal site from environmental, wind resource, transmission, and economic perspectives.

The next step in the development process was to secure the site by entering into agreements with landowners that were interested in having PPM place wind turbines and associated facilities on their property.

Once a site is selected and secured, the next step in the process is to identify preliminary turbine locations based on initial site inspection, topographic maps, known environmentally sensitive

areas, review of the North Dakota's power plant siting exclusion and avoidance areas, review of Pierce County wind siting requirements, and communications with local, state and federal agencies. These preliminary turbine locations will be presented in our application for a Certificate of Site Compatibility ("Certificate"). This preliminary site plan is the commonly accepted standard for applications in other jurisdictions.

PPM suggests that the Certificate define the site area, maximum number of turbines and other structures related to wind generation to be located in the site area. Within the site area, PPM would be able to site turbines and other structures related to wind generation subject to required setbacks from environmentally sensitive areas, roads, and residences.

Once the Commission issues the Certificate, PPM would complete the studies required by the Certificate or PPM's siting process including microwave beam path analysis, geotechnical studies, wetland, biological, and cultural resource surveys. In addition, PPM would seek further input from landowners regarding the location of wind facilities. Once these additional studies and communications are completed, preliminary turbine and access road locations are re-evaluated for their appropriateness with the Certificate conditions and buffers. A final site plan for the 150 MW project would be submitted to the Commission prior to construction and a pre-construction meeting held with Commission staff to ensure that the site plan conforms to the Certificate requirements.

An analogous process can be found in Minnesota. In Minnesota, the site is evaluated based on a series of environmental parameters listed in the Wind Siting Rules (Minn. Rules Chapter 4401). PPM submits a preliminary site layout considering the environmental parameters listed in the Wind Siting Rules. If the application is considered complete and the project is compatible with "environmental preservation, sustainable development, and the efficient use of resources," a site permit is issued by the State with a set of conditions and mitigative measures specific to the project. After the site permit is issued, the wind project developer is given latitude to locate turbines within the permitted project area provided the site layout is consistent with the site permit conditions. The developer, however, must submit a final plan to the Minnesota Environmental Quality Board prior to construction.

Wind project siting is unique in that the project occupies a large area and must not only conform to Certificate conditions but must also optimize the wind resource at the site. Ideally, the Certificate provides the parameters within which the developer may optimize the site. With Certificate conditions in place, the developer is able to proceed with planning and development. Early approval of a Certificate is not only consistent with circumstances unique to wind project siting but it is also essential to timing given the uncertainty and limited duration of the federal production tax credit necessary for wind project development.

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

Please do not hesitate to contact me if PPM can provide any additional information or clarification. You can reach me by phone at 651-917-9285 or e-mail at timothy.seck@ppmenergy.com.

Sincerely,

Tim Seck

Tim Seck
Manager of Midwest Renewables

cc: Michelle Bissonnette – HDR Engineering, Inc.

Public Service Commission
State of North Dakota

600 E. Boulevard Ave. Dept 408
Bismarck, North Dakota 58505-0480
web: www.psc.state.nd.us
e-mail: ndpsc@state.nd.us
TDD 800-366-6888
Fax 701-328-2410
Phone 701-328-2400

March 8, 2005

Tim Seck
PPM Energy Inc
2221 Riverwood Place
St. Paul, MN 55104

RE: Rugby Wind Farm
Pierce County, North Dakota
Case No. PU-05-47

Dear Tim:

The Commission and staff held a work session on March 8, 2005 to discuss the proposal outlined in your March 4, 2005 letter. The Commission agrees to proceed under the framework of PPM's proposal with the understanding that some details will likely need to be worked through as the process goes forward. For example, the level of final site plan approval necessary before starting construction could be decided after hearing and established as a condition in the Commission's order.

We look forward to receiving your application. If we can be of further assistance, please contact us.

Sincerely,

Annette Bendish

Annette Bendish
Public Utility Analyst

4 **PU-05-305** Pages: 1

Letter re the Commission's proceeding unmder the framework of PPM's proposal by Public Service Commission

03/08/2005 C: Comm Legal Illona, Jerry, Annette . .

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

March 25, 2005

[200560053]

Ms. Michelle Bissonnette – Project Manager
HDR Engineers, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Dear Ms. Bissonnette:

We have reviewed your request for Department of the Army, Corps of Engineers (Corps) jurisdictional wetland determination on a parcel of land located in several Sections in Townships 156, 157 and 158, Range 71, 72, 73 West, Pierce County, North Dakota.

Through Section 404 of the Clean Water Act the Corps regulates the discharge of dredged or fill material into waters of the United States. Waters of the United States may include, but are not limited to, lakes, ponds, rivers, streams, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and vernal pools. Based on the information that you provided to this office, we have made a preliminary determination that Section 33, T157N, R72W; Section 6, T156N, R72W; and Section 1, T156N, R73W appear to contain jurisdictional waters of the United States. Therefore, should the proposed project and/or associated construction activities result in the discharge of dredged or fill material into waters of the United States, a Corps permit may be required. If however, the project and associated work can be accomplished by avoiding impacts to waters of the United States, a Corps permit would not be required.

In order for the Corps to fully review the proposed mitigation project for Section 404 authorization, a completed Corps of Engineers permit application must be submitted to this office. Should construction activities associated with this project result in impacts to waters of the United States, please complete and submit the enclosed permit application to the U.S. Army Corps of Engineers, North Dakota Regulatory Office, 1513 South 12th Street, Bismarck, North Dakota 58504. It is essential to identify all impacts to waters of the United States resulting from the proposed project.

Should you have any questions regarding this determination, please do not hesitate to contact this office at telephone number (701)-255-0015 or at the letterhead address and reference project number 200560053.

Sincerely,

Jason Renschler
Project Manager
North Dakota Regulatory Office

Enclosure